WALTON RELATIONS & HISTORY

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WALTON COUNTY HERITAGE ASSOCIATION, INC.

OFFICE LOCATION

Walton County Heritage Museum, (Old Train Depot)
Hours: Open Tuesday – Saturday, 1:00 – 4:00 PM

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Clockwise from top left:

1. Darlington, Florida, early 1900s, Courtesy of Baker Block Museum, photographer unknown. Edited by Sam Carnley.

2. *Henderson-Mathis turpentine still in Glendale or Gaskin*. 1904. Black & white photoprint, 4 x 6 in. State Archives of Florida, Florida Memory. <https://www.floridamemory.com/items/show/42107>, accessed 28 June 2017 by Sam Carnley.

3. William Lewis (Luke) Hurst Family, Fleming Creek/Clear Springs area, north Walton County, ca 1894, from "The Heritage of Walton County, Florida," p. 190.

4. Old Paxton High School, "1961-62 Paxtonian" Year Book, photographer unknown. Edited by Sam Carnley

5. Walton County Heritage Museum, photo and editing by Sam Carnley.

6. Gladys D. Milton (1924-1999), Midwife, Flowersview/Paxton, photo by her daughter, Maria Milton. Also in "The Heritage of Walton County, Florida," p. 249, and the September 2018 Newsletter at http://www.waltoncountyheritage.org/GenSoc/NL2018Sep.pdf Edited by Sam Carnley.

7. Lake Jackson, South Side, in Paxton City Limits, photo and editing by Sam Carnley.

8. Paxton Water Tower, Paxton, Florida, photo and editing by Sam Carnley.

9. Old Freeport School, constructed ca 1908, burned 1943. Photo from "The Heritage of Walton County, Florida," p. 45. Photographer unknown. Edited by Sam Carnley.

10. *Florala Saw Mill Company's engine number 3 - Paxton, Florida*. 1907. Black & white photonegative, 4 x 5 in. State Archives of Florida, Florida Memory. Photographer unknown. <https://www.floridamemory.com/items/show/146972>, accessed 7 September 2019 and edited by Sam Carnley. [Built in 1873 and Originally owned by New York, Ontario and Western Railroad Company as engine number 60; then owned by Southern Iron and Equipment Company as engine number 568 in 1907; then owned by Florala Saw Mill Company as engine number 3 on March 3, 1907; returned to Southern Iron and Equipment Company and number changed to 915 on March 13, 1913; then owned by Louisiana Saw Mill Company as engine 50 in May, 1913.]

The **Walton County Heritage Association, Inc**. is an 501 (C) 3 Florida Not for Profit Corporation Recognized by the IRS as a Public Charity Organization for Tax Deductible Donations.

The Walton County Heritage Association was organized for four main purposes:

- To promote the preservation and restoration of buildings and other landmarks of historical interest within Walton County;
- To maintain the Walton County Heritage Museum to preserve the heritage of Walton County for the education and enjoyment of current and future generations by collecting, preserving, and exhibiting artifacts and information from the time of its original inhabitants to the present;
- To foster and enhance the development, education, and sense of history which is unique to Walton County; and
- To secure cooperation and unity of action between individual citizens, businesses, and other groups as may be necessary to fulfill these purposes.

The Association depends upon the support of its members and the business community to accomplish its goals. Annual dues are $25 for individuals, $40 for families and $100 for corporate memberships.

Click here for the Individual Membership Application

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Member Benefits:

- **Automatic** membership in the **Walton County Heritage Museum** and the **Walton County Genealogy Society**.
- **Invitations** to Quarterly Members Meetings
- **Discounts** on Special Events
- **The Museum Research Center:** Members get free copies of documents and use of the Genealogy Society computer when the Museum is open.
- **The Museum Gift Shop:** Members receive discounts on books, special publications, postcards, photographs, CDs, DVDs, videos, and gift items.
- **Free subscriptions** to the WCHA Newsletter and Journal.

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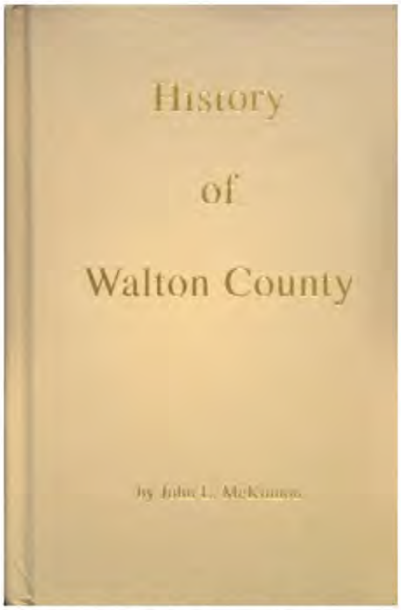
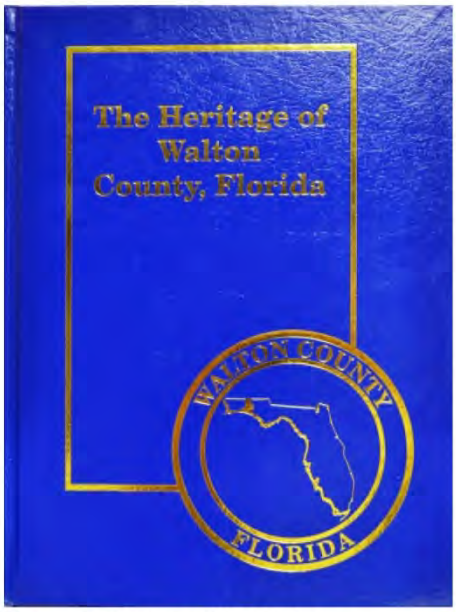
www.WaltonCountyHeritage.org. *Walton Relations & History* is a publication of the Walton County Heritage Association, Inc., Sam Carnley, editor. Distribution is encouraged! For more information or to submit an article, please email its editor at wsamuelcarnley@gmail.com or phone at 850-209-3778.

From the Museum Gift Shop

Our most popular books

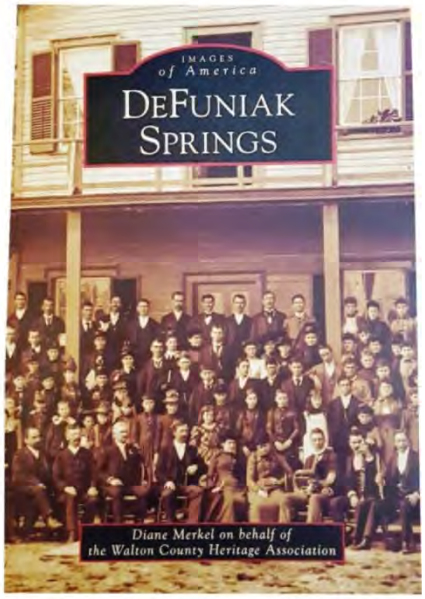


History of Walton County by John L. McKinnon. The Museum has sold out of this book and it is out of print, but it is available on line free of charge at this link, https://dlg.galileo.usg.edu/georgiabooks/pdfs/gb0503.pdf



The Heritage of Walton County, Florida. Item code B13. History of Walton County's organizations, churches and people. Hard cover, 316 pages, indexed.

$59.00 plus tax and shipping.



Images of America, DeFuniak Springs. Item code B06. By Diane Merkel. Softcover, 128 pages, 185 photos, indexed.

$21.99 plus tax and shipping.

