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BUREAU OF GEOLOGY
**MISSISSIPPI
GEOLOGICAL
SOCIETY**

Volume XXXIIV

No. 1

September 1987



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1987-1988

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COVER:

New exploration frontier! Keweenawan age (1,000-1,200 Ma) diabasic intrusive associated with the midcontinent rift system, an aborted intracontinental rift that extends from southern Kansas to Lake Superior. Location: Split Rock Lighthouse State Park, 6 miles south of Beaver Bay, Minnesota on the north shore of Lake Superior.

Photo: Peter Lufholm

**FALL BARBECUE!!
FOWLER'S LODGE
THURSDAY, SEPTEMBER 3**

TIME

4:00 p.m. - until?

MENU

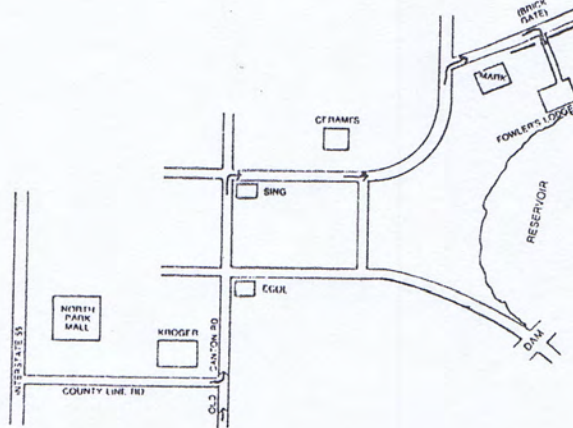
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PRESIDENT'S MESSAGE

I stand corrected. In last month's message I said that only resistivity logs and minor amounts of other geological well data have been collected by the Bureau of Geology and Oil and Gas Board. Ed Luper with the Bureau of Geology informs me that the Bureau has cutting samples on file from 5564 wells and cores from 742 wells. I agree with Ed when he says that this represents more than a minor amount of data. He states that the sample library covers about 75% of the wildcat wells in the state.

I have always had a pretty severe case of foot-in-mouth disease.

Possibly many of you were as ignorant as I was as to the extent of our sample coverage. If so, maybe my faux pas will lead to more use of the Bureau's sample library.

The Bureau has been able to collect this data on a strictly volunteer basis and has done an excellent job in doing so. We geologists should have insisted long ago that the Oil and Gas Board require that samples from exploratory wells and chips from all conventional cores be filed with the Bureau.

I pledge to make a diligent effort during my term in office to get the state much more involved in well data collection. We have three committees working on this. The committees and their chairmen are listed below. If you have suggestions or want to volunteer to work, please contact one of the chairmen.

Bureau of Geology Liaison - Neal Barnes
Oil and Gas Board Liaison - Bob White
Well Data - Steve Walkinshaw

— Harry Spooner



Mississippi Geological Society

NOON MEETING

Tuesday, September 8, 1987

Smackover Room, Petroleum Club

SPEAKER

Malcolm Hyson

TOPIC

Enhanced Method For Formation
Evaluation Using Core
And Log Data

*Please notify T. C. Rader (969-3286) of your
attendance so adequate seating can be arranged.*



Enhanced Method For Formation Evaluation Using Core and Log Data

MALCOLM HYSON

A method has been developed that makes possible a more definitive determination of productivity of a reservoir, identification of depleted zones, and placement of water levels. The method presented uses routine core analysis data, special reservoir core data, and log analysis data to make these identifications.

Examination of some of the inherent short comings of routine core analysis and log analysis data are addressed. The enhanced interpretation involves techniques using capillary pressure, relative permeability, and viscosity data. This data is then used to determine the maximum amount of formation water that a particular reservoir can tolerate before producing a significant water cut. This maximum formation water saturation can then be expressed in terms of a minimum resistivity value that the wireline log must exhibit. Several examples using the enhanced core and log evaluation technique will be reviewed.

Mr. Hyson is the Southeast District Manager for Core Lab in Shreveport, Louisiana.

NOON LUNCH SCHEDULE

1987	1988
September 8	January 12
October 13	February 9
November 10	March 8
December 8	April 12

Louisiana's first oil discovery was made by W. Scott Heywood, six miles northeast of Jennings on September 21, 1901. The well was drilled by the Heywood brothers in the name of the Jennings Oil Company; both company and well were largely promoted by Scott Heywood.

Heywood was a trumpet player, one of five theatrical brothers who were sons of a college professor. He was born in Cleveland, Ohio, while his father was president of Hiram College. Scott Heywood started his career as a newsboy but also worked spare time in a bakery and a soda water plant to help make ends meet when his father died in 1888.

His first interest in oil occurred in Florence where the Heywood brothers were playing a concert during the oil boom there in 1893. He soon moved to California, where he pursued his oil activities, but was diverted by an adventure into the Klondike.

The gold fever finally wore off in Alaska and Heywood returned to California. He was there when he read of the Spindletop strike and rushed to Beaumont. He arrived the day the famous Lucas Gusher was controlled. He became associated with a driller named Dobbins and a capitalist named W. C. Tyrrell. He obtained leases and drilled the largest producer ever brought in on Spindletop hill.

Shortly after that a group of Jennings businessmen contacted Heywood and told him they would form the Jennings Oil Company, give him a quarter interest, and give the drilling contract to his own firm if he would drill. Their enthusiasm was based on gas seeps.

Heywood agreed and took the contract to drill two 1000-foot wells. When the first well was dry at 1000 feet, he chose to start the second well at the bottom of the first. His associates objected, but he insisted. It was a good decision. He hit oil at 1800 feet and opened Louisiana production.

Scott Heywood died during the golden anniversary of his beloved Spindletop and was unable to attend the celebration. The State of Louisiana has memorialized his achievement with a historic marker.



"I WAS HOPING THOSE DRY HOLES WOULD DISCOURAGE THEM, BUT THEY DONT EVER GIVE UP!"

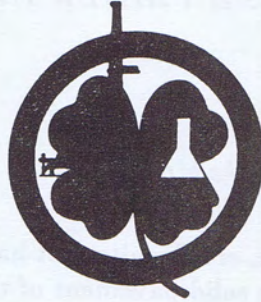
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A GEOLOGICAL PRIMER IN VERSE

by John Scafe

Granitogony, or the birth of granite

In ancient time, ere Granite first had birth,
And form'd the solid pavement of the earth,
Stern Silix reign'd, and felt the strong desire
To have a son, the semblance of the sire.
To soft Alumina his court he paid,
But tried in vain to win the gentle maid;
Till to caloric and the spirits of flame
He sued for aid—nor sued for aid in vain:
They warm'd her heart, the bridal couch they spread,
And Felspar was the offspring of their bed:
He on his sparkling front and polished face
Mix'd with his father's strength his mother's grace.
Young Felspar flourish'd, and in early life
With pale Magnesia lived like man and wife.
From this soft union sprang a sprightly dame,
Sparkling with life—and Mica was her name.
Then Silix, Felspar, Mica, dwelt alone,
The triple deities on Terra's throne.
For he, stern Silix, all access denied
To other gods, or other powers beside.
Oft when gay Flora and Pomona strove
To land their stores, their bark he rudely drove
Far from his coast; and in his wrath he swore
They ne'er should land them on his flinty shore.

They called it "Benson's Folly," but it became the first long oil pipeline in history — a six-inch line from Coryville, on the edge of Bradford Field, to Williamsport, 109 miles away.

Prior to this line, built by Benson and associates under the name of Tidewater Pipe Company, the largest line was 30 miles long and three inches in diameter. Previously no line had been designed to cross elevated terrain. Benson's line crossed the 2600-foot Allegheny Mountain range. It was the first line with pump stations to force the oil forward and upward.

Benson, with two associates, David McKelvey and Major Robert E. Hopkins, organized the Tidewater. Benson had convinced his partners that a long line would operate. Others in the industry scoffed at the idea, especially the Standard group, and particularly John D. Rockefeller. The railroads did everything in their power to delay and obstruct the line.

Prior to building the Tidewater line, Benson had considerable experience with the Columbia Conduit, which he and his partners had leased from David Hostetter when Hostetter gave up in the face of Pennsylvania Railroad opposition at rail crossings.

Benson's Tidewater Company was organized as a limited partnership with a capitalization of \$625,000 in November, 1878. On May 28, 1879, as Pennsylvania Railroad and Standard Oil representatives, newspapermen, and thousands of oil region citizens watched with skepticism, Benson's pipeline valves were opened. The line worked without a hitch, and history was made in the field of petroleum transportation.

Within weeks Pennsylvania had reduced oil tariffs to New York from \$1.10 per barrel to 55 cents from the lower fields. Bradford charges were cut from 85 cents to 30 cents a barrel. Another result was the reduction of United Pipeline charges for local field transfers from 20 cents to 5 cents a barrel.

The accomplishments turned the skeptics into national cheering sections. Benson's idea had provided petroleum with a significant step forward.

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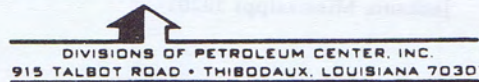
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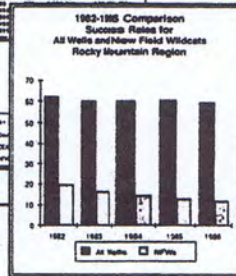
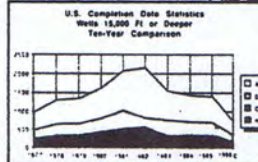
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1986 Completion Data Statistics
Estimated Drilling and Completion Costs
South Range States

South Range States	Drilling	Completion	Total
Ala.	1,200	1,500	2,700
Ark.	1,500	2,000	3,500
Calif.	2,000	3,000	5,000
Colo.	3,000	4,000	7,000
Ill.	4,000	5,000	9,000
Ind.	5,000	6,000	11,000
Iowa	6,000	7,000	13,000
Kent.	7,000	8,000	15,000
La.	8,000	9,000	17,000
Miss.	9,000	10,000	19,000
Mo.	10,000	11,000	21,000
N.C.	11,000	12,000	23,000
N.D.	12,000	13,000	25,000
Okla.	13,000	14,000	27,000
Tex.	14,000	15,000	29,000
W. Va.	15,000	16,000	31,000
Wyo.	16,000	17,000	33,000
Total	150,000	180,000	330,000

1986 Completion Data Statistics
Estimated Drilling and Completion Costs
South Louisiana & Texas Statistics 14

South Louisiana & Texas Statistics 14	Drilling	Completion	Total
La.	1,000	1,200	2,200
Tex.	1,500	1,800	3,300
Total	2,500	3,000	5,500



This versatile review of 1986 well completions is a must for intelligent planning!

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- well completions
- exploration reviews
- well permits and new starts
- expenditures
- depth analyses
- leading operators
- geological provinces
- states
- counties
- fields
- deep drilling by province
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In addition, discovery well listings for 1986 will be presented by region and include such data as:

- location
- well name
- operator
- producing formation(s)
- total depth
- initial potential

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COVER:

Four Corners Area: abandoned river meander located at the Goosenecks of the San Juan River, Utah.
Photo: Peter Lufholm - Cities Service Oil & Gas Co.

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PRESIDENT'S MESSAGE

As most of you know, the 37th Annual Gulf Coast Association of Geological Societies Convention is scheduled for October 28-30 in San Antonio. The program includes a number of Mississippi and Alabama papers. If you did not get an announcement, contact me and I will send you a copy of the program.

Annual dues are now due. If you missed the Bar-B-Que and have not renewed your membership, please do so today. You will find a renewal card at the back of this bulletin. If you know someone that is not a member and should be, give them a copy of the application for membership and ask them to join. Our membership last year was 312. We hope to substantially increase that this year.

Oil prices have nearly doubled in the past year but the market price of gas continues to slide. Since gas prospects vastly outnumber oil prospects in Mississippi our exploration activity continues to languish. Take Heart! The rebound is surely coming. It will probably begin this winter if the weather cooperates.

In 1986 and 1987 we drilled only 7000 to 8000 gas wells per year in the United States. As a result, reserves have declined about 17 trillion cubic feet. Our national reserves in the Lower Forty-Eight are down to about 150 TCF.

Alaska does not count. It would take 10 years to market Alaska gas if efforts to do so started today. Indeed from discovery date it is taking Mobil that long to get its Lower Mobile Bay Mary Ann Field on production. It will probably take another 10 years for the other large fields in that area to come to market.

Gas deliverability is ultimately related to reserves. Our natural gas situation is similar to producing a well at a fixed allowable rate. Production is flat for a period even though reserves are declining but eventually production decline surely comes. When we reach that point with our natural gas reserves, the price upswing will be sudden and, I believe, very substantial.

Harry Spooner



Mississippi Geological Society

NOON MEETING

Tuesday, October 13, 1987

Smackover Room, Petroleum Club

SPEAKER

Kenneth Hamlin *

TOPIC

Sandstone Petrology and Diagenesis of
Lower Tuscaloosa Formation Reservoirs
in McComb and Little Creek Field Areas,
Southwest Mississippi

*Please notify T. C. Rader (969-3286) of your
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* currently employed by Exlog in Houma, Louisiana



Petrology and Diagenesis of Lower Tuscaloosa Reservoirs

KENNETH HAMLIN

Two major depositional facies characterize producing Lower Tuscaloosa Formation (Upper Cretaceous) in the McComb and Little Creek fields of Southern Mississippi: a lower fluvial sequence ("Denkman Sand", Little Creek) that passes upward into nearshore marine deposits ("McComb Sand"). Petrographic studies reveal that the sandstones of both fields were deposited as very fine to medium-grained quartz arenites and quartz litharenites. Interpretation of petrographic and X-Ray diffraction analyses of the clay mineral content of the sandstones indicate that most of the clays are authigenic and comprise a suite which includes kaolinite, chlorite, mixed-layer illite/smectite and illite. Mixed layer illite/smectite appears to be considerably more abundant in the McComb reservoir sandstones than those at Little Creek. The reservoir sandstones in the McComb and Little Creek fields characteristically have good secondary porosity (average 19%, range, 3% to 27%) developed through dissolution of rock fragments and carbonate cements.

Interpretation of the combined petrographic and X-Ray diffraction results have lead to the development of a genetic model which begins with mechanical compaction of the sediments and the precipitation of quartz overgrowths. Carbonate cements replaced quartz overgrowths and filled interstices between framework grains during the first stages of mesodiagenesis. During a more mature diagenetic stage, perhaps corresponding to hydrocarbon migration and interbedded and adjacent fine-grained deposits led to wide-spread decarbonization of the reservoir sandstones and intergranular pores with good pore-throat interconnection. Complete and partial alteration of rock fragments and feldspars was accompanied by neof ormation of kaolinite, chlorite (as grain coatings), and illite.

Futher grain dissolution and reprecipitation of quartz and carbonate, as well as the formation of vermicular kaolinite, occurred after the main phase of secondary porosity generation and hydrocarbon emplacement. Late stage diagenetic events also include the precipitation of euhedral quartz crystals in some pore spaces and over chlorite-coated grains.

NOON LUNCH SCHEDULE

1987

~~September 8~~

~~October 13~~

November 10

December 8

1988

January 12

February 9

March 8

April 12

Walter B. Sharp was the Texas oil industry's pioneer driller and producer. During his career he made outstanding contributions to the development of rotary drilling — a technique that made possible the first production of consequence in the South Texas area.

