SEPTEMBER CALENDAR

September 14, 1981 (Dinner Meeting)
Galleria Plaza Hotel (3060 West Alabama)
Jeff Dravis
Exxon Production Research Company
"Depositional Setting and Porosity Evolution of the Upper Cretaceous Austin Chalk Formation South - Central Texas"
Social Period - 2:30 PM, Dinner and Meeting - 6:30 PM
Reservations (telephone only, 771-8315) must be made or cancelled by noon Friday, September 7, 1981.

September 19, 1981 (Luncheon Meeting)
Holiday Inn Medical Center (6701 South Main Street)
Robert A. Morton
Bureau of Economic Geology, Austin, Texas
"Methane Entrained in Gulf Coast Geopressured Aquifers"
Social Period - 11:30 AM, Luncheon and Meeting - 12:00 noon
Reservations (telephone only, 771-8315) must be made or cancelled by noon Monday, September 28, 1981.
HOUSTON GEOLOGICAL SOCIETY
6916 Aashcroft
Houston, Texas 77081
771-8315

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The Houston Geological Society

Annual Shrimp Peel

Friday Oct. 2, 1981

at the

Knights of Columbus Hall

607 E. Whitney

THIS WILL BE THE ONLY NOTICE

Time : 5:30 P M
Price : $11.00 (Advance—Per Person)
       $15.00 (At Door—Per Person)

Please make checks payable to
H G S Entertainment Fund
Mail to : W. N. "Mac" McKinney
        P O Box 94193
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Deadline for advance ticket
purchase is Monday Sept. 28
PRESIDENT'S COMMENTS

On behalf of the Executive Board and Committee Chairmen of HGS, I welcome you to the 58th year of the Society. The 1980-81 administration under the able leadership of Chet Baird left the organization in a strong financial position with surpluses in both the operating and academic accounts. The Treasurer's report will be published next month.

Membership increased 12% during Chet's term, and he proposed two new classes of members: emeritus and student, in order to recognize our long-time supporters and encourage young people to join. Other changes included a modest system of dues increases (none contemplated in the immediate future) to enable the Board to keep up with inflation without resorting to the trouble and expense of a vote by the membership. Continuity of the Society's management was improved by eliminating the Past President from the Board and instituting the long overdue office of President-Elect. All these measures were resoundingly approved by the membership, the least vote being 92% in favor. Unfortunately, the percentage of members who were interested enough in the management of the Society to vote for its officers and these important amendments to the by-laws and constitution was a dishearteningly small 38%.

Meeting attendance was slightly higher, but still averaged only about 7% of the membership. In this connection, it is appropriate at the beginning of the administrative year to point out to new members and to remind a great many old ones what happens when you make a reservation and do not honor or cancel it - THE SOCIETY PAYS! In spite of all efforts in the past to get this concept across, there always are a number of egregiously inconsiderate or irresponsible persons who believe that their attendance or lack thereof will be made up somehow, and it is - by inconvenience to their fellow members or from the Society's treasury. Since meal prices are set by the Program Chairman to break even, a large shortfall in attendance can be a disaster, especially in these times of unavoidably high rates, particularly at convenient locations. I urge your cooperation.

Further to the problem of low meeting attendance, actually a substantial percentage decline in view of the massive increase in membership over the past few years, Chet appointed an ad hoc committee to study the geographical distribution of members. This showed by far the largest number (about 50% of the membership at the time) to be in the downtown area. However, this must be discounted substantially, because many companies have downtown post office boxes. I have asked John Hefner, chairman of the Membership Committee, to include a space on the next dues notice, please notify the HGS office. As stated in the Bylaws, members not paid by November 15, will be dropped from the membership roll.

Richard R. McLeod
Treasurer

OOPS, CORRECTION!!!

Please (for the sake of a very nice lady) correct your Directory. The correct phone number for Michael J. Stellas is 688-8400.

SOCIETY CALENDAR FOR OCTOBER

October 12, 1981 HGS Dinner Meeting Location and speaker to be announced.
October 28, 1981 HGS Noon Meeting Location and speaker to be announced.