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Quantity	Description	Item Code	Price Each*	Amount
	The Heritage of Walton County, Florida	B13	71.13	
	Images of America, DeFuniak Springs.	B06	31.53	

*Price includes tax at 7% and shipping of $8.00 per item. Total

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From the Editor

As in last month's newsletter, we again this month feature an article on a book authored by a Walton County native. His name is Wayne Wooten and his book is titled "Iron Bones." By way of introduction, Wayne's autobiographical sketch is presented below:

> John Wayne Wooten has born on May 10th, 1948 to Margaret and J.D. Wooten, Jr. in Lakeside Hospital in DeFuniak Springs. He grew up on their Hilltop Farm in Piney Grove, and was collecting petrified Miocene age wood at age four. His initial plans in first grade were to become a paleontologist, being able to spell Tyrannosaurus before most kids could spell their names.
>
> But a 1957 appearance of Comet Mrkos in the hot August skies turned his gaze skyward to astronomy, although he never forgot the love of fossil hunting. Five Walton county kids established the Walton County Astronomy Club in December 1962, and it met for years on Wooten's Hilltop and later at Walton High.
>
> He graduated salutatorian from Walton High School in 1966, attended University of Florida with fellow astronomer Rand Baldwin, and returned to teach four years at Paxton High School science from 1970-74; his earth science classes did extensive research with W.A. Ray and Felix Ray at Camp Creek fossil beds for the Florida State Museum.
>
> He also served in the 919th SOG at Duke Field as its paymaster from 1971-77, helping resettle 20,000 Vietnamese refugees after the fall of Saigon. While training for disbursement accounting at Shepherd AFB in Wichita Falls, TX, he did a lot of fossil hunting with Morey Chapel, a retired Master Sargent who knew all the fossil sites in NE Texas well, and brought back many fine fossils to Pensacola Junior College. He joined PJC in 1974 after getting his Masters, and received his Doctorate in Astronomy Education from Gainesville in 1979.
>
> He married Merry Edenton in 1980, and with their sons, Michael and Trevor, continued work on Walton County fossils for years afterwards. With the help of Paxton art teacher Barbara Ballard, he published "iron Bones", a monograph on the prehistory of his home county, in July 1976 as his bicentennial present to his home county.
>
> Due to Parkinsons, he retired from teaching astronomy at the University of West Florida in 2016 after 30 years, and from Pensacola State College in August 2017, after 43 years of service. He still works with the Escambia Amateur Astronomers, which he sponsored for 42 years, and also still teaches Solar System Astronomy on line with Tennessee's Regents Online College Collaborative. If he teaches with them this fall, it will mark the 50th year of his teaching science to the students of Florida.

Wayne's "Iron Bones," takes the reader millions of years back in the county and earth's prehistory before the continents as they now appear were formed. He then moves the story forward to the present day when he identifies himself as a descendant of the earliest men to inhabit Walton County.

On the subject of the newsletter, I stated in an earlier one that they would lag a month behind until the end of the year. I have however, been able to catch up with this one and they are now back on schedule; you are receiving this one in the month it is due.

Sam Carnley
5/8/2020

IRON BONES
Walton County Before Man

Written by Wayne Wooten

Illustrated by Barbara Ballard
Edited for the Newsletter by Sam Carnley

CONTENTS

The Author

John Wayne Wooten is a native of Walton County, the son of Mr. and Mrs. J. D. Wooten, Jr., of Glendale. He is a 1966 graduate of Walton High School. He majored in physics and astronomy at the University of Florida, graduating Phi Beta Kappa in 1970. For the next four years he taught at Paxton High School, and completed his Master's degree at the University of Florida in 1972. He presently is a physical science instructor at Pensacola Junior College in Pensacola, Florida.

The Illustrator

Barbara Ann Ballard is also a native Walton Countian, the daughter of Mr. and Mrs. Cliff Ballard of Paxton. After graduating from Paxton High School in 1970 she attended Okaloosa-Walton Junior College, transferring with honors to the University of West Florida. Since receiving her B. A. in Art in 1974 she has interned at Walton Senior High School and taught art at Paxton High School.

I. INTRODUCTION

This is my bicentennial gift to you, the residents of Walton County and the surrounding area. I hope the publication of this paper on the story of this area before the coming of man will be enjoyable and informative to you, and increase your appreciation of the wonderful region we live in. While I will discuss Walton County geology in some detail, much of the information in this publication also applies to the rest of the Florida Panhandle and south Alabama.

Work on this paper began with the publication of Harold Gillis' "**Flint Chips"** in 1972. This fascinating study of local Indians and their artifacts was very warmly received by the Historical Society of Okaloosa and Walton Counties. Harold encouraged me to extend the story of our region even farther back in time. So challenged, I have spent several years of spare time in field work, reading, research, and writing on this paper.

With the fine art work of Barbara Ballard and her interest as a catalyst, "**Iron Bones"** became a reality in April of 1976. The initial press run of 200 was soon distributed to teachers, journalists, and the interested public. At the request of the Library Association and Historical Society, this Bicentennial edition has been prepared. All proceeds from this edition will go to support those two

worthy organizations. Next year plans are being made to use this as a supplement to earth science at Walton Middle School.

In addition to Harold and Barbara, I would also like to thank several others for their help on "**Iron Bones":** Pam, Lamar, and Donnie Ray for excellent field work, David Frailey, Mike Frazier, S. David Webb, and Tom Patton of Florida State Museum for fossil identification, Dr. Ken Exum and Brooke Towery of PJC for reviewing the geology, and Frances Cobb of PJC for help in editing. Rev. Henry Mooney and the First Presbyterian Church allowed me to use their fine mimeograph, and my own parents lent encouragement and helped with the distribution; many other friends read the manuscript and lent suggestions; thanks to all of you. *JWW*

II. WALTON COUNTY BENEATH THE SURFACE

Like our nation,, a melting pot of men and ideas from many continents, the bedrock under the southeastern U. S. is derived from the fusion of continents. Only recently has much of the fascinating story of this region's origin emerged. It comes through studies of deep oil well cores, and the magnetic fields of ancient igneous rocks, and the fossils and ancient sediments in sedimentary rock layers.

We now know the continental bedrock some three miles below us is of African, not North American origin. Some 600 million years ago, in the Cambrian Period when our good fossil record began, Florida and much of the Southeast lay only 20° from the South Pole, beneath a blanket of glaciers (refer to maps, Figure 1). The east coast of Florida was connected to western Africa. No Atlantic Ocean yet existed. Neither was there a Gulf of Mexico. The Yucatan Peninsula of Mexico was curled up against our Florida Panhandle. All of North America north and west of the Appalachians lay far to the north, in the Cambrian Tropics.

As millions of years passed, the southern supercontinent of Gondwanaland shifted on the earth's plastic mantle. The giant land mass included modern Africa, South America, Arabia, India, Australia, and Antarctica. The South Pole began its long journey toward Antarctica, and our region drifted north, toward the tropics. The glaciers melted, and the fossil record indicates warmer conditions over the whole world for the next 250 million years.