Sharp started in the oil business at Corsicana, Texas, in the early 1890's. Over the years — a fairly brief span of years, because of his untimely death in 1912 — he became one of the leading oilmen in the Gulf Coast and the Southwest. As head of the Moonshine and the Producers Oil Companies, he was chiefly responsible for the discoveries of the Sour Lake, Humble, Batson, and West Columbia Fields.

When Walter Sharp began his career in oil, cable tool drilling was the only drilling method being used. Cable tools were fine for hard rock country, but almost useless in the soft formations of the Gulf Coast. Drillers in the salt domes of South Louisiana were eager to switch to the rotary method, but had not learned to keep their holes from caving in or how to control gas pressures they encountered. Sharp worked out a way to solve both problems by using drilling muds. He made rotary drilling practical in the region. Word of his success with mud spread, and rotary drilling quickly became the preferred technique in the Gulf Coast. Soon the word reached South Texas, where Captain Lucas and others put rotary drilling to sensationally good use.

Walter Sharp also helped develop the rock bit, which gave the rotary driller a tool that would bite through layers of hard rock. This made the rotary tool so efficient that before many years it had become the favored drilling technique all over oil country.

Walter Sharp died at the peak of his career, when he was 43. He died after helping extinguish one of the biggest well fires in the industry's history. It was at Shreveport, Louisiana. A big gusher had caught fire and Sharp — a large, powerful man — worked day and night to help put it out. Finally he (and friend Howard Hughes, Sr.) rigged up a machine to dig diagonally into the hole from a safe distance. The oil underground was led away from the fire it had been feeding, and soon the soaring flames dwindled and died. So, not long afterward, did one of the oil industry's producing pioneers. Overexertion while fighting the fire was the cause.

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Outgoing Navy Secretary John Lehman revealed on "This Week with David Brinkley" (5/24/87) and in "Newsweek" (6/1/87) that our commitment to keep the Persian Gulf oil supply lines open costs the United States more than \$40 billion per year. Divide that \$40 billion by the 334 million barrels and you see that taxpayers are subsidizing Mideast OPEC oil to the tune of \$120 per barrel. Add the current world price and the **true cost of Persian Gulf oil imports approaches \$140 per barrel**, according to calculations provided in a news release by Mitchell Energy & Development Corp. of The Woodlands, Texas.

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Dr. William M. Burton is the father of modern petroleum refining. After receiving his Ph.D. in chemistry from Johns Hopkins University in 1890, he joined Standard of Indiana.

Dr. Burton was born in Cleveland in 1865, the son of a physician who was a neighbor of John D. Rockefeller.

Even before the birth of the liquid fuel age, Dr. Burton predicted that demand for gasoline would soon exceed that for kerosene. In 1909 he started experiments which led to the first commercialized process for thermal cracking. These experiments have led to the modern techniques that enable refiners to recover an ever-increasing yield of gasoline from a barrel of crude oil.

On January 7, 1913, he was granted a patent on his process for thermal cracking. That same year, the first cracking stills to replace the old straight line distillation method that served the industry for its first half century went into operation at Standard's Whiting, Indiana, refinery.

His rise with Standard of Indiana was rapid. In 1895 he became general superintendent of the company's Whiting refinery. In 1911 he was elected a director of the company. He became vice president in 1915 and president in 1918.

One of the most honored scientists in petroleum history, Dr. Burton was awarded the Willard Gibbs Medal in 1918 and the Perkins Medal in 1922 for his contributions to petroleum chemistry. In 1947 he was awarded the American Petroleum Institute's Gold Medal for distinguished achievement.

Dr. Burton, a handsome, intelligent, industrious and resourceful person, made chemical discoveries which led to tremendous gains in demand for crude oil.

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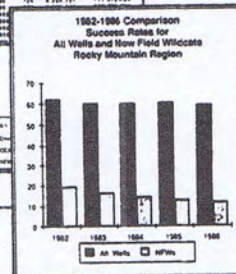
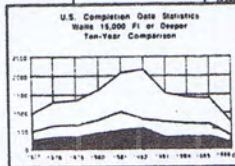
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140,000	180,000	220,000
280,000	360,000	440,000
560,000	720,000	880,000
1,120,000	1,440,000	1,760,000
2,240,000	2,880,000	3,520,000
4,480,000	5,760,000	7,040,000
8,960,000	11,520,000	14,080,000
17,920,000	23,040,000	28,160,000
35,840,000	46,080,000	56,320,000
71,680,000	92,160,000	112,640,000
143,360,000	184,320,000	225,280,000

South Louisiana & Texas Districts 1-4	North Region	South Region
1,000	1,200	1,500
2,000	2,400	3,000
4,000	4,800	6,000
8,000	9,600	12,000
16,000	19,200	24,000
32,000	38,400	48,000
64,000	76,800	96,000
128,000	153,600	192,000
256,000	307,200	384,000
512,000	614,400	768,000
1,024,000	1,228,800	1,536,000
2,048,000	2,457,600	3,072,000
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8,192,000	9,830,400	12,288,000
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Volume XXXV

No. 3

November 1987



1987-1988



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COVER:

Navajo Rug Monocline with the San Juan River, Utah
Photo: Peter Lufholm - Cities Service Oil & Gas Co.

HIRAM BOND EVEREST

Hiram B. Everest's contribution to the petroleum industry was the discovery and development of refined lubricating oil.

Although crude oil had been used for many years as an unrefined and unreliable lubricant, Everest discovered in 1866 that the residue from kerosene distillation under vacuum was unscorched.

Everest, a grocer in Rochester, New York, decided to sell this residue as a lubricant for machinery and harness and for other uses as a substitute for vegetable and animal fats. In doing so, he created an entirely new and most important market for oil. It was Everest's idea that made oil a lubrication industry as well as an illumination industry.

He invested all of his money in a small shed type of oil plant and packaged his product in salvaged oyster cans. He marketed it with the help of his son, C. M. Everest, from store to store in Rochester. Though ignored and ridiculed at first, they prevailed on many prospects to sample and then use Everest's lubricating oil.

Everest incorporated in 1867 as the Vacuum Oil Works, naming the company after the distillation process which produced the lubricating oil.

When Everest's product and his process reached the attention of the Standard Oil Company, J. D. Archbold, H. H. Rogers, and Ambrose MacGregor bought 75 of the 100 shares of stock in the Vacuum Oil Works for \$200,000. Everest and his son remained to run the company on annual salaries of \$10,000.

In 1879 the company's name was changed to Vacuum Oil Company and became part of the Standard Oil operation, providing an important market for surplus oil.

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PRESIDENT'S MESSAGE

The Geological Society of Alabama recently announced that it is considering organizing a research consortium consisting of the Survey, the Petroleum Engineering and Geology Department of the University of Alabama, and interested companies. The purpose would be to identify and work on research projects that would stimulate increased exploration and production in Alabama. According to the announcement letter from State Geologist, Dr. Ernest Mancini, a meeting to discuss the plan is scheduled for 2:30 p.m., November 12, 1987, in Jones Hall in the State Oil and Gas Board Hearing Room, Tuscaloosa, Alabama. Interested parties are invited to attend.

This is an excellent idea. I commend Dr. Mancini and the Alabama Survey for initiating this approach. It represents another example of the outstanding contributions that they and the University of Alabama Geology Faculty are making toward expansion of geologic knowledge in the Gulf Coast.

The Mississippi Geologic Society exist primarily to gather and disseminate geological information and encourage research. We should encourage the Alabama Survey's proposal and our Society should have as much input as possible. Either myself and/or a member of the Bureau of Geology Liason Committee will attend the Tuscaloosa meeting as representatives of the Mississippi Geological Society. If any of you have suggestions or research ideas and are not able to personally attend the meeting, please call me.

As most of you probably know, Bob White, our Past President has joined Taurus Exploration, Inc. in Birmingham. Keith Jordn has agreed to replace him as Chairman of the Oil and Gas Board Liason Committee.

Harry Spooner



Mississippi Geological Society

NOON MEETING

Thursday, November 5, 1987
(note date change)

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SPEAKER

John R. Farina *

TOPIC

A Dry Hole or Reservoir Damage?
What We Need To Know

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A Dry Hole or Reservoir Damage? What We Need To Know

JOHN R. FARINA
Consulting Petroleum Engineer
Houston, Texas

Stories abound in the industry about the oil or gas field drilled and abandoned by one company, only to be "discovered" by a second company that evaluated the data from a different perspective. The Elsworth (Canada), Beeville, North Resenberg, and Running Duke fields (Texas) are all examples where the initial well penetrated the hydrocarbon column but was not completed, or was completed, tested, and abandoned.

Numerous explanations exist as to why fields are abandoned and then rediscovered. Often contributing to this cycle is a lack of understanding of the reservoir's pore geometry, and of the effects of drilling or completion-induced damage on production or pressure performance measured by drill-stem tests, repeat formation testers, and well logs. Additionally, the inability to tell the difference between a low-permeability noncommercial reservoir and a damaged commercial reservoir results in a lot of missed field discoveries.

In my lecture, I discuss the causes of formation damage, as well as factors that signal the reservoir's vulnerability to damage (e.g., small pore throats, authigenic clays, low reservoir pressure). I also include case examples of conventional tests that, by routine analysis, show the zone to be noncommercial when, in fact, the well was completed and produced commercially.

Understanding the type of reservoir system being tested and using all available tools and data are the key to determining reservoir behavior.

NOON LUNCH SCHEDULE

1987	1988
September 8	January 12
October 13	February 9
November 5	March 8
December 8	April 12

PATTILLO HIGGINS (1863-1955)

Had there been no Pattillo Higgins it is reasonable to guess that the liquid fuel age would have been delayed many years.

Higgins was a self-educated son of a gunsmith. He dropped out of school in the earliest grades and became a logger in the timberlands of southeast Texas.

A leading lumberman in his hometown of Beaumont, Texas, recognized Higgins as an unusually intelligent and determined young man. He helped Higgins form a company for the express purpose of drilling for oil on Spindletop mound. Higgins said he would find wells that would produce "tens of thousands of barrels of oil daily." The leading geologists, oil experts, and government people scoffed at his claims.

Higgins, a self-trained geologist, draftsman, engineer, inventor, and promoter, was finally thwarted after almost ten years of trying to get a proper well drilled at Spindletop. Then he asked for one more chance, ran an advertisement in an engineering journal, and attracted Captain Anthony F. Lucas to Beaumont. Lucas, after one failure, finally succeeded with the backing of the Mellon Brothers through Guffey and Galey. But Higgins had been dropped from the project by that time.

It was the dogged persistence of Higgins that kept the interest in Spindletop alive even when his own state geologist warned Beaumonters "not to fritter away your hard earned dollars in the vain hope of finding oil near Beaumont." He also withstood the Standard Oil experts' warning that there would "never be a drop of oil produced from the unconsolidated sands of the Texas Gulf Coast."

With Drake, Joiner, and D'Arcy, Higgins is one of the four important prophets of petroleum.

The nautilus and the ammonite

The Nautilus and the Ammonite,
Were launch'd in friendly strife;
Each sent to float, in its tiny boat,
On the wide wild sea of life!

For each could swim on the ocean's brim,
And when wearied its sail could furl;
And sink to sleep in the great sea deep,
In its palace all of pearl!

And theirs was a bliss, more fair than this,
That we feel in our colder time;
For they were rife, in a tropic life,
In a brighter, and better clime!

They swam 'mid isles whose summer smiles
No wintry winds annoy:
Whose groves are palm—whose air is balm—
Where life is only joy!

They sailed all day through creek and bay,
And traversed the ocean deep;
And at night they sank on a coral bank,
In its fairy bowers to sleep!

And the monsters vast of ages past,
They beheld in their ocean caves;
They saw them ride in their power and pride,
And sink in their deep sea graves!

And hand in hand, from strand to strand,
They sailed in mirth and glee;
These fairy shells, with their crystal cells,
Twin creatures of the sea!

And they came at last, to a sea long past,
But as they reached its shore,
The Almighty's breath spoke out in death,
And the Ammonite lived no more!

And the Nautilus now, in its shelly prow,
As over the deep it strays;
Still seems to seek, in bay and creek,
Its companion of other days!

And thus do we, in life's stormy sea,
As from shore to shore we roam,
While tempest-tost, seek the loved, the lost,
But find them on earth no more!

Yet the hope how sweet, again to meet,
As we look to a distant strand;
Where heart finds heart, and no more they part,
Who meet in that better land!

George Fleming Richardson (1838). *Sketches in prose and verse. Containing visits to the Mantellian Museum, descriptive of that collection*. London: Relfe & Fletcher, 324 pp.

George Fleming Richardson (1796–1848) distinguished himself both as geologist and poet. He was curator of Gideon Algernon Mantell's remarkable private museum at Lewes, south of London, and later became curator at the British Museum, where Mantell's collection was eventually housed. Mantell collected every sort of natural curiosity, though fossils remained his abiding passion. His most famous discoveries were the giant *Iguanodon* and *Hylacosaurus*, whose bones were excavated from the limestone quarries of Tilgate Forest. The Mantellian Museum, based at the collector's residence, grew to such a size that his wife and children were forced to seek lodgings elsewhere.

Anthony Francis Lucas (whose real name was Luchich) gave his name to the most sensational and significant oil gusher in petroleum history — the well that heralded the beginning of the liquid fuel age at Spindletop on the morning of January 10, 1901. He was the first man to recognize a salt dome as a geological phenomenon.

Lucas was not a captain; in fact, he never was more than a lieutenant in the Austrian Navy. He was a native of Spalatro, Dalmatia, and graduated from Polytechnic Institute of Gratz in 1875 with a degree in engineering. Three years later he graduated from the Naval Academy of Fiume as a midshipman.

He visited in the United States in 1879 and decided to stay when he was offered a job paying three times his navy salary. He renounced his Austrian citizenship and was naturalized in 1885.

In 1893 he went to Petit Anse in Louisiana as a salt mining engineer. Later he went to Jefferson Island in the same state. There he learned about salt domes and the rotary drill.

His interest soon turned to sulphur, and it was to seek this mineral that he first accepted an invitation by Pattillo Higgins to drill a well at Spindletop. The first unsuccessful well had an oil show. This enabled him to interest geologist William Battle Phillips of Texas University, who recommended Guffey and Galey of Pittsburgh to him. Guffey and Galey convinced the Mellen Brothers of the feasibility of Lucas' salt dome theory and they agreed to finance a minimum of six test wells at Spindletop.

The first well, staked by Galey, was enough. It came in flowing an estimated 100,000 barrels of oil daily and triggered the most remarkable and significant oil boom in history.

During the drilling of the gusher, Lucas invented the back pressure valve, which obviated the necessity of abandoning the well before it was completed. He was the first chairman of the Oil and Gas Committee of the American Institute of Mining Engineers when it was created in 1913. That was the first open forum where papers dealing with petroleum geology and petroleum engineering could be presented for open discussion.