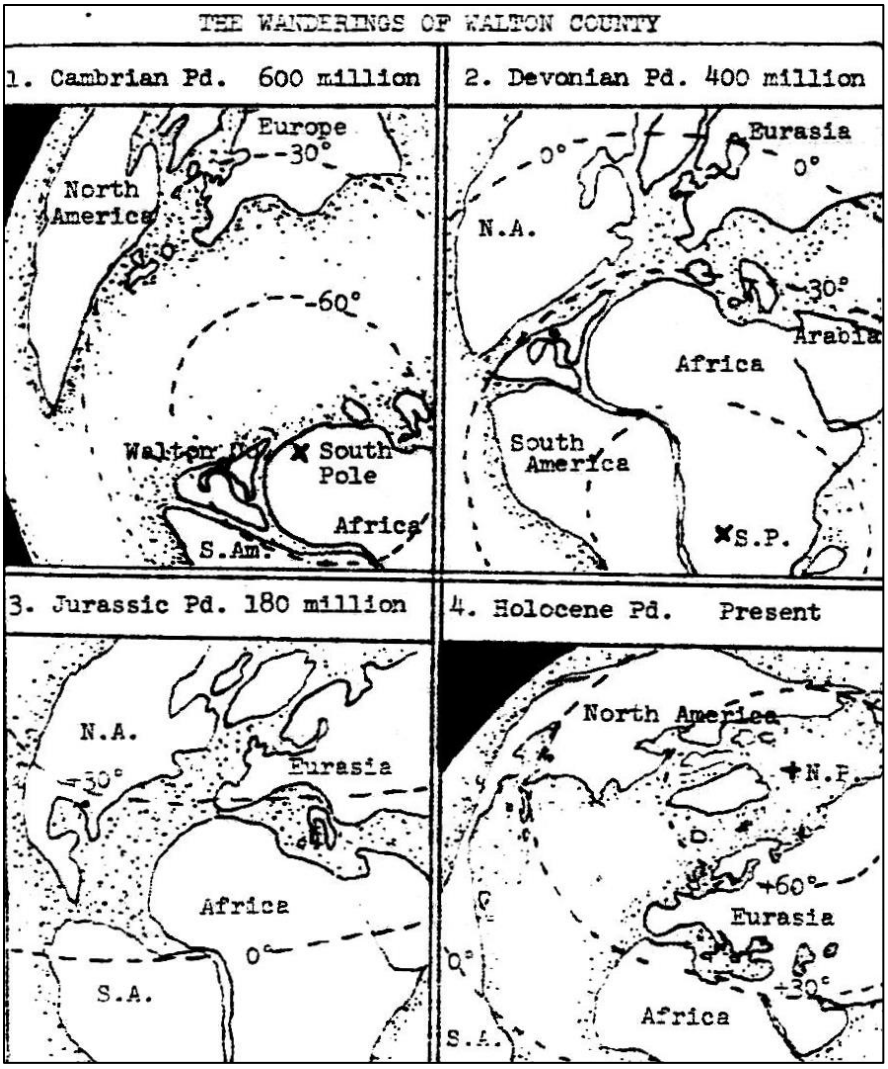

Figure 1

With higher sea levels, parts of central Florida were apparently submerged around 450 million years ago. The oldest Florida fossil is an Ordovician Period trilobite, recovered from an 8 thousand feet deep oil well core beneath the Ocala National Forest. No such marine fossils have yet come from oil well cores in the Panhandle, however. This author surmises that our area was then high, dry land. Probably the continental bedrock was exposed and being eroded by wind and rain, so no sediments were left of marine origins. At that time, all life was still in the sea.

During the Devonian Period, about 400 million years ago, our region drew closer to North America, with a narrowing sea similar to the modern Mediterranean between the two continents set on a collision course (Figure 2). Many marine organisms thrived in the warm, shallow trench between the continents; the fine fossil shells in many lime stones and shale of northern Alabama, Georgia, and the Smokey Mountains testify to the abundant life in this ancient sea. But as the land rose, plants and animals also adapted to the terrestrial environment; vast and rich coal deposits and fossil amphibians from West Virginia show us the adaptation of life to a marsh environment.

During the Carboniferous Period the continents of Africa and North America collided with tremendous force (Figure 2). Over a period of millions of years the Appalachian Mountain Chain was pushed skyward, the visible scar in the grafting of the southern U. S. onto the bedrock of North America. Some 300 million years ago the Appalachians were the mightiest mountains on earth. They towered above the modern Himalayas and stretched north to the Catskills of New York and west to the Ouachita of Oklahoma. In central Alabama the retreating seas left swamps; forests flourished, leaving behind the coal to make Birmingham an industrial center. But even the mountains grow old; today only the roots of the once proud peaks remain. The last quarter of an eon has seen wind, rain, and ice reduce the Appalachians to rubble and transport this sediment south to build up the land you now stand upon.

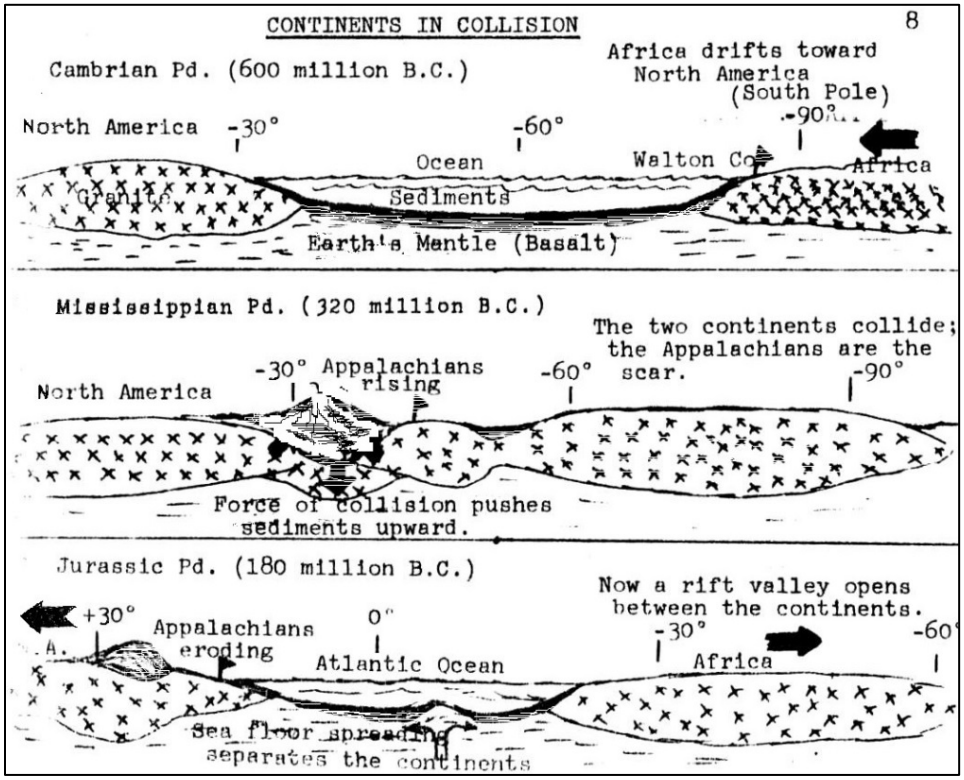

Figure 2

During the Permian Period when reptiles took over the land, at last Walton County became part of the northern hemisphere, crossing the equator along with the rest of our drifting continent. Then our region was high and dry, centrally located on a vast land mass which included Europe, North America, and Gondwanaland. The towering Appalachians cut off rainfall from the western oceans, so conditions on our high plateau must have been much like those of modern Utah or Colorado.

A second important geologic transition occurred about 180 million years ago. A rift opened between North America and Africa, the beginning of the Atlantic Ocean (Figure 2). Our area broke away from ancestral Africa and drifted north and west, with the rest of our present continent.

Perhaps in this time our state first felt salt water. The Yucatan Peninsula of Mexico drifted southward, opening a basin to be occupied by the Gulf of Mexico. The early gulf was shallow, salty and hot. Under the hot tropical sun the gulf dried up completely when tectonic activity raised the Florida Arch, the backbone of the peninsula, cutting off the waters of the Atlantic. As the early, premature gulf dried up, its organisms perished. But their hydrocarbons are preserved in the petroleum we now pump from the Norphelt shale under Jay, Florida (Figure 3). This Jurassic layer extends west into Texas. It is overlain by the "Smackover," a layer of salt and gypsum anhydrite marking the complete evaporation of the gulf. The salt domes of Louisiana (and salt on your table) come from the evaporates of this early version of the Dead Sea.

As the continents continued separating, our region subsided. Located on the margin of North America, our region would have become part of the continental shelf, except for some very industrious "land builders." As the reopened gulf flooded the basin, it formed the ideal environment for coral polyps. These simple relatives of jellyfish can extract calcium carbonate from sea water and build limestone homes with it for protection. But since the polyps live in association with green algae needing sunlight, the coral were forced to build their reefs higher and higher over the slowly sinking bedrock. Depositing unbelievable amounts of limestone, the coral remained within the sunlit zone for 100 million years. Their success in this race against a dark, slow starvation is shown by the depth of Cretaceous Period limestone under us; in places in Walton County it is three miles thick. This reef building process still continues in the Florida Keys, but the coming of the Cenozoic Era brought changes.

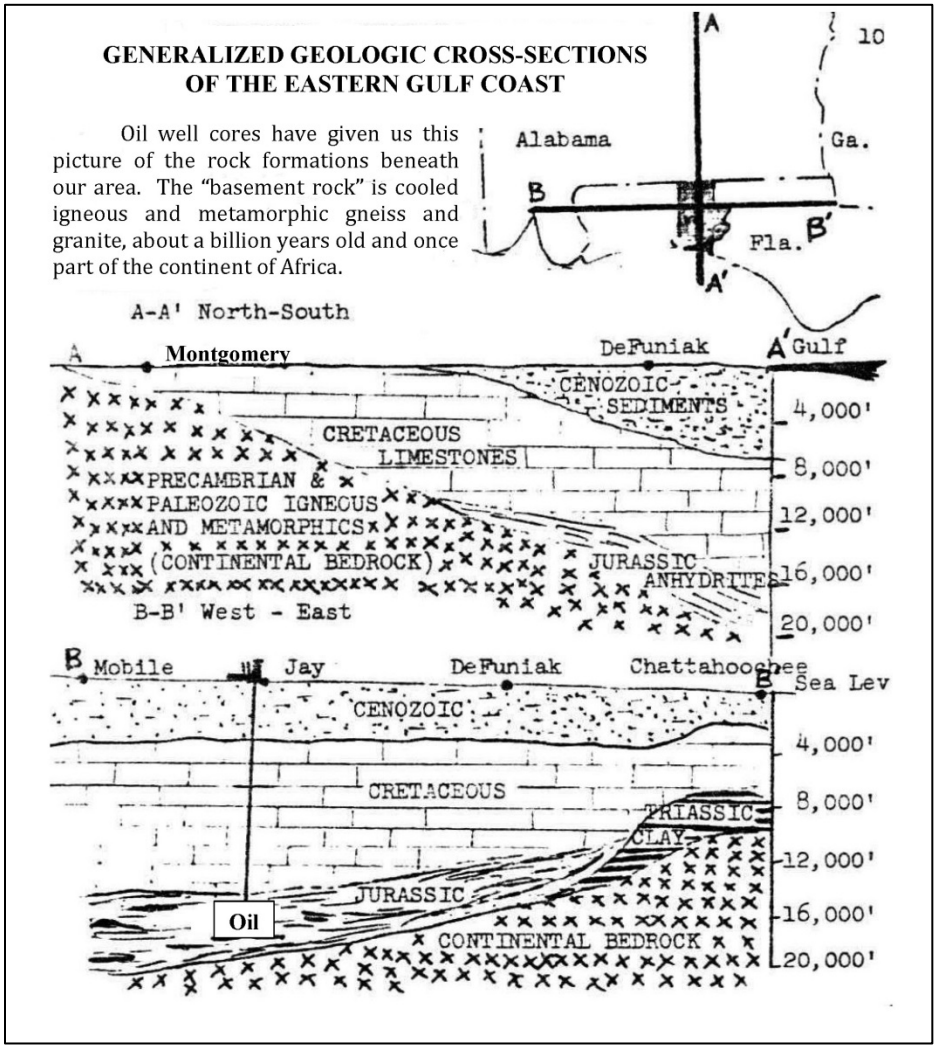

Figure 3

III. SURFACE GEOLOGY OF WALTON COUNTY

The limestone deposition of the Mesozoic Era (the age of Reptiles) continued into the Cenozoic Era, the age of mammals. About 30 million years ago, however, our drift northward and colder worldwide climate forced the coral farther south (coral reefs are still built in Florida's Keys). Our area was uplifted, and erosion of the older sedimentary deposits began. Erosion has revealed on the surface of Walton County formations from all of the last six epochs, or the last 50 million years, of earth history. Walton is the only county in Florida with this complete record.

Near Darlington is the oldest exposed formation, the Crystal River, a badly eroded limestone. The northeast corner of the county is underlain with the Oligocene Epoch Duncan Church and Marianna Limestones, between 40 and 25 million years old (Figure 4). If freshly exposed, these limes may contain good fossils. Usually ground water has dissolved much of the lime near the surface, however; the ground subsides as caves and sinkholes are formed. Lake Cassidy occupies a large, partially filled sinkhole, while Gaskin's "Natural Bridge" is a collapsed string of caves.

Coral reefs are absent from the limestones of the Miocene Epoch, from 25 to 10 million years ago. Apparently the climate was getting colder. Sea level dropped, probably as the Antarctic Ice Cap formed. Variations in the Miocene sea level gave rise to a variety of marine and terrestrial (land) deposits in Walton County. The Florida Geologic Survey recognizes three formations of Miocene age here in Walton County, covering most of the north and center. Their names are Chipola, Shoal River, and Red Bay.

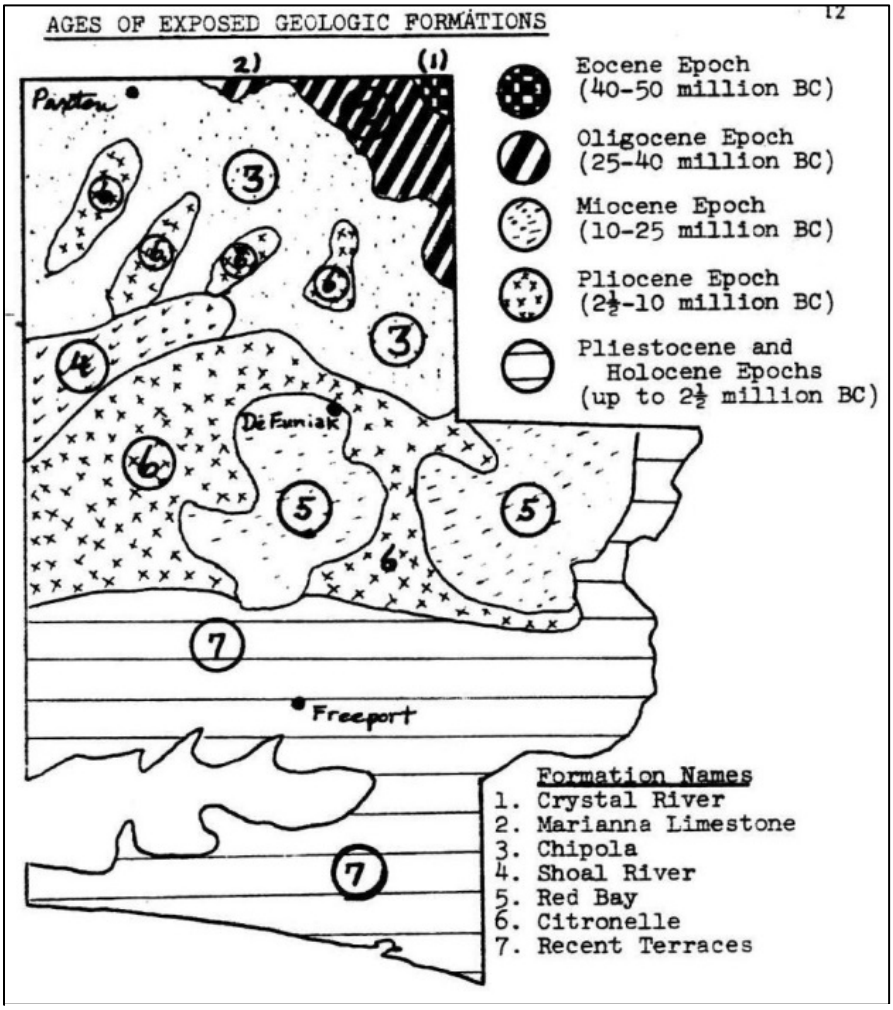

Figure 4

Some of Walton County's most interesting fossils (and best farm land) come from the Chipola Formation. This layer of sediment is a mixture of red and gray clays, limey marls, shell hashes, and sand beds. This geologic jumble must be the result of an environment like modern Choctawhatchee Bay. Eroded clays washed in from Alabama, while shellfish added some lime and waves sorted out lenses and dunes of sand.

The clays of the Chipola formation contain much iron, frequently in an underoxidized form of gray clay (the color is known as "Prussian Blue"). When this wet clay is dried and exposed to atmospheric oxygen, it rapidly turns red or orange in a chemical reaction similar to rusting. It is this iron, once in solution in the waters of Walton County's streams which is the petrifying agent in preserving many striking fossils in our area, hence the name of this paper, **"Iron Bones."** The original white calcium phosphate of the animal's bones dissolves, but atoms of iron compounds precipitate to replace it. The mineralized bones are very hard and durable; they have a distinct gray color. This feature helps us to pick out the fossils from the creek pebbles when erosion washes the mixture out of the clay. Similar iron mineralization preserved the petrified wood in the Glendale area. Often large rocks, weighing up to 100 pounds, are plowed up by farmers working soils weathered from the Chipola. Such large rocks could not wash down from the Appalachians; rather these rocks formed in place. They are conglomerates, made chiefly of quartz pebbles cemented together by iron precipitation. Even now this process can be observed to occur in some creek beds, as rocks visibly "grow" year by year. The red iron compound,

limonite, also appears as small, soft pebbles in some stream beds. Also known as "red ochre," these pebbles have long been used as a pigment. Ground and mixed with animal fat, they provided the "war paint" for the American Indians.