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In addition, discovery well listings for 1986 will be presented by region and include such data as:

- location
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- operator
- producing formation(s)
- total depth
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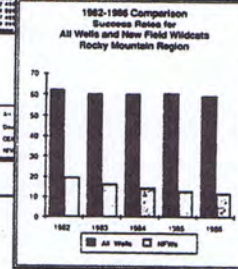
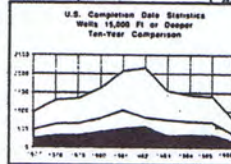
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1986 Completion Date Statistics
Estimated Drilling and Completion Costs
South Region

South Region	1986	1985	1984	1983	1982
Estimated Drilling	1,200	1,100	1,000	900	800
Estimated Completion	1,300	1,200	1,100	1,000	900
Total	2,500	2,300	2,100	1,900	1,700

1986 Completion Date Statistics
Estimated Drilling and Completion Costs
South Louisiana & Texas Basins 1-4

South Louisiana & Texas Basins 1-4	1986	1985	1984	1983	1982
Estimated Drilling	800	750	700	650	600
Estimated Completion	900	850	800	750	700
Total	1,700	1,600	1,500	1,400	1,300



Resume 1986, the most comprehensive review of the nation's well completions, will be available in late March in soft cover for just \$75.* Quantities are limited, so order your copy today.

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No. 4

December 1987



1987-1988



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COVER:

The Solitario, a domed uplift approximately 13 km (8 miles) in diameter is located on the Presidio-Brewster County line in the Big Bend area of Texas. The outer rim is formed by Cretaceous limestones dipping outward away from the center of the uplift. The center of the dome has been eroded, exposing complexly folded and faulted older rocks of Paleozoic age. The topographically low center combined with the limestone ridges visually isolates the Solitario. The difficulty of access resulted in the early Spanish settlers to refer to this place as "El Solitaria".
Photo: Lars Johnson, Geologist

JOHN WASHINGTON STEELE (1843-1920)
(Coal Oil Johnny)

The wild, fanciful, highly exaggerated stories of one man have vexed the oil industry for more than 100 years, doing violence to its public image and supplying the unfriendly with ammunition for attacking oilmen everywhere.

The man was John Washington Steele, known to the world as Coal Oil Johnny. Steele was never an oilman. He was an orphan boy, taken in with a sister, in 1845, by the Culberson McClintock family on Oil Creek, Venango County, Pennsylvania, across from Rouseville.

When Culberson McClintock died in 1855, he left his farm to his adopted son, John Steele, in trust to his wife. As a boy, Steele became a student of the Bible, went to school with classmates Lyman Stewart, founder of Union Oil, and Dan Schofield, later president of Standard of California. He married the eldest daughter of a well-to-do farmer, worked in the oil fields, and obtained a partnership in a grocery business.

In the meantime, the McClintock farm was under lease and money was no problem. Then Mrs. McClintock was killed in a stove explosion and the young, naive farm boy became the beneficiary of a growing fortune from oil production.

He became the victim of lawyers, businessmen, and even doctors. Finally he fell into the hands of Seth Slocum, a black sheep city slicker, who introduced him to the wild life of the big city. For about a year Steele led a profligate life on one of the wildest spending sprees in recorded history, running the gamut of drunken parties, horse racing, half interest in a circus, enormous tipping, unconventional clothing, gambling, and other acts of excess. Finally, with all of his money gone, his wife and father-in-law forgave and took him back into the family. Thereafter he lived a quiet and sedate life of hard work.

But the harm had been done. The press had had a heyday with him. The image of the extravagant oilman had been created, largely by news reporters who exaggerated further even his most outrageous acts.

In 1920 when he died, Steele was a railroad employee in Nebraska. But his spree lingers on, and all oilmen still live in its shadow, although Steele himself never invested a nickel in oil or drilled a single well.

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PRESIDENT'S MESSAGE

Are we using all the exploration tools that we have at our disposal? Is surface geo-chemistry finally coming of age?

Most oil and gas traps leak. Indeed substantial evidence exists that leaky traps are the best traps. Many of our early giant field discoveries were the result of drilling near oil seeps.

Even super deep gas reservoirs appear to leak all the way to the surface. How else do you explain the shallow well at Fort Morgan, Alabama, which has flowed gas and brackish water for many years. It burns when lit until the wind blows it out. This burning water well lies on the south flank of the Lower Mobile Bay-Mary Ann Field which contains about a trillion cubic feet of gas in the Northphlet formation below 20,000'.

If hydrocarbons leak to the surface from most traps, they should be detectable with sufficiently sophisticated instruments. The problem is that as an industry our experience with earlier surface hydrocarbon detection devices was bad. We lost confidence in the method and few use it in their exploration programs today.

Geo-chemical technology has advanced considerably in the last few years. Maybe it has come of age and we should include it in our repertoire of exploration methods.

Harry Spooner



Mississippi Geological Society

NOON MEETING

Tuesday, December 8, 1987

Smackover Room, Petroleum Club

SPEAKER

Wendell M. Beavers*

TOPIC

The Taurus Exploration TEAM Project:
Experiences In Coalbed Methane Production

*Please notify T. C. Rader (969-3286) of your
attendance so adequate seating can be arranged.*

* Taurus Exploration Alabama
Methane Project Manager



The Taurus Exploration TEAM Project: Experiences In Coalbed Methane Production

WENDELL M. BEAVERS
Taurus Exploration

The TEAM Project is a coalbed methane development project operated by Energen Corporation in the Black Warrior Basin. TEAM is the acronym for Taurus Exploration Alabama Methane and represents a unique example of successful intercompany corporation to cost effectively complete a major energy project within a short time frame. Since spring of 1986, 106 single zone completion wells have been drilled through the Mary Lee Coal Group with 77 of those currently producing gas. Total production at the TEAM Project is approximately 10 MMCFD.

Four companies within the Energen Corporation have cooperated to develop an innovative approach to provide drilling and completion, operation, production, and marketing functions with emphasis on teamwork. Valuable experience has been gained and lessons have been learned in completion, production, dewatering, and cost control aspects of coalbed methane resource development. This experience is being applied to new wells as the project expands.

NOON LUNCH SCHEDULE

1987	1988
September 8	January 12
October 13	February 9
November 5	March 8
December 8	April 12

Credit for the great Mexican oil development in the early part of the century goes to Edward L. Doheny, the man whose daring and imagination sparked the boom.

Doheny, a slight, alert and restless man of Irish descent, born in Fon du Lac, Wisconsin, was the imaginative and bold member of the partnership of Doheny and Canfield. C. A. Canfield was his counterbalance, a gentle, patient, and persevering man. Together they made a perfect team. Without each other, both were far less effective.

Doheny started his career in mining in New Mexico when he was 18. He had been on his own then for two years working as a book agent, a fruit packer, a mule driver, and a waiter. By 1892 he lost all he had made in his mining efforts. He went to Los Angeles with Canfield, a man he had known for seven years and who had worked one of his unsuccessful claims.

There Doheny saw a wagon full of "brea" and recognized its potential. He and Canfield obtained a lease, personally dug a hole with their own hands, and opened the Los Angeles boom with a crude, seven-barrel-a-day well.

Based on a guidebook of California oil seeps contained in a state geologist's annual report, Doheny and Canfield drilled wells up and down the state. In a few years California was the leading oil state because of their discoveries, and Doheny and Canfield were the state's top oil men.

At this time Doheny negotiated a contract with Santa Fe Railroad to buy all the oil he and Canfield could supply at \$1 a barrel. The contract almost floated Santa Fe out of business on a flood of oil until the railroad purchased much of the Doheny-Canfield oil property.

In these negotiations with Santa Fe, Doheny met A. A. Robinson, an executive of the railroad. It was Robinson, later president of the Mexican Central Railroad, who lured Doheny and Canfield to Mexico where he had observed hundreds of California-type oil seeps.

There they acquired hundreds of thousands of acres of land in fee and formed the Mexican Petroleum Company. On May 14, 1901, their Cerro de la Pez (Hill of Tar) well, 35 miles west of Tampico, came in as a gusher from oil sand at 545 feet and the oil history of Mexico was started.

To a fossil fern

Child of an ancient world! o'er whom the storms
That shatter'd empires silently have roll'd,
What awful mysteries could'st thou unfold
Of Chance and Change in all their various forms!
Thy frond-like leaves were blooming when in glory,
Proud Rome and Egypt each beheld its prime,
And doubtless thou could'st tell us many a story
Of mighty victors of the olden time.
Geology, with microscopic eye,
Regards thee as a phantom metaphoric;
While Chemistry, whose flight is always high,
Claims thee as a production meteoric;
But sister Poesy seems half afraid,
And wisely keeps her learning in the shade.



1 2 3 4 5 6 7 8 9
TAB. 129.—THE FLORA OF THE CARBONIFEROUS EPOCH.
(Designed and drawn by Miss Ellen Maria Mantell.)

Fig. 1. Auracaria. 2. Asterophyllites comosa. 3. Pandanus. 4. Equisetum. 5. Arborescent fern. 6. Fern. 7. Calamites. 8. Lepidodendron. 9. Sphenopteris.

Anon. (1836). To a fossil fern. *The Museum of Foreign Literature and Science* 29, 572.

The Museum of Foreign Literature and Science (1822–42) was a popular Philadelphia-based eclectic magazine which contained short stories, poetry, and 'literary and scientific intelligence' excerpted from European sources. This anonymous sonnet was originally published in *The Court Magazine and Monthly Critic*, a London 'ladies magazine.'

The coal and the diamond

A coal was hid beneath the grate,
(’Tis often modest merit’s fate;)
’Twas small, and so perhaps forgotten;
Whilst in the room and near of size,
In a fine basket lined with cotton,
In pomp and state a diamond lies.
‘So, little gentleman in black,’
The brilliant spark in anger cried,
‘I hear, in philosophic clack,
Our families are close allied:
But know the splendor of my hue,
Exceeded by nothing in existence,
Should teach such little folks as you
To keep a more respectful distance.’

At these reflections on his name,
The coal soon reddened to a flame:
Of his own real use aware,
He only answered with a sneer;
I scorn your taunts, good Bishop Blaze,
And envy not your charms divine;
For know I boast a double praise,
As I can *warm* as well as shine.

Anon. (1850). *The coal and the diamond*. *Merry’s Museum* 20, 78.

Merry’s Museum (1841–72) was one of the most successful popular American literary magazines. Poems appeared monthly in this New York-based journal, and were usually unsigned. The chemical similarity between coal and diamond, as well as the thinly veiled abolitionist sentiments of the author, would have been well understood by most nineteenth-century readers.

CAPTAIN JACOB JAY VANDERGRIFT (1827-1899)

While still under 35 years of age, Captain J. J. Vandergrift revolutionized water transportation of petroleum. In 1861 he considered the waste of time, the danger, and the trouble involved in shipping oil by barrels. He had a dozen barges built at a total cost of \$2400, each of which would hold 400 barrels of oil, and started a new era in the movement of oil.

A native of Pittsburgh, Vandergrift was a cabin boy when he was 15. Nine years later he assumed command of his first steamboat, a coal boat on the Ohio. He was the captain of the first boat to tow barges, an idea formulated by Daniel Bushnell.

As a result of his enterprise in oil handling, Vandergrift became wealthy. In 1863, for instance, he purchased a load of oil at the point of production for \$1.00 a barrel and sold it later the same year at \$12.00 a barrel in Pittsburgh.

In 1863 he formed two producing companies, a tank car company, a pipeline organization which was to eventually become the National Transit Company, and a half dozen other smaller pipeline companies. By 1884 National Transit's capital was 30 million.

He was one of the organizers of H. I. Taylor & Co. The firm eventually gave birth to the Union Oil Company of Pittsburgh. He was a prime mover in the formation of the Forest Oil Company and the United Pipeline Company.

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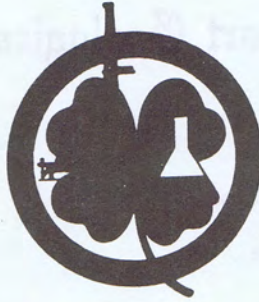
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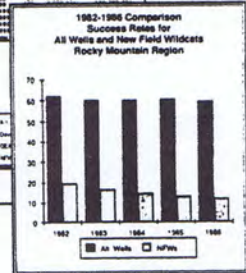
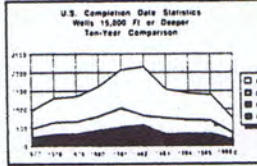
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Southeast Region

Month	Drilling	Completion
1-1986	2,100	1,100
2-1986	2,100	1,100
3-1986	2,100	1,100
4-1986	2,100	1,100
5-1986	2,100	1,100
6-1986	2,100	1,100
7-1986	2,100	1,100
8-1986	2,100	1,100
9-1986	2,100	1,100
10-1986	2,100	1,100
11-1986	2,100	1,100
12-1986	2,100	1,100
1986 Total	25,200	13,200

1986 Completion Data Statistics
Estimated Drilling and Completion Costs
Central Region

Month	Drilling	Completion
1-1986	2,100	1,100
2-1986	2,100	1,100
3-1986	2,100	1,100
4-1986	2,100	1,100
5-1986	2,100	1,100
6-1986	2,100	1,100
7-1986	2,100	1,100
8-1986	2,100	1,100
9-1986	2,100	1,100
10-1986	2,100	1,100
11-1986	2,100	1,100
12-1986	2,100	1,100
1986 Total	25,200	13,200



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Volume XXXV

No. 5

January 1988



1987-1988

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PRESIDENT'S MESSAGE

During the last oil industry depression, from 1958-1973, major oil companies hired almost no new geologists. Graduating geologists at the major petroleum geology schools such as Oklahoma, Texas and LSU declined from hundreds to a handful. Faculties were decimated. When the boom came in the 70's University staffs recovered slowly and were inadequate during most of the upswing.

The down cycle began again in 1982. After five years most major schools are down to a handful of geology majors but in most cases the staffs that were built up during the upswing are still in place. It is a great time to be studying geology. Students now have much more direct contact with their professors.

A geology freshman entering school in 1988 will graduate with a Master's Degree in 1993-94. This timing should be perfect. All indications are that surplus oil and gas supplies will be worked off by then and major oil companies will be hiring all available graduating geologists.

If you know a sharp high school senior inclined toward science, advising his or her consideration of geology would certainly be prudent. Along this line LSU has announced a new program whereby high school graduates can get a good taste of geology in a field camp setting and earn college credit for Physical and Historical Geology courses at the same time. LSU's announcement of this program will be found elsewhere in this bulletin. It sounds like a great way for a kid to find out if he likes geology before he gets several semesters invested.

It would be very helpful if you would call T.C. Rader to make reservations for monthly meetings. His number is found on the page with the announcement for the meeting. This is double true if the speaker is someone you especially want to hear, because most other people will too. We usually plan for about 20% more than we have reservations for. In November, when John Farina spoke, 50 people made reservations and more than 100 attended. We did not plan for 100% overrun and some people with reservations were forced to eat in a separate room. This hardly seems fair.