The erosion of Shoal River in the west reveals a different, more marine set of Miocene deposits. Often streams in this and the Red Bay formation have slick bottoms of talc sediments (soapstone) and also flakes of mica (the artificial "snow" at Christmas). This area has some well-preserved shallow water shellfish fossils, but no really pure exposed limestone. As with most such soft deposits, often ground water will dissolve the shells before erosion reveals them at the surface.

The Red Bay formation is perhaps 5 to 10 million years old, either late Miocene or early Pliocene. Even more than the Shoal River formation, the lime rich clays and sands of the Red Bay often glisten with mica flakes. Soapstone is found all along the "Bob Sikes" Road south of DeFuniak. Like the Chipola, this formation has a good deal of iron, especially as "hardpan" (durable flat sheets of limonite, up to an inch thick). The red clays resist erosion well, and the hills of central and north Walton County are the highest points in Florida; Briton's Hill, in the Chipola formation, is 345' and our state's highest point; it is located just east of Paxton. The marine deposits of the Red Bay may date back to a high sea level stand about six million years ago, when continental drift dammed up the strait of Gibraltar, drying up the trapped Mediterranean and raising sea level worldwide about sixty feet. Later the dam was broken and the sea refilled, dramatically dropping sea level and producing the terrestrial red clays. While actual shells are rare, many lime-rich clays preserve shell imprints; the best such site is the Alaqua road cut (Figure 6).

Probably the most puzzling and controversial formation in our area is the Citronelle. As you might guess from the name, this formation extends westward, covering most of Okaloosa, Santa Rosa, and Escambia counties in Florida, and well into southern Alabama. The very red coarse clays of this formation can be found as the top layer of sediment over much of northwest and central Walton County, mixed with the underlying Chipola and Shoal River deposits. These deposits are often used by road builders, so the "clay pits" excavated in this formation are a very visible red scar as seen from an airplane. Because of the coarse texture and oxidized nature of the clay, no fossils are preserved and dating this formation is difficult. Some geologists place the Citronelle in the Pliocene, a few million years old, while others place it in the Pliestocene, less than a million years old. Some stream beds contain large quartzite pebbles from this formation.

The south end of Walton County records well the variations in sea level accompanying the Pliestocene glaciations. As topographic cross-sections (Figure 5) show, the county has several flat plains (terraces); these features were formed when waves cut away the shore, depositing the sediments just offshore in a broad, flat "terrace." The longer sea level was constant, the broader the terrace. Presently a terrace is forming just offshore on many gulf beaches; you can walk well out in the water without getting your hair wet. Since present sea level dates back only 8,000 years, this terrace is much narrower than some of the older terraces upland.

Several old sea level stands can be identified by using the topographic map cross-sections to identify terraces. The north edge of the terrace will be the old coast line for the particular interglacial period in question (see the terrace maps at the bottom of Figure 5). Two cross-sections, one for the eastern and western boundary of the county, show the variations in elevation from to north to south. Remember the older terraces are badly broken by stream erosion, while the lower (and more recent) ones) are still fairly flat.

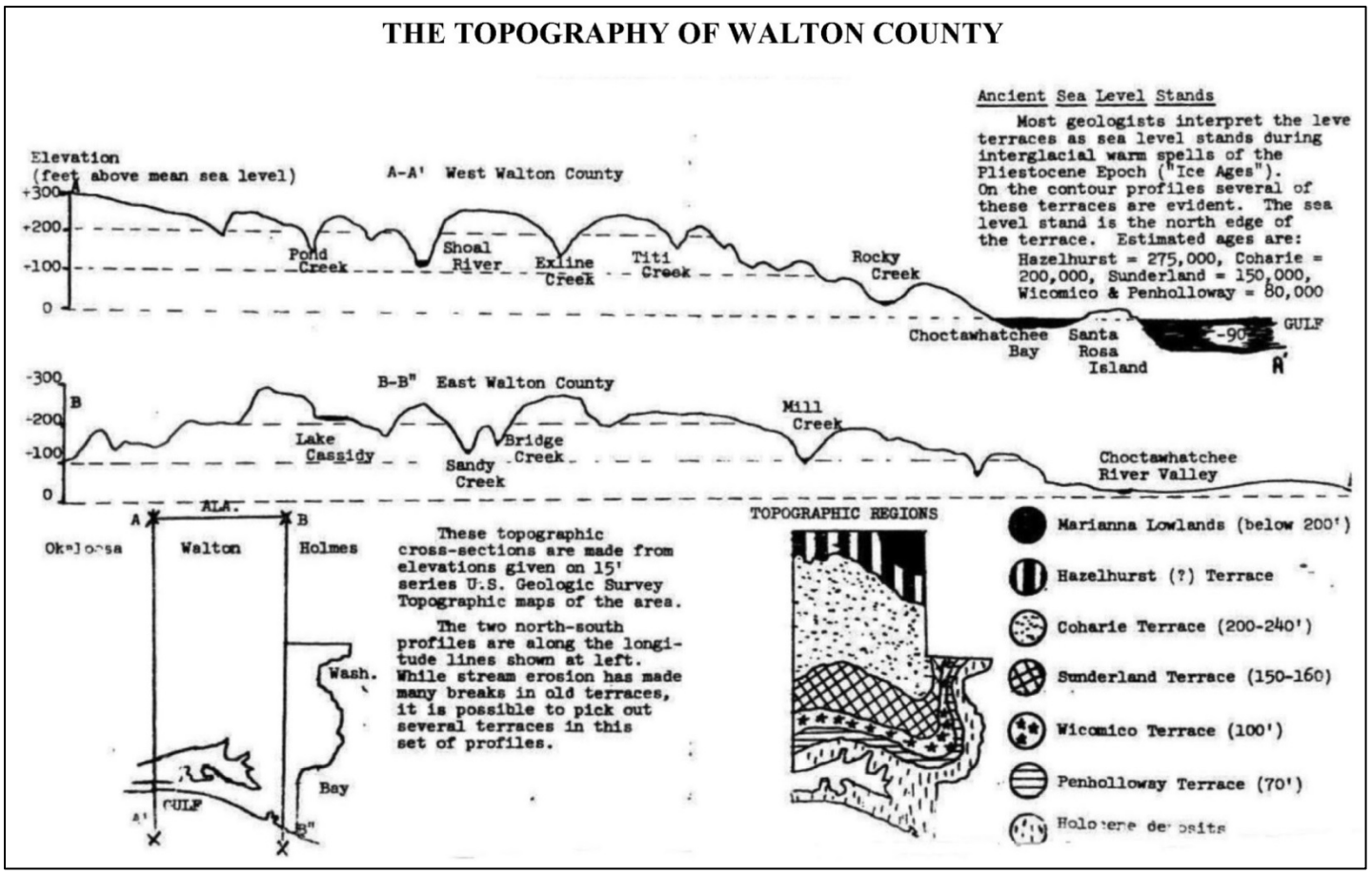

Figure 5

Perhaps the best local example of a terrace is the flat area of US 331 south, at First American Farms headquarters. This area north of Freeport is on the 100' terrace, called the Wicomico; geologists date it at about 90,000 years. South of it is the 70' Penholloway, about 70,000 years. To the north are the 150,000 year old Sunderland, and the widest, oldest, but most deeply eroded terrace, the Coharie, about 200-240' and around 200,000 years old. The exact ages of the warm interglacials which produced the high sea levels are quite uncertain; the figures above are rough estimates.

Still more terraces were formed during low sea levels of the glacial advances. One broad terrace, some 90' deep, is well preserved just a few miles offshore. During the coldest Ice Age sea level dropped as much as 300 feet, and the coast may have been over 100 miles from Destin. Then a sudden melting of the ice sheets caused flooding of the coastal plain; American Indian legends tell of this.

IV. FOSSIL HUNTING IN WALTON COUNTY

A fossil is any record of past life preserved in sedimentary deposits. With Walton County's large variety of ages and types of sediments, a diversity of fossils of both marine and terrestrial origin have been found here. Sometimes these fossils are hard, like the bones mineralized in iron that are the source of this paper's name. But other fossils may be delicate, crumbling at an accidental touch. Some even record the activities of the unpreserved soft bodied animals, like the intricate network of burrows at Alaqua.