Harry Spooner



Mississippi Geological Society

NOON MEETING

Tuesday, January 12, 1988

Smackover Room, Petroleum Club

SPEAKER

Robert Evans*

TOPIC

Pathways of Migration of Oil & Gas
in the South Mississippi Salt Basin

*Please notify T. C. Rader (969-3286) of your
attendance so adequate seating can be arranged.*

* Mobil Research and Development Corp.
Dallas, Texas



Pathways of Migration of Oil and Gas in the South Mississippi Salt Basin

ROBERT EVANS
Mobil Research and Development Corp.
Dallas, Texas

ABSTRACT

The South Mississippi Salt Basin is one of three interior basins characterized by structures formed by movement of the Late Jurassic Louann Salt. An analysis of pathways of migration within the basin has revealed that it is possible to explain why hydrocarbons have accumulated in some structures, yet are absent from others that would appear to be favorable. Of the more than 840 fields within the basin, 74, including the largest known accumulations, have hydrocarbons stacked in reservoirs in more than one formation. These stacked reservoirs result from vertical migration brought about by faulting. More than 750 fields have hydrocarbons confined to one formation in traps associated with four distinct trends of production that decrease in age systematically from the margin of the basin into the interior. The hydrocarbons in these trends have accumulated by intrastratal migration, without the agency of faulting, from a nearby source in the same unit as the reservoir. On the northwest side of the basin, migration between units brought into contact along unconformities has resulted in ten fields. Vertical migration brought about by faulting around shallow salt diapirs has allowed hydrocarbons to escape, so that only 5 of 56 such structures have ever produced oil or gas. These conclusions derived from geological deductions are supported by preliminary geochemical data, but more extensive and detailed chemical analyses of oils from the various sources are under way.

W. S. Farish was a recent law graduate when he accidentally stepped into the oil business.

Sent by an uncle in England to investigate the situation at Spindletop immediately after the Lucas Gusher blew in, Farish went on to become one of the most highly respected men in petroleum history.

A native of Mississippi, a grand-nephew of Jefferson Davis, and a law graduate of the University of Mississippi, Farish worked for one oil company, formed a drilling partnership, and then poor-boyed his way into other ventures. This led eventually to the formation of the Humble Oil & Refining Company. Although he bitterly fought the integrated companies, Farish was the man most responsible for the sale of half of Humble's stock to Standard of Jersey for \$17 million.

Along with Robert Lee Blaffer, Harry C. Wiese, and Ross Sterling, Farish built the small Humble Company into one of the most efficient and influential independent companies in the country prior to the sale to Jersey.

He became president of Humble, then a director, chairman of the board and president of Standard of Jersey. Long after his death the influence of Farish is still felt strongly in both Humble and the parent Jersey Company.

Farish, a champion of the independent oilmen's cause, is credited with having brought crude price increases in 1918 which saved many independent oilmen from going broke. He headed an organization of independents and then attempted to organize an association of small producers who could market their product free of major company influence.

During World War I, as a member of the Petroleum Committee of the Council of National Defense, he broadened his knowledge of the industry, met and learned to admire A. C. Bedford and Walter Teagle of Standard of Jersey. He then talked his associates into making the deal which in future years would make Humble one of the world's most important oil and gas producing companies.

An omnivorous reader with a photographic memory and a man concerned with broad industry problems rather than details and trivia, Farish was a natural and effective leader. He was a pioneer in the promotion of petroleum geology, engineering, and conservation.

MISSISSIPPI BUREAU OF GEOLOGY
Office of the Director

The Bureau of Geology is charged to conduct studies of the mineral resources of the state, including petroleum, natural gas, building stone, clay, sand and gravel, coal, limestone, water, and all other mineral substances of value. The Bureau also administers the leasing of oil, gas, and mineral rights on state-owned lands and off-shore areas. In addition, the Bureau permits and regulates all mining and land reclamation activities in the state.

The Director of the Bureau of Geology serves on the Department of Natural Resources Permit Board that issues permits to landfills and NPDES waste disposal facilities. In addition, the Director serves on the Water Well Drillers Advisory Committee, which regulates and licenses the water well drilling industry in Mississippi. The Bureau of Geology Director serves as a member of the Nuclear Waste Technical Review Committee, which advises the state on matters relating to nuclear waste disposal and is a member of the Mississippi Mineral Resources Institute Board of Directors.

At the present time the staff of the Bureau of Geology is heavily utilized as a support staff for the ongoing efforts of the Department of Natural Resources in areas of waste management and pollution studies. However, several new Bureau projects are presently under way that will be of particular interest to the oil and gas industry in Mississippi. A computerized cross-reference of the core and sample library that is maintained by the Bureau of Geology is being compiled by Mike Meadows and David Booth. This will provide instant access to depth and formation representation and will be available to the general public. Chuck Peel has begun a Smackover facies study of the Interior Salt Basin of Mississippi. When completed it should prove to be a valuable aid to local mapping studies. Efforts are under way by Carolyn Wodley, Bureau Librarian, to improve the acquisition of theses, dissertations and petroleum-related monographs specifically related to the geology of Mississippi.

As the new Director, I have a keen interest in developing programs that are more oriented toward oil and gas. At the present time, however, the level of funding makes these changes difficult. This agency can and should be a strong partner to the oil and gas industry. It needs the continued interest and strong support of the Mississippi Geological Society to accomplish this goal.

Conrad A. Gazzier
Bureau Director

For years after his arrival he was raised by his own food.
When he was 20, he won the first prize in the Model of Honor at Annapolis and at 22, he was out of the Civil War a brave soldier.
He was 24 when a "drummer" fascinated him with tales of the oil regions and the great opportunities there. Carter went to Knoxville and earned a clothing store which prospered under his good management.
Before he was 25 Carter entered the oil business in Bradford. His first venture was a success. He had the reputation of hardly ever drilling a dry hole. He studied geology and became one of the most respected men in the field in the eastern part. He is credited with development of the famous Spitzer's Field in West Virginia.
In 1903 he founded the Carter Oil Company and immediately started the search for standard oil officials. In 1904 he sold standard 60 percent of his company through the South Texas Oil Company. In the deal he received over \$1 million he had invested since entering the business \$425,000 cash and 50 percent interest in one of the most productive producing companies in existence at the time.
Even after his retirement, Colonel Carter traveled throughout the U. S. and the world for standard oil recommending projects and helping subsidiaries in various fields.
He succeeded in establishing geology and engineering funds in oil property evaluation. His own geological knowledge was considered by oil leaders as almost infallible.

John J. Carter seemed to walk right out of the pages of Horatio Alger. Born in Ireland of good parents, he was impoverished as a boy when his parents died and relatives squandered his inheritance. As a child he migrated to America on a sailing ship so disreputable he had to prepare his own food.

For years after his arrival he was raised by priests and benefactors.

When he was 20, he won the Congressional Medal of Honor at Antietam and at 23, came out of the Civil War a brevet colonel.

He was 24 when a "drummer" fascinated him with tales of the oil regions and the great opportunities there. Carter went to Titusville and opened a clothing store, which prospered under his good management.

Before he was 35 Carter entered the oil business at Bradford. His first venture was a success. He had the reputation of hardly ever drilling a dry hole. He studied geology and became one of the most respected men in the field in the earliest days. He is credited with development of the famous Sisterville Field in West Virginia.

In 1893 he founded the Carter Oil Company and immediately attracted the attention of Standard Oil officials. In 1894 he sold Standard 60 percent of his company through the South Penn Oil Company. In the deal he received over \$1 million he had invested since entering the business, \$415,000 cash, and 40 percent interest in one of the most profitable producing companies in existence at the time.

Even after his retirement, Colonel Carter traveled throughout the U. S. and the world for Standard Oil, recommending prospects and helping subsidiaries in serious trouble.

He succeeded in establishing geology and engineering firmly in oil property evaluation. His own geological knowledge was considered by oil leaders as almost infallible.

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Costs for the Program, including tuition, room and board, but excluding transportation to and from Colorado Springs, will be \$804 for Louisiana residents and \$1,554 for non-residents. Scholarships are available on a competitive basis, including several specifically for black students. The full scholarships will include all costs and roundtrip transportation to and from Colorado Springs; some partial scholarships will also be available. Apply directly to the LSU Department of Geology Precollege Field Camp Program. Please include a statement of your interest in science, and geology in particular; the name and address of a high school teacher that would act as a reference to your qualifications. We would also like to see copies of your high school grades and the results of your ACT scores. LSU is an equal opportunity university and encourages applications from all minority groups.

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1. Mississippi Geological Society Photo Directory, 1981 \$ 2.00
2. Wilcox Fields of Southwest Mississippi, Maps and production data on 171 fields, in ring binder, 350 pp., 1969 28.00
Mesozoic-Paleozoic Producing Ares of Mississippi and Alabama.
3. Volume I. Maps and producing data on 57 fields, with 2 composite logs, clothbound, 139 pp., 1957 10.00
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9. Upper Cretaceous Outcrops, Northeast Mississippi and West Central Alabama, Fourteenth Field Trip, 29 pp., May, 1959 4.00
10. Cenozoic of Southeast Mississippi and Southwest Alabama, Fifteenth Field Trip, 52 pp., May, 1960 6.00
11. Cenozoic of Horn Island and the Pascagoula Valley, 10th Annual GCAGS Meeting, 24 pp., October, 1960 2.50
12. The Paleozoics of Northwest Arkansas, Sixteenth Field Trip, 48 pp., May, 1962 5.00
13. Tertiary Type Localities of East-Central Mississippi, 25th GCAGS Meeting, 133 pp., October, 1975 5.00
14. Mississippi Rocks of the Black Warrior Basin, Seventeenth Field Trip, 79 pp., April, 1978 8.00
15. Tertiary and Upper Cretaceous Depositional Environments, Central Mississippi and West Central Alabama, 33rd Annual GCAGS Meeting, 40 pp., October, 1983 7.50

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Volume XXXV

No. 6

February 1988



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COVER:

Boland Scholarship Committee and 1987 Boland Recipients

E. DeGolyer, founder of the Amerada Petroleum Corporation, pioneer in the use of geophysics in oil and gas exploration, and one of the world's most recognized petroleum consultants, was born in a sod hut near Greensburg, Kansas. His parents were homesteaders, but his father became a lead and zinc prospector in Missouri before DeGolyer finished high school in Joplin.

DeGolyer's petroleum career started under remarkable circumstances; in 1910 he spotted the location for the famous Potrero del Llano No. 4 well for Mexican Eagle Oil north of the Tuxpan River near Vera Cruz. DeGolyer was a junior in geology at the University of Oklahoma at the time. The Potrero No. 4 came in with such force that it toppled the derrick and flowed 15 million barrels of crude in 90 days before it was capped. It is regarded as the largest oil producer of that day. DeGolyer's career was started by that well, but, as it turned out, it was not undeserved.

Even before the famous Potrero No. 4, DeGolyer had staked location for the mediocre discovery well in the field and supervised completion of several others. After the Potrero No. 4 gusher he returned to Oklahoma University to complete his education.

DeGolyer also introduced torsion balance survey and refraction seismograph to the American oil industry. While head of Amerada, DeGolyer also formed Geophysical Research Corporation as a subsidiary. When he left Amerada in 1932 he formed Geophysical Service, Inc., and, in 1936, he and his associate, Lewis W. MacNaughton, formed DeGolyer and MacNaughton.

He was the first man to predict the amazing reserves of petroleum found in the Middle East. In the petroleum industry DeGolyer was considered a maverick and a mystery man. He was the recipient of untold honors and was once president of the American Institute of Mining and Metallurgical Engineers and the American Association of Petroleum Geologists.

His close friendships with oil leaders around the world included all of the pioneers of his age, starting with Captain Anthony F. Lucas. His reputation was worldwide.

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PRESIDENT'S MESSAGE

Those of you who did not attend the January luncheon meeting missed a lively and thought provoking session. Robert Evans' talk, based on some simple research, was very revealing regarding distribution of oil accumulation in the various rock units of the Mississippi Salt Basin. A number of his conclusions were challenged by the members present during the question session after the talk, especially his already disproven conclusion that very little oil would be found on Mississippi piercement domes. Evans told me later that he thoroughly enjoyed the give-and-take of the questions. I think most of the rest of us did also.

Many Geologists have given up on trying to understand oil generation and migration and are content to hunt near existing fields. But if we could expand our knowledge of where oil comes from and how it gets where it is, surely we would find some virgin areas to explore.

Current theories about thermal maturity and vertical migration along faults just do not seem to wash in many cases. These theories bring up questions like — If Smackover source was not mature until it was buried 7,000 or 8,000 feet, why isn't oil in structures with Cretaceous growth rather than Haynesville? Eutaw and Tuscalossa are too shallow to be a source at Tinsley. Did that 200 million barrels come from the Smackover? If so, why didn't some stop in the LK? How does oil get out of the Smackover along faults anyway with all that thick Haynesville shale and evaporate on top?

Keep plugging researchers. There must be some better answers.

Harry Spooner



Mississippi Geological Society

NOON MEETING

Tuesday, February 9, 1988

Smackover Room, Petroleum Club

SPEAKER

Phil R. Reeves*

TOPIC

North Blowhorn Creek/Armstrong Branch Fields
One of Black Warrior's Best

*Please notify T. C. Rader (969-3286) of your
attendance so adequate seating can be arranged.*

* Hughes Eastern Corp.



North Blowhorn Creek/Armstrong Branch Fields One of Black Warrior's Best An Abstract

**PHIL R. REEVES
Hughes Eastern Corp.**

The simultaneous development of North Blowhorn Creek and Armstrong Branch Fields, originally discovered by wildcats located over four miles apart, has culminated in the delineation of a large common reservoir which to date has accounted for over 64% of the oil produced from the entire Black Warrior Basin. Substantial core, log and production data indicate that the reservoir is an elongate bar sand with Armstrong Branch representing the gas cap associated with North Blowhorn Creek oil field. This reservoir is located in the northeastern portion of the Black Warrior Basin in Lamar County, Alabama. The basin to date is primarily a gas province with some local oil accumulations. The primary producing interval in the basin, as well as the producing interval in North Blowhorn/Armstrong Branch fields is the mississippi Chesterian Carter Sand. The Carter Sand within the study area is inferred to represent a Deltaic sand which has been reworked into a north/south trending marine bar. Stratigraphically, the Carter is located within the Parkwood Shales between the Bangor and Millerella Limestones. The development of North Blowhorn Creek oil Field on 80 acra spacing and subsequent infield drilling has provided the most detailed look at a reservoir in the Black Warrior Basin to date. This field is also the first oil field in the basin to be unitized for the purpose of secondary recovery by pressure maintenance. Structure maps on the sand and the overlying Millerella Limestone indicate meandering regional dip with some minor local nosing, suggesting a total stratigraphic trap. Lithologically, the sand is a medium to fine grained quartz arenite with isolated sparry calcite, fossil fragments and small amounts of kaolinite and mixed layered clays. From log calculations, average effective porosity is 12% with an average water saturation of 19%. Using these parameters, estimated oil in place at North Blowhorn Creek is 17.8 million barrels with an ultimate recovery of 6.2 million barrels. Subsequently, at Armstrong Branch estimated gas in place is 5 billion cubic feet with approximately 4.5 billion being recoverable. This represents by far the largest and most prolific oil field in the Black Warrior Basin, and with its associated gas cap, makes this marine bar sand one of Black Warrior's best.

WILLIAM GRAY WARDEN (1831-1895)

William Warden, the founding member of Warden, Frew & Company, established the Atlantic Refining Company in 1870.

Ten years earlier Warden, Frew & Company had been formed in Philadelphia as one of the first oil exporting firms. This partnership merged with Peter Wright and Sons to become the Atlantic Petroleum Storage Company and built a small refinery in Philadelphia in 1866.

The moving spirit behind these organizations was Warden. A large man with a mustache and sideburns, he was genial, volatile, exuberant, and always optimistic. In addition, he was a bold speculator, prone to shocking his associates with highly advanced ideas in business.

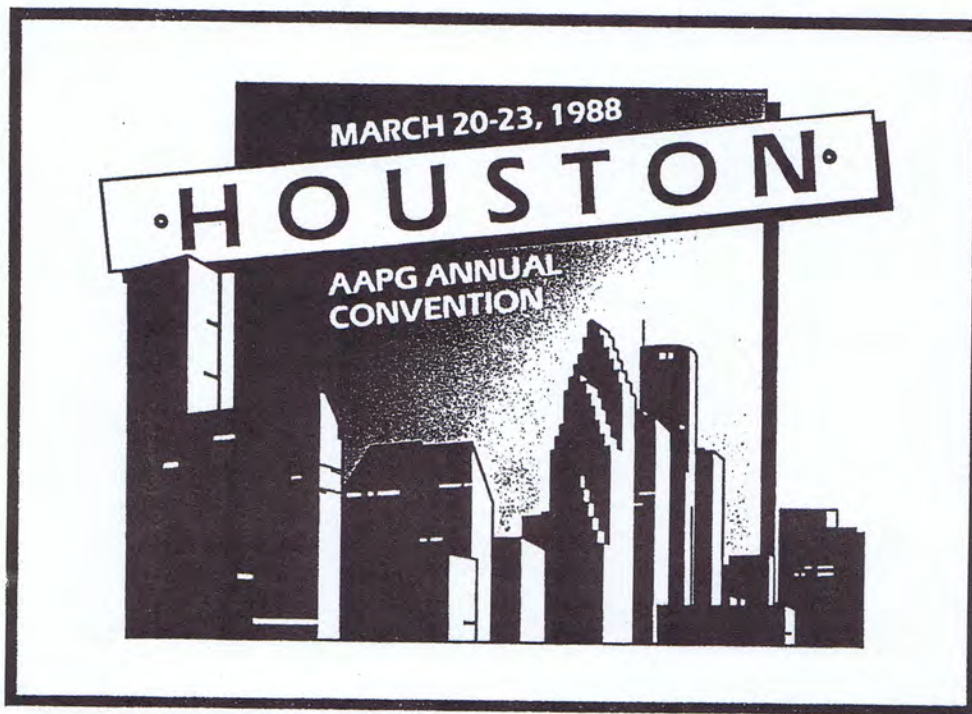
An inventive man, Warden patented a petroleum distillation process in 1871 and an improved cylindrical tank car with a dome in 1872.

In the controversial and chaotic days of 1872, Warden with another partner, Charles Lockhart, advanced a scheme to unite the industry's refining interests and to make peace with producers following the debacle of the South Improvement Company, in which Warden was a major stockholder.

The largest refiner in Philadelphia, Warden agreed in 1874 to transfer his refinery holdings to the Standard Oil Company for stock. He became one of the nine trustees of the Standard Oil Trust in 1882 after having become a director in Ohio Standard in the 1870's and a member of the executive committee in 1878.

In 1885 he advocated a system of bulk stations throughout the country to be administered from New York with one price for all, an idea not widely held at that time.

In the later 1880's Warden became preoccupied with the United Gas Improvement Company and Philadelphia real estate and dropped out of the ranks of top petroleum executives.



Housing and preregistration are now open for the 1988 AAPG Annual Convention, which will be held in Houston, Texas, March 20-23, 1988. The technical program will include close to 600 papers presented in both oral and poster sessions.

AAPG members may make their reservations through AAPG on the official preregistration form in the back of the convention announcement or by phoning 918-584-2555 and asking for Convention Registration. Only major credit cards are accepted on phone registration.

During the meeting, the services of our Employment Information Center will be available to facilitate arranging interviews and posting job and resume listings. Two seminars on employment strategies will be held on Sunday, March 20, 1988, and are open to all convention registrants at no charge. For further information contact: Jerry A. Watson, 12843 Ashford Chase, Houston, TX 77082, phone 713-496-7526.

The Hyatt Regency will be the AAPG headquarters hotel and the Holiday Inn Houston Downtown will be the SEPM headquarters. Technical sessions, exhibits, short courses and our headquarters office will be in the new George R. Brown Convention Center.

Houston Geological Society Golf Tournament

In March, 1988, the Houston Geological Society will serve as host for the 73rd AAPG annual convention. As President of the HGS, I would like to issue a "Sporting Challenge" to all local Geological Societies affiliated with AAPG. As a part of our convention activities, we will hold golf tournament, Sunday, March 20th at 8:00 a.m. on the beautiful and sporty Tournament Players Course at the Woodlands. This is the same course on which the Professional Golf Association will hold the Independent Insurance Open in late April with a total prize of \$700,000. Due to the state of the petroleum economy, our prize fund will be somewhat less.

We challenge your Society to assemble a team of 4 players with a combined handicap of 43 or above. Only one player can have a single digit handicap (same format as used in the nationwide Oldsmobile Scramble"). The 4 player teams will play a "Florida Scramble" in which the used tee shots of each team must be divided 5-5-4-4 among the four players. This team challenge will be played at the same time but not as part of the AAPG Golf Tournament. Prizes will be furnished by the Houston Geological Society. The cost will be \$55.00 per person (same as the fee in the AAPG Tournament) and includes bus transportation, continental breakfast, green fees, golf cart, beverages and a cold cut buffet award luncheon.

If anyone is interested in competing, please phone Harry Spooner at 969-1831.

NOON LUNCH SCHEDULE

1987	1988
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November 5	March 8
December 8	April 12

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-American forum-



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In June and July of 1988 the LSU Geology and Geophysics Department will offer a special program of study for graduating high school seniors. The program will be taught by LSU faculty at the LSU Geology Field Camp near Colorado Springs in the Rocky Mountains. Up to 55 students will stay in seven dormitory cabins. Separate dorm and shower facilities are available for men and women. Meals are prepared and served in a modern mess hall. Students will spend six weeks at the camp and on trips to points of geological interest as far away as the Grand Canyon National Park. The program will introduce students to geology with an emphasis on the physical processes that produce earth materials and landforms, and evolutionary development of the earth and its biological systems through time. Eight semester hours of college credit may be earned in the following LSU Geology courses: 1) Physical Geology, 2) Physical Geology lab, 3) Historical Geology, and 4) Historical Geology Lab. To qualify for the course the student must be a graduating high school senior, with an interest in and aptitude for the sciences. Individuals should be in very good health and physical condition.

Costs for the Program, including tuition, room and board, but excluding transportation to and from Colorado Springs, will be \$804 for Louisiana residents and \$1,554 for non-residents. Scholarships are available on a competitive basis, including several specifically for black students. The full scholarships will include all costs and roundtrip transportation to and from Colorado Springs; some partial scholarships will also be available. Apply directly to the LSU Department of Geology Precollege Field Camp Program. Please include a statement of your interest in science, and geology in particular; the name and address of a high school teacher that would act as a reference to your qualifications. We would also like to see copies of your high school grades and the results of your ACT scores. LSU is an equal opportunity university and encourages applications from all minority groups.

PUBLICATION LIST

SPECIAL VOLUMES

1. Mississippi Geological Society Photo Directory, 1981 \$ 2.00
2. Wilcox Fields of Southwest Mississippi, Maps and production data on 171 fields, in ring binder, 350 pp., 1969 28.00
3. Mesozoic-Paleozoic Producing Ares of Mississippi and Alabama. Volume I. Maps and producing data on 57 fields, with 2 composite logs, clothbound, 139 pp., 1957 10.00
4. Volume II. Maps and producing data on 77 fields, includes Supplement 1, in ring binder, 143 pp., 1963 15.00
5. Supplements 2 through 7 for Volume II, Maps and producing data on 35 fields, 110 pp. 15.00
6. Supplement 8 for Volume II, Maps and producing data on 34 fields, 108 pp., 1980 25.00
7. Volume II, complete with Supplements 2-8, 361 pp., 146 fields 50.00
- ★ 8. Volume III, 85 pp., 46 fields, 1987 50.00

FIELD TRIP GUIDEBOOKS

9. Upper Cretaceous Outcrops, Northeast Mississippi and West Central Alabama, Fourteenth Field Trip, 29 pp., May, 1959 4.00
10. Cenozoic of Southeast Mississippi and Southwest Alabama, Fifteenth Field Trip, 52 pp., May, 1960 6.00
11. Cenozoic of Horn Island and the Pascagoula Valley, 10th Annual GCAGS Meeting, 24 pp., October, 1960 2.50
12. The Paleozoics of Northwest Arkansas, Sixteenth Field Trip, 48 pp., May, 1962 5.00
13. Tertiary Type Localities of East-Central Mississippi, 25th GCAGS Meeting, 133 pp., October, 1975 5.00
14. Mississippi Rocks of the Black Warrior Basin, Seventeenth Field Trip, 79 pp., April, 1978 8.00
15. Tertiary and Upper Cretaceous Depositional Environments, Central Mississippi and West Central Alabama, 33rd Annual GCAGS Meeting, 40 pp., October, 1983 7.50

COMPOSITE LOGS AND CROSS-SECTIONS

16. Composite Mesozoic Log of South Mississippi and South Alabama 2.00
17. Composite Paleozoic Log of Black Warrior Basin, Mississippi and Alabama 2.00
18. Well Log Correlation Sections, Paleozoic of the Black Warrior Basin, Set of 5 Sections 10.00
19. Stratigraphic Cross-Sections, Jurassic of Mississippi, Alabama and Northwest Florida, Set of 9 Sections 50.00

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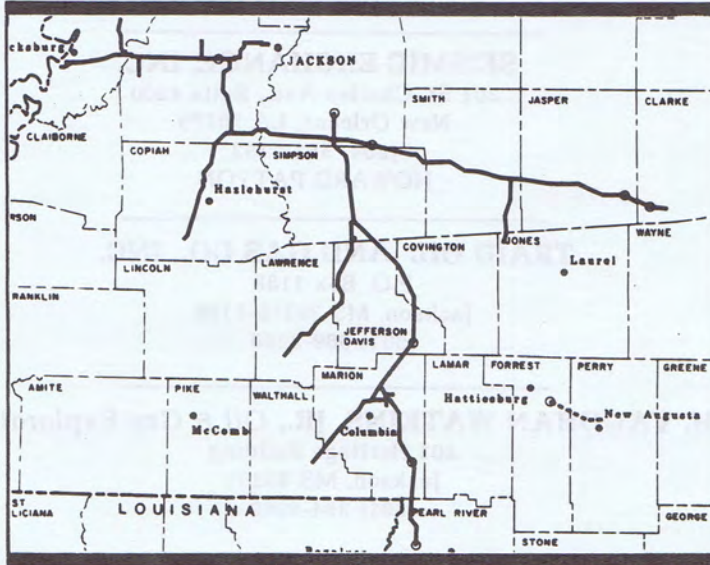
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MISSISSIPPI GEOLOGICAL SOCIETY

Volume XXXV

No. 7

March 1988



1987-1988

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1987-88**

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COVER:

Grand Canyon National Park, Arizona
Tertiary Basalt flows cascading over the North Rim. The flows partially dammed the Colorado River. With time, the river cut a new course through the flows.

JOSEPH NEWTON PEW (1848-1912)

Joseph N. Pew was the principal founder of the Sun Oil Company, the inventor of the modern gas meter, and builder of the first natural gas line to a big city in the United States. He also conceived and developed the idea of pumping gas by mechanical pressure.

A native of Mercer, Pa., Pew earned his first money as a school teacher. He entered the real estate business in Mercer and then moved to Titusville where he became attracted and fascinated by oil and the possibilities of natural gas.

In 1876 he piped gas to Bradford oil fields. In 1882, with E. O. Emerson, he purchased the famous Haymaker well in Murrysville, Pa., and installed in Pittsburgh the first natural gas service to a large city in this country.

Pew, with his partner Mr. Emerson, formed the Penn Fuel Company, the Peoples Natural Gas Company, and the Sun Oil Line Company prior to organizing the Sun Oil Company (the Ohio Corporation) in 1890.

Emerson disposed of his oil interests in 1897. J. N. Pew brought his nephews, Robert C. and J. Edgar Pew, into the firm in 1886; his sons, J. Howard and J. N. Jr., came in 1901 and 1908, respectively.

When Spindletop was discovered in 1901, Pew sent first Robert and then Edgar to Beaumont with instructions to take advantage of the new era in the petroleum industry. To get ready for the big things he knew would happen, Pew bought a pleasure park on the Delaware River at Marcus Hook, Pa., and started a major refinery in November 1901.

Joseph N. Pew was a conservative, intelligent, brilliant, inventive man with unlimited energy and vision. He inspired his entire family to enter and follow the oil and gas industry, where they have all made major contributions.

**SEG Fourth Annual Gulf Coast
Exploration and Development Exposition**

New Orleans, Louisiana

March 13-15, 1988

On behalf of the Jackson Geophysical Society, fellow Gulf Coast Geophysical Societies, and the Society of Exploration Geophysicists, we cordially invite you to attend the SEG Fourth Annual Gulf Coast Exploration and Development Exposition, March 13-15, in New Orleans, Louisiana.

One of the goals of this meeting is to provide a theme of exploration, not necessarily one of geophysics. Sunday, March 13, at 6:00 p.m. marks the opening of the meeting with an icebreaker and exposure to all exhibitors in the exhibition hall. Monday and Tuesday follows with two full days of technical papers. Topics cover:

- Recent Advances In Geophysics And A Look At The Future
- Best Papers From Associated Societies
- Personal Computer Applications
- Seismic Interpretation: Case Histories
- Migration: Dip Movement, Prestack Migration, and Inversion
- SPE/SEG Joint Session: Reservoir and Engineering Geophysics

Of special interest will be the Plenary Session with the Presidents, or designated representatives, of the SEG, AAPG, SPE, and SPWLA, to discuss the interaction of disciplines in an exploration program. Questions and answers will follow this session.

Our industry — having broken the traditional boundaries of geophysics and found new applications in exploration and development areas — has an ongoing need for education in geophysical processes and the professional support available to reach the goals of the oil and gas industry. Only through an interchange of ideas and exposure to new developments can geophysicists support further growth toward happenings beginning to appear on the horizon.

Please contact myself or Karl Kaufmann for help or further details.

Gary Williams
General Chairman

PRESIDENT'S MESSAGE

Under existing statutes the Mississippi Oil and Gas Board has authority to collect well records and data. To the extent the Board exercises this authority, it does so under its Rule 24 and Form 3 (Well Completion or Recompletion Report and Well Log) I believe that the original intent of Rule 24 and Form 3 was to require that all well data including all logs and core information be filed with the Board. Rule 24 commences with the sentence "Copies of electrical surveys or logs or radioactive surveys or logs, _____, shall be filled with Board _____." On the back page of Form 3 the instructions state "Show all important zones of porosity, detail of all cores, and drill stem tests _____."