Fossils form rarely; only under special conditions are dead organisms buried with fine-grained sediments. Then the water seeping downward must carry minerals in solution to replace the decaying and dissolving bone, shell, or wood. While many sites in the same formation may have identical

subsoil, only a few may yield good fossils. Several such sites in Walton County have been found by or reported to the author, but certainly far more will be found as the public becomes aware of fossils and reports them to others.

No good Eocene epoch sites are presently known, most likely due to the bad weathering of the Crystal River Formation exposed in the north east corner of the county. Farther east in Jackson and Gadsden counties, however, this formation yields many fine marine mollusk fossils.

The Marianna Limestone is well exposed by the erosion of Bridge Creek at Natural Bridge, four miles west of Gaskin and just off State Road 181. The dirt road passes over a hard cherty lime bridge, hollowed out by the erosion of the creek on the underlying softer, sandy lime. The famed "swimming hole" on the north side is a good collecting site for many fossils from an ancient coral reef. Identified in this strata of Oligocene sediments, about 35 million years old, are: coral, limpets, clams, oysters, tusk shells, scallops, fish bones, snails, sting ray plates and barbs, and foraminifera as large as a half dollar. Perhaps the best way to save these fragile fossils is to break off a fairly large piece of the hard upper layer and carry it home with you. Then at your leisure, a brush and pick can reveal the fossils.

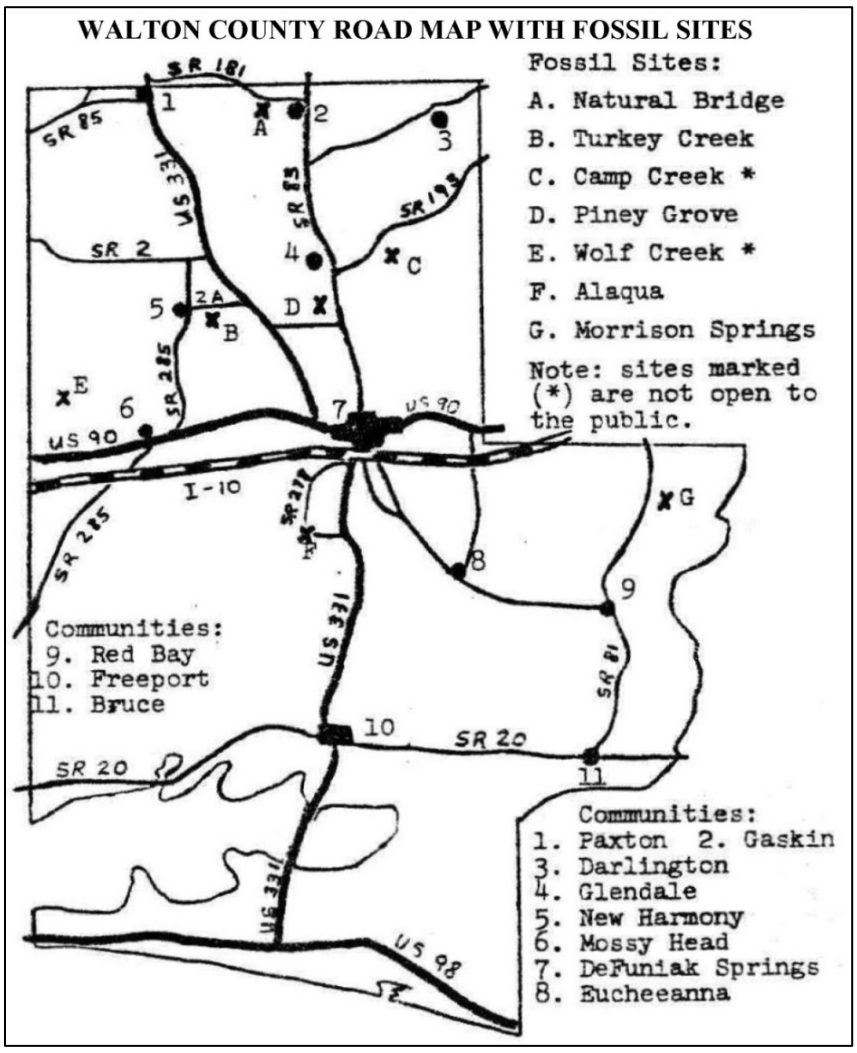

Figure 6

The Miocene Epoch Shoal River Formation has a good fossiliferous exposure along Wolf Creek, north of Shoal River. This site is on private property, and collection should be with the owner's permission and under the direction of Dr. Paul Boyer of Okaloosa-Walton Junior College. Locally called "Shell Bluff," this site features a well preserved "shell hash" in its lower layers, but only prints of the same shells within about three feet of the top. Obviously ground water slowly dissolves most shells before they are exposed on the surface; only the rapid erosion of swift, deep cutting Wolf Creek saved these shells for us. Prints, but no shells, can be found beneath Turkey Creek Bridge on State Road 2A.

Camp Creek near Glendale also swiftly erodes into a rich Miocene deposit, with both marine and terrestrial fossils. Like Wolf Creek, this is private property; collection should be supervised by the author and with the owner's permission. Florida State Museum is saving many of the most valuable specimens, so please co-operate with the pros. Here an older reef of hard lime sits beneath a gray iron-rich marl containing "iron bones," including shark teeth, ray plates, manatee ribs and vertebrae and terrestrial life described on page 11.

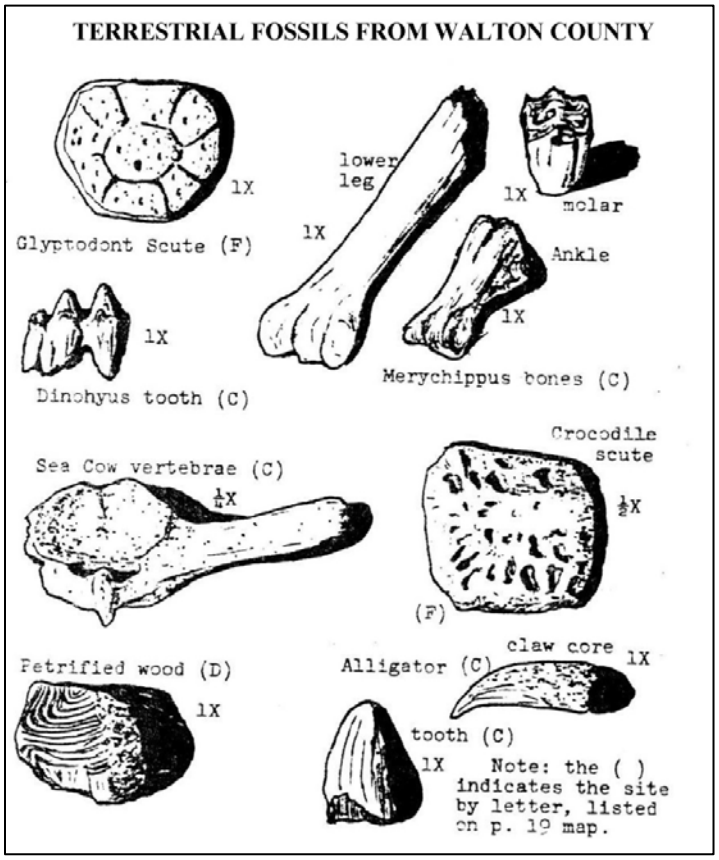

Figure 7

Also in the Chipola Formation is a fine site for petrified wood near Piney Grove, located on the hillside north of the author's parents' home. Once permission to collect is obtained, a fossil hunter can pick up several pieces in a few minutes; so good is the preservation that the specimens could be mistaken for real wood, except for their heaviness. So pure is the iron ore, some pieces are magnetic. The mineralization has faithfully preserved the tree rings, bark, and even worm holes. If cut and polished, the specimens are quite attractive. Farther north are slabs of "hardpan," the limonite plates found beneath many natural ponds in the Chipola formation.

The Miocene (or early Pliocene?) Red Bay Formation is strikingly revealed at the Alaqua road cut, found ½ mile north of Alaqua Methodist Church on State Road 278. The lowest stratum is gray and flaky, with interesting dark rocks and flakes of mica. The rocks apparently formed in the gray shale, or hardened mud, and often bear the prints of fossil shells. The crumbly texture prevents recovery of good shell prints, but digging a few inches will reach some harder shale with prints intact. Also marine vertebrate fossils, like shark's teeth and whale vertebrae, occasionally turn up in these soft rapidly eroding strata. As with the shell prints, weathering makes these fossils delicate; gentle brushing and a coat of Elmer's glue should help in extracting these interesting fossils. The red clay above the gray shale is rich in iron; shell specimens preserved in it are a rich bronze color, very attractive, and more durable. Look especially for large clam casts, often with a black lining of carbon. Also quite interesting are the networks of "iron pipes" running over the hillside. Apparently these tubes are the fossil burrows of a marine crab, shrimp, or worm. The industrious animals built an underground condominium, complete with exits, branches, and side tunnels. Iron was attracted to the cementing material in the tubes, forming resistant pipes which stand several inches above the present erosion surface.

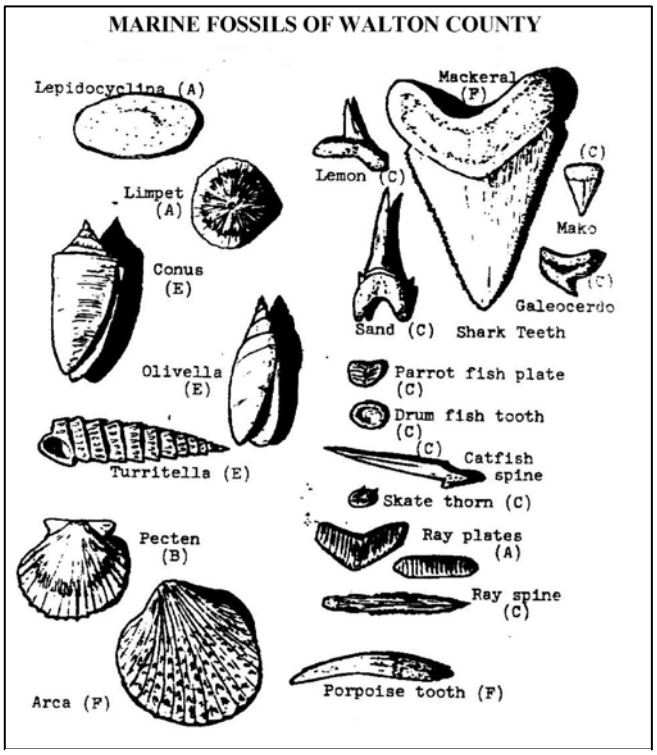

Figure 8

The red clays of the Pliocene Citronelle Formation have yielded no known fossils. Similarly Walton County's Pliestocene terraces have produced meager results. The only known Ice Age fossils are mastodon bones and teeth, reportedly brought up from the dangerous caves of Morrison Springs,

above Red Bay. Probably during low sea levels this area had many sinkholes and caves, and the large animals accidentally fell in and became trapped. Modern collectors should be cautioned to use extreme safety in exploring this fossil site; you don't want to become part of the fossil deposit yourself. Several divers have already lost their lives in these caves. Perhaps Choctawhatchee River has some fossil beds for divers to discover, as do the submerged terraces. If you find any, please report them to the author.

V. STRANGE INHABITANTS OF THE PAST

With our knowledge of fossil life and ancient environments preserved in sediments, it might be interesting to close this paper with a reconstruction of some scenes from the distant past of Walton County. Here are three "snapshots":

Scene I: North Walton County, 30 million years ago.

Gentle tropic seas wash over a sharp, jagged coral reef, part of a chain of islands much like the modern keys, and about 20 miles offshore. While many fish look modern, we note a flock of strange jelly-covered disks clouding the water. These are Lepidocyclina, the largest single celled organism to ever live. They will disappear by the Miocene, but leave smaller relatives in the modern Caribbean. They have tests, thin disks of lime, for internal support; some tests are the size of a half dollar. A sudden intrusion of fresh water kills the fragile giant foraminifera by the millions. Their tests settle to the bottom, among the dead coral; later this lime, cemented by silica, will form the backbone of Natural Bridge.

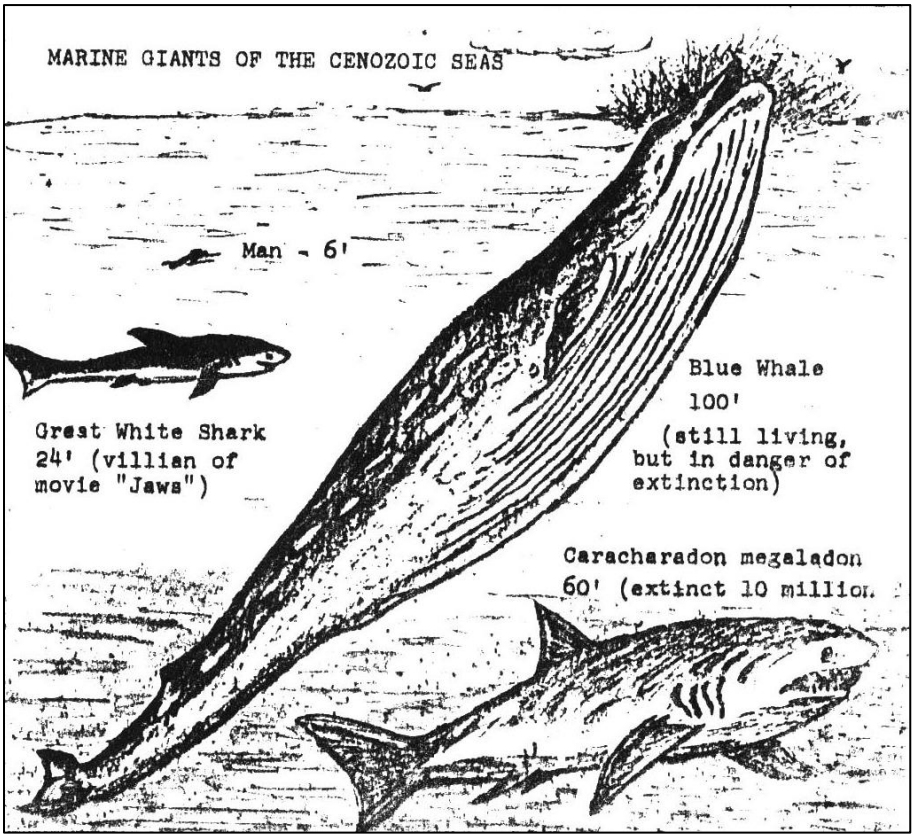

Figure 9

Far larger life lurks in these tropic waters. In deeper waters swims Carcharadon Megaladon, the Giant Mackeral Shark. Sixty feet from terrible jaws to powerful tail, he is the most fearsome large carnivore to ever swim (the great whales dine on nothing larger than shrimp). In attacking a careless porpoise, one of the monster's teeth, larger than a man's hand, is broken out; later the author will find it at Camp Creek. The swift porpoise escapes, but is mortally wounded; the prey finds sanctuary in the reef. The giant shark turns back, disliking shallow water. The porpoise dies quietly in the reef, to the joy of hungry fish and crabs. After the clean-up crew finishes, waves scatter the bones. A few ribs are covered with the lime debris; later these will be recovered by the author at Natural Bridge. In this fashion pass many years at the Oligocene coral reef.

Scene 2: Ten million B. C., Central Walton County.