Over the many years since Rule 24 and Form 3 were established the Board has drifted away from the original intent until now only one type of electrical log is required to be filed. No core information, no drillstem test data, no porosity logs or dipmeters, no drilling or completion reports are required. We live in the age of information explosion but the Mississippi Oil and Gas Board operates in the Stone Age. To make matters worse the Board greatly restricts public access to what little data that it does collect.

In 1986 in an attempt to rectify the situation the Mississippi Geological Society petitioned the Board to amend Rule 24 to specifically require that all logs and core data be filed. After some opposition to our original petition by Exxon regarding dipmeters and some Natchez operators concerning core analysis, the petition was amended and reheard. There was no public opposition but the Board denied the amended petition. Our attorney could not find out why. It is obvious that the Board looks on collection and public use of well data as a burden rather than one of its principal duties.

The principal users of well data collected by the Board are geologists, mostly members of our Society. As a Society, we were planning to again petition the Board to amend Rule 24.

Fortunately this may not be necessary. A white knight in the form of Conrad Gazzier, Director of the Bureau of Geology, has appeared on the horizon. Conrad, like most geologist, looks on data as a treasure not a burden. The Bureau of Geology is preparing a bill to introduce in the legislature which will require all well data including logs, cores and samples to be filed with the Bureau in addition to whatever data the Oil and Gas Board requires to be filed with it. The requirements will be similar to those currently in effect in Alabama. Data may be held confidential up to one year by simply notifying the Bureau that the well is confidential.

At the February meeting with 115 members present, the Society voted unanimously to support the Bureau of Geology bill. It will certainly be helpful if you will express your support for the bill to any state legislators you may know, especially Tommy Reynolds, Chairman of the House Oil and Gas Committee and Ronnie Shows, Chairman of the Senate Oil and Gas Committee.

Harry Spooner



Mississippi Geological Society

NOON MEETING

Tuesday, March 8, 1988

Smackover Room, Petroleum Club

SPEAKER

David A. Kemmer*

TOPIC

Exploration in Jurassic of North Mafla,
Eastern Gulf of Mexico

*Please notify T. C. Rader (969-3286) of your
attendance so adequate seating can be arranged.*

* Anadarko Petroleum Corp.



Exploration in Jurassic of North Mafla, Eastern Gulf of Mexico*

**DAVID A. KEMMER
Anadarko Petroleum Corp.**

ABSTRACT

Exploration in North Mafla focuses on general categories of prospects, potential reservoirs and their associated facies, and seismic modeling of available well control.

Jurassic prospects in North Mafla can be classified into four general categories: (1) basement-related structures, (2) closures associated with the Pensacola-Destin peripheral fault trend, (3) salt anticlines, and (4) prospects associated with interregional structural highs. Each of these categories can be related to documented, predictable, and repeated patterns of hydrocarbon accumulations in east Texas, north Louisiana, Mississippi, Alabama, and Florida.

The primary objectives in North Mafla are the Jurassic Smackover carbonates and Norphlet sands at depths ranging from 15,000 to 25,000 ft. Major gas accumulations in the Norphlet around Mobile Bay are separated from thicker sequences of Norphlet sands in the De Soto Salt Basin by the offshore extension of the Pensacola Arch. Seismic geometries suggest that Smackover high-energy carbonates may have been deposited on the crest of some of these thick Norphlet sands.

Seismic modeling indicates that a high-amplitude, laterally continuous event associated with a Norphlet-Louann Salt contact is dependent on the presence of Pine Hill Anhydrite member of the Louann Salt. In addition, seismic reflection geometries indicate that the Norphlet sandstone thickens from 300 ft. on the eastern flank of the Destin Dome to nearly 1,000 ft. nearby.

Although drilling in the lightly explored North Mafla area has yielded few substantive results to date, the elements necessary for significant hydrocarbon accumulations are known to exist.

*With Roger L. Reagan, Houston, Texas

HENRY LATHAM DOHERTY (1870-1939)

Henry L. Doherty was a pioneer in the field of petroleum conservation, the first man to advocate the unitization of oil and gas leases, and the organizer of Cities Service Company.

Born in Columbus, Ohio, Doherty was forced to quit school when he was 12 years old. In spite of this educational disadvantage, Doherty became one of the world's most prolific inventors and inaugurated the large scale hiring of scientists and technologists.

Throughout his life, he engaged in a continuous program of self-education which gained for him many honorary degrees and numerous honors from his own industry.

Doherty is credited with being one of the first men to recognize the geological possibilities in the finding of oil and gas. He pioneered in the field of combustion engineering; he developed oil heating equipment for homes and was among the first to advocate the development of the oil-burning locomotive. He was also a pioneer in the field of petrochemicals and gave that industry a needed impetus through the development of methods to recover useful chemical residues.

Cities Service, which was formed by Doherty and his associates in 1910 with foreign money when they could not get financial backing at home, was the first to establish gas storage fields.

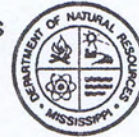
Under Mr. Doherty, Cities Service was the first to develop large-diameter, long-distance pipelines constructed of high tensile steel capable of withstanding high pressures. The first such line was completed in 1931. It extended from Amarillo Field to Chicago.

In 1937 he was awarded the coveted Anthony F. Lucas medal "for distinguished achievement in improving the technique and practice of finding and producing petroleum."



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Bureau of Geology
2525 North West Street
P. O. Box 5348
Jackson, Mississippi 39216
(601) 354-6228



February 10, 1988

Mr. Harry Spooner, President
Mississippi Geological Society
P. O. Box 422
Jackson, Mississippi 39205-0422

Dear Mr. Spooner:

On behalf of the Bureau of Geology and our Director, Mr. Conrad Gazzier, I wish to thank you and the Mississippi Geological Society for the \$125.00 donation to the Geology Library. The Society's continued financial support will enable us to purchase several geological publications which will benefit your members, the Bureau staff, and other local geologists. It is the desire of this agency and this library to serve the information needs of the geologic community, and we are gratified that your organization is helping us meet this objective.

Sincerely,

A handwritten signature in cursive script that reads "Carolyn Woodley".

Carolyn Woodley
Librarian

CW:cd
cc: Pete Lufholm, Editor
MGS News Bulletin

Don Hudson's son Richard Hudson was involved in a terrible accident involving an elevator in an MUW dormitory last year. After many months in the hospital and Methodist Rehab Center, Richard is making good progress toward recovery. Because the accident apparently resulted from faulty operation of an elevator door on state property, two special bills have been introduced in the State house of Representatives for Richard's benefit. They are House Bills 664 and 683. Don asked that members of the Society use any influence that they may have with State Legislators to support these bills.



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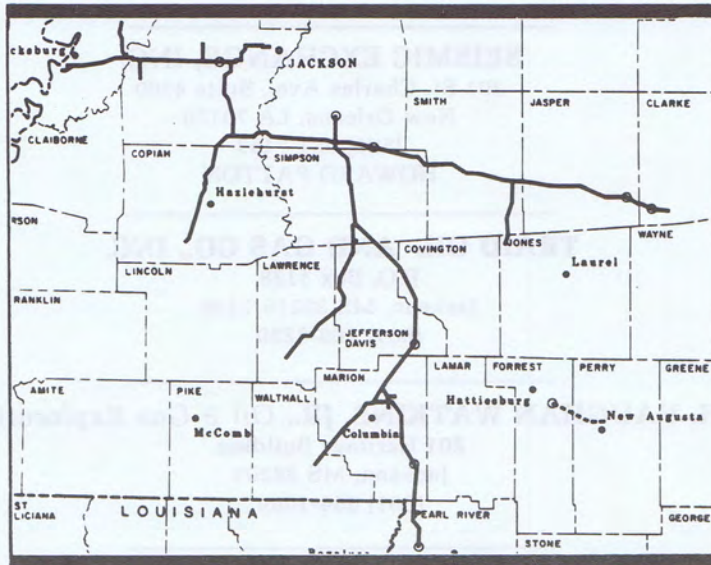
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Volume XXXV

No. 8

April 1988



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COVER:

Standard Front Pumping Unit.
This unit was installed on Mobile H.P. Hale #10, East Texas Field, during 1937. It was in use until 1978, and was originally in use in Oklahoma, circa 1920.
Photo: Mitch Srack. Cities Service Oil & Gas



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PRESIDENT'S MESSAGE

Senate Bill 2686 which would have provided that all well logs be filed with the Bureau of Geology in addition to what the Oil and Gas Board requires died in committee. At the Senate sub-committee hearing concerning the bill Oil and Gas Board member Bill Watson and Supervisor Richard Henderson opposed the bill. They did agree, however, to reconsider a petition by the Geological Society to require that additional data be filed with the Board. Consequently the Well Data Committee has drafted a preliminary petition to be presented to the Board.

The Committee consists of myself as Chairman, Kipp Fern - Coastal Oil and Gas, Kirk Sparkman - Cities Service, Andy Cutler - Exxon, George Vockroth - Vantage Oil and Julian Cooley - Bureau of Geology. Ed Brunini, Jr. has graciously agreed to represent the Society as its legal council on this matter.

A first draft of the petition is printed elsewhere in the Bulletin. It is currently being reviewed by Mr. Brunini. Please read it and let us know if you have any suggested changes or objections. When it is in its final form, we plan to submit it to all principal operators in Mississippi and ask for their support.

Arkansas has passed a law requiring registration of Professional Geologists. If you work in that state, you will be required to have a Certificate of Registration. The State's news release concerning this matter is carried elsewhere in this bulletin.

The Society's Spring Fling has been set for Friday, May 27th. This is a little later than usual but that is the only date we could reserve Fowlers Lodge.

Harry Spooner

Seismic Prediction of Porosity and Hydrocarbon Traps in Carbonate Rocks

M. RAY THOMASSON
Pendleton Exploration - Denver Colorado

Seismic stratigraphy has been used in many areas to identify stratigraphic carbonate traps such as shelf margins, pinnacle reefs, mounds, and updip porosity pinch-outs. Many large oil fields are the result of oil entrapment in these types of stratigraphic traps. Examples include fields from the Gulf Coast, Permian basin, Mid-Continent, and Rocky Mountain provinces in the United States, as well as fields in the Middle East, Canada, North Sea, and the Far East.

Where the trap shows geomorphological relief, evidence such as draping, pull-ups, dim spots, data dispersion, and other criteria can be used. Stratigraphic carbonate traps can be localized with some precision using these criteria. However, the specific definition and measurement of porosity in carbonate rocks are much more difficult. With very careful integration of geologic (rock data from cores and petrophysical data from logs) and geophysical (high resolution seismic) data, it is possible to estimate both the thickness and, in a qualitative way, the amount of porosity in a potential carbonate reservoir.

During the Carboniferous in the Mid-Continent, a sequence of depositional and diagenetic events created irregular pods of porosity in otherwise tight limestones. The areal extent, thickness, and quality of this porosity are the primary factors that determine the location, geometry, and productivity of major oil fields in the area. A twenty-million-barrel oil field has been studied in detail, and the initial production rates and overall production richness correspond closely to measurable seismic phenomena. A seismic line shot through the producing interval at a depth of 4,000 ft., using 30-fold, broad band (20-120 hertz) data has allowed the recovery of frequencies over 100 hertz. These data confirm (1) the presence of porosity and (2) field limits that correspond to the field limits known from subsurface information.

The Geoquest System work station was used to model (1) the key porous interval as known from core and petrophysical data in the analog field and (2) evaluate similar phenomena in the surrounding play area and measure both porosity thickness and quality in prospective stratigraphic traps. Two specific trap types occur regionally. The first type evidences porosity that developed locally and has an acoustically recognizable event over it (and between it and an overlying shale). The second type shows evidence of local porosity extending vertically to the shale seal. In both types, the lateral limits can be mapped seismically. The trap types have very different characteristics; both trap types and variations of them can be modeled successfully.

The trap types discussed are very subtle and have historically been discovered only by operators drilling for structure or by random drilling. Many areas within the onshore United States are underexplored for these subtle type traps. With the availability of very high frequency/high resolution data these type plays can now be made.



Mississippi Geological Society

NOON MEETING

Wednesday, April 20, 1988

Smackover Room, Petroleum Club

NOTE DATE CHANGE

SPEAKER

Ray Thomasson*

TOPIC

**Seismic Prediction of Porosity and
Hydrocarbon Traps in Carbonate Rocks**

*Please notify T. C. Rader (969-3286) of your
attendance so adequate seating can be arranged.*

* Pendleton Exploration
Denver, Colorado



**MISSISSIPPI GEOLOGICAL SOCIETY
WELL DATA COMMITTEE
PROPOSED AMENDED
MISSISSIPPI OIL AND GAS BOARD RULE 24**

First Draft 3/18/88

(a) At least one electric log shall be run in each well and two copies shall be filed with the Board within thirty (30) days after the well reaches TD and the drilling rig is released. This will include an electrical correlation log consisting of the spontaneous potential or gamma ray and induction resistivity surveys, or equivalent, and covering that portion of the wellbore from total depth to the base of the surface casing, specifically displayed on either a one inch per one hundred foot scale or a two inch per one hundred foot scale. Two copies of all additional open hole logs, including but not limited to electrical, mechanical, dipmeter, mudlog and radioactive logs, run in the well, except those specifically generated from wellbore geophone surveys, shall be filed with the Board within said thirty (30) day period, provided, however, that logs obtained on stratigraphic tests shall be filed with the Board within six (6) months. The Supervisor of the Board may, for good cause and at the sole discretion of the Supervisor, waive the requirement that one electric log be run from total depth to the base of the surface casing. Moreover, a log is not required if safety or well conditions are such that a prudent operator would not run such a log.

(b) Two copies of all conventional core descriptions and analyses, and all sidewall core descriptions and analyses, shall be filed within thirty (30) days after the well reaches total depth and the drilling rig is released.

(c) Two copies of all open-hole drillstem or wireline chambered formation test reports, including all pressure data obtained therein,

and documentation of all fluids produced, shall also be filed with the Board within thirty (30) days after the well reaches total depth and the drilling rig is released.

(d) Two copies of all cased hole logs, including but not limited to cement bond and radioactive logs, shall be filed with Form 3 within 30 days after the completion of the well.

(e) Two copies of a daily report of pertinent drilling, completion and workover information shall be filed with Form 3 within 30 days after completion or recompletion of the well. Such report shall include but not be limited to: Drilling contractor, spud date, ground level, derrick floor, and kelly bushing elevations surveyed by a licensed land surveyor or registered professional engineer; total depth, kick-off point depths and directions of any sidetracks; bottom-hole location; casing and liner record; cement record; squeeze cement record; perforation record; tubing record; the depth and type of any plugs or packers set; well stimulation and treatment record; drill stem test record; and a record of all wireline logging, sampling, and coring operations for said well.

(f) If requested by the person filing, the data filed in accord with subsection (a), (b), (c), (d) and (e) above shall be kept confidential for a period of six (6) months from the date on which it is filed. If subsequently requested by the person filing said data, the Board shall extend the period of confidentiality an additional six (6) months, for a total period of confidentiality not to exceed one (1) year from the date of filing. The Board may after notice and hearing, grant an extension of the confidentiality for a total period of confidentiality not to exceed two (2) years from the date of filing.