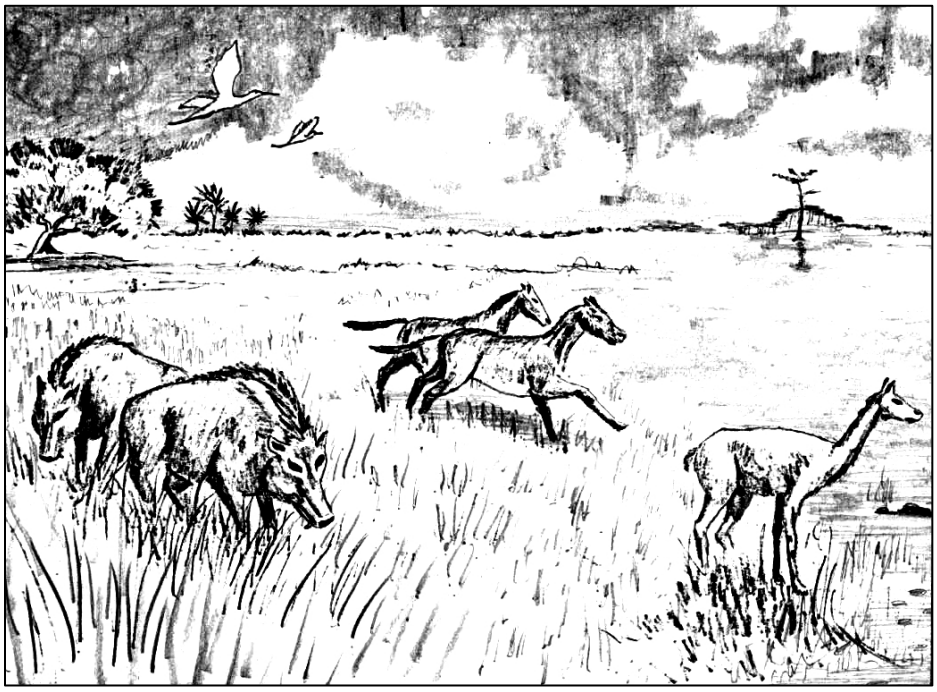

Figure 10

Two small horses, collie-sized, playfully frisk in the shallow water at the edge of a lagoon. The animals are Merychippus, ancestors of our modern horse Equus. Their feet still retain "vestigial" toes on either side of the main hoof, however; once their ancestors had five digits per limb, like most mammals today. The young pair play, not noting a log nearby.

Suddenly the swamp erupts; a twelve foot gator lunges to grab the male horse by a hoof. Death is certain, but mercifully swift. The heavier reptile holds the careless Merychippus under-water until it stops struggling, then carries his meal down to a cluttered underwater lair. The bones of Merychippus join those of past gator meals, including raccoons, pigs, camels, turtles, and catfish. Even the gator's own bones join the collection as age and infirmity take their toll. As sediment covers the bones, the iron in solution replaces the bone material and hardens the bones to a fossil treasure for the paleontologists of the Florida State Museum.

Just offshore sea cows swim in the warm, brackish waters. While this species is now no longer found in the Americas, their cousins the manatee still persist in south Florida. The heavy ribs of the sireneans are dense and make good fossils; they are the most notable fossils in Camp Creek. Oysters build a bed several feet thick in the quiet waters, and occasionally a feeding ray or shark will break off a tooth; these too make good fossils.

Occasionally a rain-swollen creek brings the carcass of a land mammal to the lagoon. Thus the bones of Procamelus, a deer-like camel, were saved. His descendants would later cross into Siberia along with the horse, but strangely disappear from the New World. The most awesome mammal probably Dinohyus, a bull-sized giant pig with vicious tusks.

Scene 3: 15,000 years ago, East Walton County.

A single old sabertooth cat wanders down to a local drinking hole on an arid plain much like the modern savanna of Africa. The sabertooth "tiger" is really a very large bobcat with six-inch daggers for incisors; he is far heavier than any living cat. His muscular forelimbs are made for leaping and clawing, and his lower jaw drops 90° to allow his sabers to stab his large prey deeply into their vital organs. Plenty of prey there is too, despite the dry conditions. A small Glyptodon backs away from the water as the cat approaches. The Glyptodon is a mammal tank, with a hard dome-like armor up to six feet across protecting him from the sabers. Our immature relative of the armadillo is safe for now; the cat is thirsty, not hungry.

The action below draws little notice from the herd of Megatheriums, or giant ground sloths, feeding in the trees on the hill. These animals resembled huge bears, with long claws and heavy

tapering tails; however their diet is just tree foliage. Full grown, they tower twelve feet high and weigh more than any modern elephant. Like the Glyptodon, they are a recent immigrant from South America, coming north across the Isthmus of Panama when continental drift formed a land bridge there only a few million years ago.

Another huge herbivore notices the cat, however, and trumpets a warning. The Imperial Mastadon and the even hairier mammoth came from the Old World in the Pliocene, and now are found throughout North America. This bull is at least a foot taller than any living elephant, and even the sabertooth will give him plenty of room.

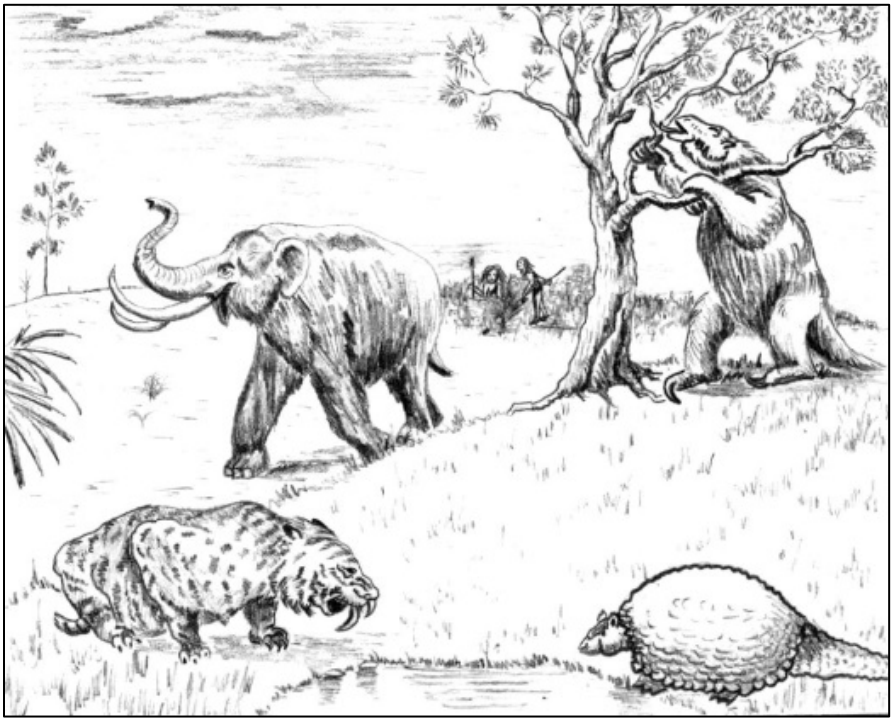

Figure 11

An even more recent, and far more dangerous, immigrant also watches the scene. He is Homo Sapiens, the Ice Age hunter. His descendants will include the Creek Indians, and thus this author. His victims will include all of the magnificent mammals described above. While changing environment probably made it harder for many of these species, it is likely the overpredation of our ancestors wiped out many of these wonderful Ice Age Giants. Let us be more careful to protect what wildlife resources still survive.

VI. BIBLIOGRAPHY

Bishop, Earnest W. and Dee Lawrence I., Jr., *Rocks and Minerals of Florida.* Tallahassee: Florida Geological Survey (Spec. Pub. #8), 1961.

Clark, Thomas H., and Stearn, Colin W., *Geological Evolution of North America,* New York: Rolland, 1968.

Garrison, Louis E., and Martin, Ray G., *Geologic Structures in the Gulf of Mexico.* Washington: U S. Gov. Printing Office (USGS #773), 1973.

Gillis, Harold W., *Flint Chips*, DeFuniak Springs: Published by the Author, 1972.

Glen, William, *Continental Drift and Plate Tectonics*, Columbus, Ohio: Charles Merrill, 1975.

Hendry, C. W. Jr., & Yon, William Jr., *Mineral Resource Study of Holmes, Walton and Washington Counties,* Tallahassee: Bureau of Geology 1969.

Laporte, Leo F., *Ancient Environments*, Englewood Cliffs: Prentice-Hall, Inc., 1975.

Murray, Grover E., *Geology of the Atlantic and Gulf Coastal Province of North America*, N.Y.: Harper, 1961.

Olsen, Stanley J., *Vertebrate Fossil Localities in Fla.*, Tallahassee: Florida Geological Survey, 1965.

Puri, Harbans S., & Vernon, R. O. , *Summary of the Geology of Florida,* Tallahassee: Fla. Geol. Survey (Special Publication #5), 1964.

Seyfert, Carl K., & Sirkin, L. A., *Earth History and Plate Tectonics,* New York:

Harper & Row, 1973.
Thomas, M. C., *Fossil Vertebrates*, Venice, Fla.:
Published by the author, 1974.
Webb, S. David, (Editor) *Pliestocene Mammals of Florida*, Gainesville: U. Of Fla. Press, 1974