(g) At the expiration of time in which any log or logs shall be held as confidential by the Board as provided under subsection (f) above, said log or logs shall be placed in the open files of the Board and any party or firm shall have the right to examine and/or reproduce copies of said log or logs by photography or other means not injurious to said

records, subject to the provision that before any person or firm shall remove any log or logs from the Board's office for purposes of photographing or reproducing the same, he or it shall first obtain written approval from the Supervisor and shall comply with the terms and conditions as may be established by the Board, including the giving of surety bond in such amount or amounts as may be fixed by the Board.

(i) When released from confidential status, the Board shall deliver one copy of each log to the Mississippi Bureau of Geology.

HERMAN FRASCH (1851-1914)

Not many in his day knew more about the chemistry of the complex mixture of hydrocarbons and did more with his knowledge than Herman Frasch.

It was Frasch who perfected a desulphurization process for crude oil which made Ohio and Indiana oil profitable for the first time. Later untold reserves of sour crude were made useable by this process.

When he was only 24 years old Frasch invented a recovery process for tin scrap and soon afterwards a method for the manufacture of white lead from galena.

Frasch was the man who first suggested that worn-out oil wells might be treated with hydrochloric acid to enlarge pores and develop connecting channels by dissolving parts of limestone formations.

By far, Frasch's greatest invention was the process for melting underground sulphur with superheated water and pumping it out under pressure. It was upon the basis of this invention that he founded and headed the Union Sulphur Company. Today more than 80 per cent of the world's sulphur, which would have otherwise been unrecoverable, is produced by the Frasch method. He is the founder, therefore, of the rich American sulphur industry.

Due largely to his desulphurization patents, Frasch sold out to Standard Oil Company and became its first director of research. He made hundreds of contributions in all fields of petroleum research, including the perfection of an improved and important process for refining paraffin. Other Frasch processes in refining, production, and drilling helped accelerate progress of the industry.

Herman Frasch was born in Gaildorf, Wurtemberg, Germany, the son of the burgomaster. He migrated to the U. S. in 1870 when he was 19 years old. He was a stubby little German chemist with a Van Dyke beard, beribboned eyeglasses, and a thick German accent. He was a sound chemist, a resourceful engineer, a shrewd businessman, and a master salesman. He was calculating, venturesome, creative, and farsighted.

Wirt Franklin, a native of Richmond, Mo., was one of the founders and the first president of the Independent Petroleum Association of America.

The son and grandson of lawyers, Franklin prepared for the law in high school, attended two years of law classes at Columbian (now George Washington) University, and became an expert at shorthand and typing.

He went to Oklahoma in 1902 to become a stenographer for the Commission to the Five Civilized Tribes (The Dawes Commission) and soon became a recognized expert on the Choctaw-Chickasaw tribes. He was admitted to the bar in 1907.

In 1913 he acquired a farm 20 miles west of Ardmore upon which he found a spring pole hole that had been drilled to 400 feet and abandoned in 1888 when the driller learned he was on Indian land. The hole was oozing black oil. With others, he formed the group that brought in the Healdton field. In 1928 he and J. I. Cromwell drilled the first well in the Oklahoma City field.

In 1914 he was appointed an oil field umpire for the Oklahoma Corporation Commission. That same year he and others brought in deep production in the Fox field with a freak 16,000-barrel per day well.

As early as 1914, Franklin was instrumental in the organization of the Ardmore Independent Producers Association, and in 1929 he was president of the Oklahoma City Producers Association.

It was also in 1929 that Franklin helped organize the IPAA in Colorado Springs to combat federal policies toward the importation of oil. He was its first president. In 1930 he called the first mass meeting of the nation's independent oilmen; 1500 delegates attended. This led to an "oil march" on Washington by train, which in 1932 resulted in the first tax on imported oil. He was IPAA president for six consecutive terms.

The year 1959 was proclaimed by IPAA as "Wirt Franklin Year." In 1961 he was presented the first "Outstanding Oklahoma Oil Man" award to be presented by the Oklahoma Petroleum Council.



**STATE OF ARKANSAS
BOARD OF REGISTRATION FOR PROFESSIONAL GEOLOGISTS**

c/o Arkansas Geological Commission
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For immediate release

NEWS RELEASE

The Arkansas State Board of Registration for Professional Geologists has announced that any geologist working within the State, in the public sector, after July 1, 1988, is subject to the "Registration of Geologists Act of 1987." Those applicable geologists shall be required to have a Certificate of Registration or a Temporary Certificate indicating registration application.

The "Grandfather Clause" for registration without examination is effective until May 1989. Geologists with necessary qualifications who wish to apply for registration without taking a written examination should write to the Board for application forms not later than May 1, 1989.

Requests for forms and information should be made to:

Secretary
Arkansas State Board of Registration
for Professional Geologists
Vardelle Parham Geology Center
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"Theo" Barnsdall was born in Titusville, owned his first oil well at 16, discovered the great Bradford field, and founded the Barnsdall Oil Company. He was the first of an impressive list of remarkable second generation petroleum pioneers.

Barnsdall, son of the illustrious William Barnsdall, who drilled the second commercial oil well in the United States and built the first refinery to use crude oil, made his Bradford discovery when he was only 21 years old.

Before he was 40 he had made discoveries in New York, Ohio, West Virginia, Indiana, Texas, Kansas, and California, and was exploring in Oklahoma where he owned a top lease on the entire 640,000 acres of the Osage nation, covering a thousand square miles.

He formed more than 100 corporations, brought natural gas to a dozen states, including Oklahoma, Texas, and Louisiana. He once owed the Standard Oil Company more than \$11 million without creating a single worry in the great company about his ability to finally discharge his obligation.

He was a giant of a man, standing six feet and four inches in height and weighing some 250 pounds. A magnificent man of tremendous compassion, he never turned down a man in need or trouble and financed an army of young men with ability and ideas, many of whom became leaders in petroleum and other industries.

Barnsdall lost all of his Osage nation leases except 18,759 acres pursuant to a 1915 tribal resolution and what Barnsdall described as Washington politics. This incident probably prevented him from becoming bigger than any company in existence.

In 1905 he and G. T. Braden formed the Osage and Oklahoma Company, the first time the name "Oklahoma" was ever used in connection with an oil company. Barnsdall's operations, both private and corporate, covered the nation. When he died, a nation of oilmen mourned the loss of one of their greatest friends and leaders. Only a year earlier he had started a \$150 million project at the age of 65.

In 1950 the old Barnsdall Oil Company holdings were merged into the Sunray Oil Company, later to become Sunray DX Oil Company.

Retirement Notice

After more than 30 years of service, Professor Wendell B. Johnson, of the Department of Geology at Millsaps College has decided to "hang it up," effective May 1, 1988.

Professor Johnson received his B.S. and M.S. degrees from Kansas State University in 1948 and 1949 respectively. Before coming to Millsaps he worked as a geologist for the Kansas State Highway Department and as a geology instructor at the Missouri School of Mines. In 1954 he and his wife Martha and their new baby girl Janice, moved to Mississippi where he worked part-time for the Mississippi Highway Department and Millsaps College Department of Geology concurrently. From 1957 to the present time Professor Johnson has been a permanent, full-time fixture at Millsaps College. When Dr. Priddy retired in 1977, Professor Johnson assumed the helm of leadership as Chairman of the Department of Geology.

Professor Johnson has been an active member in at least twelve professional societies including the Mississippi Geological Society, the Mississippi Gem and Mineral Society, the Mississippi Academy of Sciences, G.S.A. S.E.P.M., Sigma Xi and others. During his tenure at Millsaps he personally directed more than 250 graduates in the Department of Geology, and has contributed numerous scientific articles. But above all else, Professor Wendell B. Johnson will be remembered as a caring teacher who always had the best interests of the students at heart.

During his retirement years he expects to travel, dabble in his rock, mineral and gem business, and just relax a lot! Thank you for your service, Mr. Johnson, and have a great retirement; we will miss you.

NOON LUNCH SCHEDULE

1987	1988
September 8	January 12
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November 5	March 8
December 8	April 20

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PUBLICATION LIST

SPECIAL VOLUMES

1. Mississippi Geological Society Photo Directory, 1981 \$ 2.00
2. Wilcox Fields of Southwest Mississippi, Maps and production data on 171 fields, in ring binder, 350 pp., 1969 28.00
Mesozoic-Paleozoic Producing Ares of Mississippi and Alabama.
3. Volume I. Maps and producing data on 57 fields, with 2 composite logs, clothbound, 139 pp., 1957 10.00
4. Volume II. Maps and producing data on 77 fields, includes Supplement 1, in ring binder, 143 pp., 1963 15.00
5. Supplements 2 through 7 for Volume II, Maps and producing data on 35 fields, 110 pp. 15.00
6. Supplement 8 for Volume II, Maps and producing data on 34 fields, 108 pp., 1980 25.00
7. Volume II, complete with Supplements 2-8, 361 pp., 146 fields 50.00
- ★ 8. Volume III, 85 pp., 46 fields, 1987 50.00

FIELD TRIP GUIDEBOOKS

9. Upper Cretaceous Outcrops, Northeast Mississippi and West Central Alabama, Fourteenth Field Trip, 29 pp., May, 1959 4.00
10. Cenozoic of Southeast Mississippi and Southwest Alabama, Fifteenth Field Trip, 52 pp., May, 1960 6.00
11. Cenozoic of Horn Island and the Pascagoula Valley, 10th Annual GCAGS Meeting, 24 pp., October, 1960 2.50
12. The Paleozoics of Northwest Arkansas, Sixteenth Field Trip, 48 pp., May, 1962 5.00
13. Tertiary Type Localities of East-Central Mississippi, 25th GCAGS Meeting, 133 pp., October, 1975 5.00
14. Mississippi Rocks of the Black Warrior Basin, Seventeenth Field Trip, 79 pp., April, 1978 8.00
15. Tertiary and Upper Cretaceous Depositional Environments, Central Mississippi and West Central Alabama, 33rd Annual GCAGS Meeting, 40 pp., October, 1983 7.50

COMPOSITE LOGS AND CROSS-SECTIONS

16. Composite Mesozoic Log of South Mississippi and South Alabama 2.00
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The Four Corners Geological Society is pleased to announce that "GEOLOGY OF CATARACT CANYON AND VICINITY", a guidebook for the Tenth Field Conference, 1987, is now available. New information on stratigraphy, sedimentology, structure, surficial geology, groundwater, oil and gas fields as well as new papers on the history of the Canyonlands area of southeast Utah are included. Price is \$35 which includes postage and handling.

1987	"GEOLOGY OF CATARACT CANYON AND VICINITY," Tenth Field Conference, 199 p. (hardbound)	\$35.00
1984	"FIELD TRIP GUIDEBOOK," Thirty-seventh Annual Meeting, Rocky Mountain Section GSA, 209 p. (softbound)	\$15.00
1983	"OIL AND GAS FIELDS OF THE FOUR CORNERS AREA," VOLUME III, Field papers include geologic setting, discovery well, drilling and completion practices and reservoir data along with a structure map and a typical wireline well log. Designed to complement Volumes I and II, 95 field papers, 415 p. (ring binder, looseleaf)	\$55.00
1979	"PERMIANLAND," Ninth Field Conference, 186 p. (hardbound)	\$25.00
1978	"OIL AND GAS FIELDS OF THE FOUR CORNERS AREA," VOLUME I and II 242 field papers, 726 p. (ring binders, looseleaf)	\$85.00
1976	"GEOLOGIC MAP OF THE GRAND CANYON," (in color), 42" x 58", folded, Copyright, 1976	\$8.00
1975	"CANYONLANDS COUNTRY," Eighth Field Conference, 288 p. (hardbound)	\$25.00
1974	"GEOLOGY OF THE CANYONS OF THE SAN JUAN RIVER," 94 p. (softbound)	\$5.00
1973	"CRETACEOUS AND TERTIARY ROCKS OF THE SOUTHERN COLORADO PLATEAU," 281 p. (available in microfiche ONLY)	\$10.00
1971	"GEOLOGY OF CANYONLANDS AND CATARACT CANYON," Sixth Field Conference, 89 p. (softbound)	\$6.00
1969	"GEOLOGY AND NATURAL HISTORY OF THE GRAND CANYON REGION," Fifth Field Conference, Powell Centennial River Expedition, 212 p. (available in microfiche ONLY)	\$5.00
1963	"SHELF CARBONATES OF THE PARADOX BASIN," 273 p. (available in microfiche ONLY)	\$5.00

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Costs for the Program, including tuition, room and board, but excluding transportation to and from Colorado Springs, will be \$804 for Louisiana residents and \$1,554 for non-residents. Scholarships are available on a competitive basis, including several specifically for black students. The full scholarships will include all costs and roundtrip transportation to and from Colorado Springs; some partial scholarships will also be available. Apply directly to the LSU Department of Geology Precollege Field Camp Program. Please include a statement of your interest in science, and geology in particular; the name and address of a high school teacher that would act as a reference to your qualifications. We would also like to see copies of your high school grades and the results of your ACT scores. LSU is an equal opportunity university and encourages applications from all minority groups.

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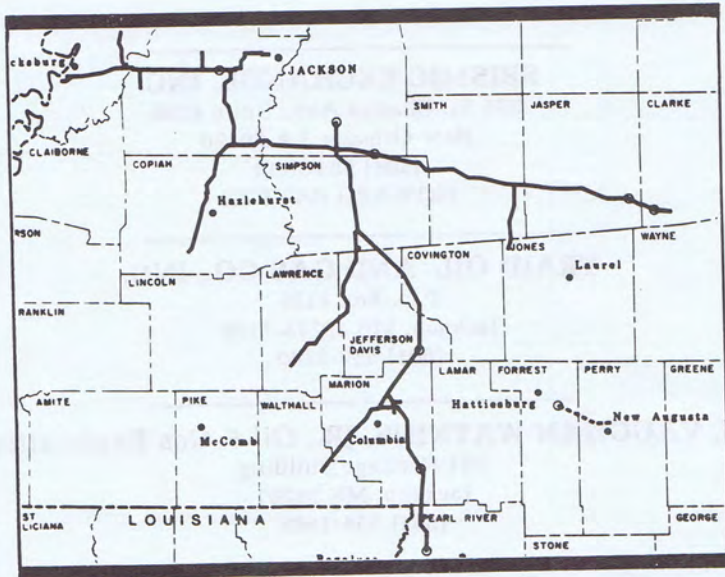
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MISSISSIPPI GEOLOGICAL SOCIETY

Volume XXXV

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May 1988



1987-1988

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COVER:

A road cut west of Linares Mexico exposes Gulf Coast equivalent Eagle Mills (Huizachal Group) red beds (right) overlain by Louann equivalent evaporites on the west (left). The beds are exposed due to extensive Laramide folding forming the Sierra Madre Oriental, which partially masks the underlying basement blocks formed during the beginning of the Triassic circum-gulf rift sequence. AAPG National Convention Field Trip: Upper Jurassic and Lower Cretaceous Carbonate Platform and Basin Systems.

Photo: Billy Moore, OXY USA, Inc. - Houston



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PRESIDENT'S MESSAGE

The Future of Exploration in Mississippi

When I gaze in my Geological Crystal Ball, I see some trillion cubic foot gas fields for Mississippi. Try as I might, I just cannot visualize big oil.

In clear focus several gas giants dot the Wiggins: Reservoir Rocks - James Carbonates - Reefs and associated detrital dolomites with a few Poplarville type Hosston sands scattered about.

A little dimmer but still clearly visible, some super giant Smackover and Norphlet strat traps appear. These lie on the Wiggins south flank. I can't quite tell whether these traps contain hydrocarbons or mostly CO₂ and H₂S from excessive heat. Only the drill will tell.

Lord, could that possibly be a Hassi R'mel twin lying beneath Mississippi delta cotton fields instead of the Algerian Desert? (For those of you that do not spend as much time as I do drooling over world giant field books, Hassi R'mel is a seventy trillion cubic foot gas field in Algeria. It produces from thick sandstone reservoirs beneath a Triassic salt bed over an eroded basement uplift.) In my crystal ball vision a Triassic dune field underlies Werner Anhydrite and pinches out around an old basement high. It is crammed full of gas; maybe thirty, maybe fifty TCF. And there is Belzoni which has become the U.S. gas captiol and catfish are long forgotten.

Then I gaze in my Gas Market Crystal Ball and the fog just will not clear. Of course, the view here is the key to when those geologic visions might become reality. I ask the ball these questions, but no answers appear: Will Canada drown us in cheap gas? If free trade is good for the Country (and I believe it is), why shouldn't it apply to all industries, not just ours? Are U.S. gas reserves declining as fast as I think they are with only 8,500 gas wells being drilled each year? Or are the reserve revisions that the Department of Energy and American Gas Association posted for 1986 real and not just smokescreens to reassure industrial users? Reserve revisions are based on revised reserve estimates of old fields not new reserves found by drilling. In 1986, DOE and AGA added 6.5 TCF to the lower 48 total reserves from reserve revisions and adjustments but estimated that only 9.2 TCF were found.

Still further questions come to mind. For most of it's life, the U.S. gas industry was heavily regulated. Gas takes were based on reserves and were very low by today's standards. Reserves were very high relative to production. Today's takes are based on deliverability and we speak of the bubble between demand and deliverability. What happens when the bubble is gone? Don't we need some cushion? Will we not be able to supply industrial users and lose that market forever or will it all come from Canada?

The questions keep coming but the ball remains forever cloudy. We speak of geology as an inexact science but it doesn't compare to economics.

HARRY SPOONER

GCAGS FINANCIAL AID TO STUDENTS PROGRAM

FINANCIAL AID PROGRAM:

The Gulf Coast Association of Geological Societies is sponsoring a program of financial aid for students pursuing research in the geosciences (geology, geochemistry, geophysics, geohydrology, etc). This program is designed to encourage research in aspects of the geosciences related to energy and minerals in the Gulf Coast region and to provide financial aid to worthy students. Students doing studies that have some relevance to the energy/minerals industries are eligible to apply for support of up to \$1,000.00 per project. Research projects that qualify for consideration include graduate-level thesis or dissertation projects for the Master's or Doctorate degrees or special studies involving individual supervision at the undergraduate level (such as a Bachelor's honors project). Applicants are expected to complete the projects within one year of the date when proposals are funded. Applicants must be enrolled in a program leading to a degree in the geosciences at a college or university within the region of the Gulf Coast Section of the AAPG (GCAGS).

PROCEDURE FOR APPLICANTS:

A proposal outlining the research project, confined to two typewritten pages and accompanied by an estimated budget of the expenses for which financial aid is requested, must be prepared by the applicant. Requests for support should not exceed \$1,000.00 although the itemized budget for the project may indicate a greater expenditure. Each proposal should include a statement of how the research project relates to an aspect of the energy/mineral industries. Also required is a letter of endorsement from the project supervisor. This letter should provide documentation of the qualifications of the student requesting project support as well as a realistic timetable including the estimated date of project completion.

OBLIGATION OF THE STUDENT AND SUPERVISOR:

The students receiving support are urged to submit their results to the GCAGS in, manuscript form for review and presentation at the Annual Convention and for consideration for publication in the GCAGS Transactions. The manuscript of project results should be sent to the Program Chairman for review and consideration at the next Annual Convention (as defined by the deadlines for each Convention) following the project completion. These manuscripts will follow the same review procedures as other papers processed for the technical sessions. Submission does not obligate the GCAGS to accept the manuscript, either for oral presentation at the Annual Convention or for publication in the GCAGS Transactions.

PROCEDURES FOR REVIEW OF PROJECTS PROPOSALS:

Proposals are to be submitted to the Chairman of the Financial-Aid-to-Students Committee of GCAGS. New proposals will be reviewed once a year, with a deadline of March 21, 1989 for receipt of proposals. A Committee appointed by the President will review the proposals. Applicants will be informed of the Committee decisions the month following the deadline date for application reviews. Decisions will be based on the quality of the proposal, qualifications of the applicant, and funds available to GCAGS for this program. Partial funding of proposals will be considered by the Committee when available funds require this consideration.

Address all inquiries and project proposals to: Mr. R. W. Boebel
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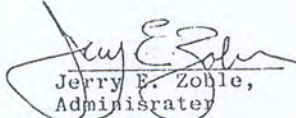
Due to recent changes in Mississippi State Law, a vote to ratify the required changes to the Bylaws of the L.F. Boland Memorial Scholarship will be held at the Spring Fling. Election of a Secretary-Treasurer will also be held.

April 21, 1988

MINUTES OF ANNUAL BOARD OF DIRECTORS MEETING

The Board of Directors of the L.F. Boland Memorial Scholarship Fund, Inc., 234 East Capitol St., Jackson, MS 39201, was held at the Capital City Petroleum Club, Capitol Towers Building, Jackson, MS on the 10th of December, A.D., 1987, at 11:45 a.m. pursuant to the order of the Chairman.

- 1) The meeting was called to order by the Chair.
- 2) A quorum being present, namely; Kipp Ferns, Stanley King, Steve Walkinshaw, and Jerry Zoble. King, the Chairman declared the meeting was ready to proceed with business.
- 3) Zoble explained the implication of the new Mississippi law governing non-profit corporations and proposed that the Executive Committee be henceforth known as the Board of Directors and that the President and Secretary-Treasurer be elected annually by the membership of the Mississippi Geological Society, who by charter are also members of the Boland Memorial Scholarship Fund, Inc. Motion was made by Walkinshaw and carried unanimously to accept the proposal.
- 4) The Board proposed and accepted the motion to recommend to the President of the Mississippi Geological Society that the bylaws be changed to reflect that the First Vice President of the Society would also be concurrently elected to the post of President of the Boland Memorial Scholarship Fund, Inc.
- 5) The Secretary-Treasurer would also be elected at the annual meeting of the Society and would be empowered to conduct all business of the Fund including but not limited to investing and accounting for the funds held in the Fund.


Jerry E. Zoble,
Administrative

DR. ISRAEL CHARLES WHITE (1848-1927)

Dr. Israel C. White has, with good reason, been called the father of petroleum geology. In 1888 he directed the drilling of the first well ever located entirely by the principles of geology, using the structural or anticlinal theory to spot the location.

While Dr. White has been called the father of the anticlinal theory, he did not exactly deserve that accolade. H. D. Rogers enunciated the theory in 1860 at about the time Hunt and Logan first published it, and Hoefer is said to have made the first scientific observation on the subject.

Dr. White, however, is regarded as the first geologist to bring the theory into prominence and apply it in a practical way. He did this after John Galey had suggested testing Rogers' theory to George Westinghouse. Westinghouse passed the suggestion on to Dr. White, who then outlined the Taylorsville Pool for Guffey and Galey. Later Capt. Vandergrift of Forest Oil Company drilled the first well there.

To prove the anticlinal theory, Dr. White decided to undertake oil development on his own. He retired from his scientific career temporarily, formed T. M. Jackson & Co. with others, and drilled near Mannington. The well, based on geology and the anticlinal theory, opened the first significant production in West Virginia. After proving his point and providing geology with status in the oil industry, Dr. White returned to his scientific pursuits.

A native of Monongalia County, West Va., Dr. White received his M.A. from West Virginia University in 1872. He was with the Second Geological Survey of Pennsylvania in 1875. He completed a postgraduate course in geology at Columbia in 1875-76 and in 1877 became professor of geology at West Virginia University, while continuing his work with the Pennsylvania survey under Lesley until 1884.

In 1885 Dr. White published "The Geology of Natural Gas," in which the claims and exceptions to the anticlinal theory were set forth.

"Anticlinal Theory" was published by Dr. White in the Bulletin of the Geological Society of America in April, 1892, giving geology and the theory lasting respect in the petroleum industry.

(From AAPG EXPLORER)

Florida Registration Forms Will Be Available in Mid-May

Applications for registering to be eligible to practice as a geologist in Florida will be available in mid-May, according to AAPG member George Freeland, member of the Florida Board of Professional Geologists.

Under the grandfather clause of the bill, passed last October, geologists applying for registration prior to October 1, 1988, can be licensed without testing, providing the individual can meet the requirements set by the board.

While the requirements vary according to the amount of higher education completed and the circumstances of previous work, generally the requirements include a degree with a major in geology (or other earth science majors the board deems appropriate), five to seven years of experience and payment of fees.

License fees are still to be officially set, but the proposed fee schedule is a \$100 application fee and a \$50 initial license fee with a subsequent \$100 biennial certificate renewal fee. After October 1, an exam will be required along with an additional \$150 testing fee.

The bill also includes provisions for a Certificate of Authorization to be issued under certain circumstances to firms, corporations and partnerships.

Freeland said the Florida law allows for the recognition of geologists licensed by other states with similar requirements upon payment of fees.

For further information, or to receive the application form upon availability, contact the Department of Professional Regulation, 130 N. Monroe St., Tallahassee, Fla. 32399-0750.



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NEWS RELEASE

The Arkansas State Board of Registration for Professional Geologists has announced that any geologist working within the State, in the public sector, after July 1, 1988, is subject to the "Registration of Geologists Act of 1987." Those applicable geologists shall be required to have a Certificate of Registration or a Temporary Certificate indicating registration application.

The "Grandfather Clause" for registration without examination is effective until May 1989. Geologists with necessary qualifications who wish to apply for registration without taking a written examination should write to the Board for application forms not later than May 1, 1989.

Requests for forms and information should be made to:

Secretary
Arkansas State Board of Registration
for Professional Geologists
Vardelle Parham Geology Center
3815 West Roosevelt Road
Little Rock, AR 72204

No name in petroleum history stands out more vividly than that of "Colonel" Edwin Laurentine Drake, who, by extraordinary circumstances, became the first man to drill a well for the express purpose of finding oil.

A man of limited education, Drake was a native of Green County, New York. He was born a farmer, but he later became a hotel clerk, a dry goods clerk, and an express agent for the Boston and Albany Railroad. In 1849 he became a conductor for the New York and New Haven Railroad; he was on sick leave from this position and staying at the Tontine Hotel in New Haven when Fate tapped him on the shoulder.

In 1857 James M. Townsend, a banker who frequented the Tontine, asked Drake to join the Seneca Oil Company. The fact that he was on sick leave salary and held a railroad pass enabled Drake to go to Titusville to survey the situation. Townsend conferred upon the 38-year-old Drake the title of "Colonel" simply by using it in a letter he addressed to Drake at Titusville.

The Drake well was all Drake. No other stockholder of Seneca Oil Company, including Townsend, ever set foot in Titusville during the drilling.

Drake was an affable, kind man who never smoked, drank, swore, or caroused. A man of pronounced individuality, he went to Titusville determined to find oil. He selected the drill site, made all financial arrangements, "pushed tools," built the first oil rig, designed and laid out the first derrick (Drake's yoke), and built the first engine house. It was his decision alone to drill through rock using steam for power.

When the famous Drake well came in on August 27, 1859, it changed the world. But Drake, the man who had more to do with founding the modern oil industry than any other, died penniless except for a small Pennsylvania pension. He was virtually forgotten until H. Rogers of Standard Oil Company erected a magnificent monument over his grave in Titusville.

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1. Mississippi Geological Society Photo Directory, 1981 \$ 2.00
2. Wilcox Fields of Southwest Mississippi, Maps and production data on 171 fields, in ring binder, 350 pp., 1969 28.00
3. Mesozoic-Paleozoic Producing Ares of Mississippi and Alabama. Volume I. Maps and producing data on 57 fields, with 2 composite logs, clothbound, 139 pp., 1957 10.00
4. Volume II. Maps and producing data on 77 fields, includes Supplement 1, in ring binder, 143 pp., 1963 15.00
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11. Cenozoic of Horn Island and the Pascagoula Valley, 10th Annual GCAGS Meeting, 24 pp., October, 1960 2.50
12. The Paleozoics of Northwest Arkansas, Sixteenth Field Trip, 48 pp., May, 1962 5.00
13. Tertiary Type Localities of East-Central Mississippi, 25th GCAGS Meeting, 133 pp., October, 1975 5.00
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The Four Corners Geological Society is pleased to announce that "GEOLOGY OF CATARACT CANYON AND VICINITY", a guidebook for the Tenth Field Conference, 1987, is now available. New information on stratigraphy, sedimentology, structure, surficial geology, groundwater, oil and gas fields as well as new papers on the history of the Canyonlands area of southeast Utah are included. Price is \$35 which includes postage and handling.

1987	"GEOLOGY OF CATARACT CANYON AND VICINITY," Tenth Field Conference, 199 p. (hardbound)	\$35.00
1984	"FIELD TRIP GUIDEBOOK," Thirty-seventh Annual Meeting, Rocky Mountain Section GSA, 209 p. (softbound)	\$15.00
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1974	"GEOLOGY OF THE CANYONS OF THE SAN JUAN RIVER," 94 p. (softbound)	\$5.00
1973	"CRETACEOUS AND TERTIARY ROCKS OF THE SOUTHERN COLORADO PLATEAU," 281 p. (available in microfiche ONLY)	\$10.00
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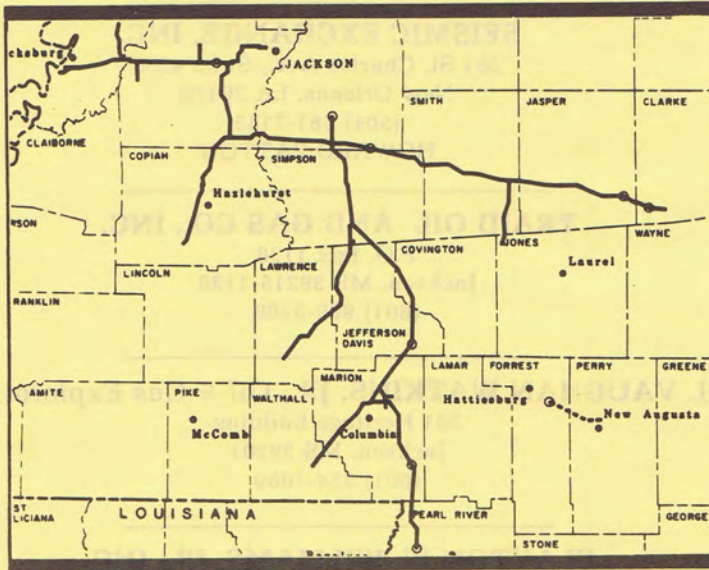
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