PRICE SCHEDULE - HGS MEETINGS

Galleria Plaza Hotel
Dinner ............................................. $18.00
Holiday Inn Medical Center
Luncheon ....................................... $10.00

RESERVATIONS (771-8315)
Please make reservations for the Monday evening meeting by the preceding Friday noon and for the Wednesday noon meeting by the preceding Monday noon.
EVENING MEETING—SEPTEMBER 14, 1981
JEFF DRAVIS—Biographical Sketch

Jeff Dravis received his BS in Geology from St. Mary’s University, San Antonio, Texas in 1971 and his MS in Marine Geology from the University of Miami’s Rosenstiel School of Marine and Atmospheric Sciences in 1977. His Master’s thesis delineated Holocene sedimentary facies and diagenetic trends across Eleuthera Bank, a high-energy Bahamian Platform.

In 1976, Jeff entered Rice University to pursue a doctorate in geology. His dissertation concentrated on the sedimentology and diagenesis of the Austin Chalk Formation in south Texas and northern Mexico. In January, 1979, Dr. Dravis began his professional career with Exxon Production Research Company in Houston where he is currently a senior research geologist. His major research interests are Mesozoic and Paleozoic carbonate reservoirs.

DEPOSITIONAL SETTING AND POROSITY EVOLUTION OF THE UPPER CRETACEOUS AUSTIN CHALK FORMATION SOUTH-CENTRAL TEXAS (Abstract)

The Austin Chalk Formation in south-central Texas represents an “impure” depositional chalk deposited within an environmental framework characterized by distinct paleobathymetric variations. Relatively shallow-water, highly fossiliferous chalks containing appreciable quantities of aragonitic material were generated on a platform coincident with the ancestral San Marcos Arch. Deeper-water basinal settings off this platform, areas of more typical chalk deposition, periodically received influxes of adjacent platform sediments. Primary mineralogies resulting from this unique depositional system are, in part, responsible for the diagenetic history and porosity evolution of the Austin Chalk.

Austin Chalk ranges in age from Coniacian to Santonian. Formation thicknesses range from less than 100 feet to 600 feet in outcrop and several hundred feet up to 1000 feet in the subsurface of Texas. The San Marcos Arch is a structural extension off the Llano Uplift in central Texas and served as a paleotopographic high during most of the Cretaceous. Its influence on Austin Chalk deposition is noted by the abrupt thinning of sediments from the ancestral Gulf of Mexico onto the arch and by documented distinct lithological variations across it.

The Austin Chalk Formation is ideal for systematically evaluating chalk diagenesis and porosity evolution because of its unique depositional setting and variations in burial depth across the trend. This study is based both on outcrop and eleven core studies in south Texas as well as outcrop studies in southwest Texas and northern Mexico. This regional approach places the Austin Chalk’s depositional setting into perspective, permitting a more accurate evaluation of its diagenetic history.

Overall, the Austin Chalk is a highly fossiliferous detrital chalk. It is composed of a distinct planktonic microfossil assemblage (chiefly foraminifera and calcispheres) and finer nannofossils (coccoliths) which comprise much of the chalk’s micritic matrix. These stable low magnesium calcite constituents are the principal components of typical chalk sequences. The Austin Chalk also contains a notable coarser benthic fauna dominated by molluscs, echinoderms and foraminifera. Abundant primary aragonitic constituents in the Austin Chalk are atypical for a detrital chalk. Texturally, the Austin Chalk is a skeletal wackestone to packstone; mudstones are rare.

In south-central Texas, Austin Chalk lithologies are highly variable and related to depositional setting. Two broad environmental settings can be recognized: (1) a relatively shallow-water platform (shelf) corresponding to the ancestral San Marcos Arch in the Austin-San Antonio area and (2) a relatively deeper-water, more basin environment away from the shelf toward the ancestral Gulf of Mexico (Figure 1). Transition from shelf to basin is very gradual as indicated by the absence of sharp lateral facies changes and probably represents a carbonate ramp system.

Relatively shallower-water Austin Chalk shelf sediments are light-colored and contain an abundant and diverse macrofaunal assemblage in addition to typical chalk components (planktonic microfossils and nannofossils). Many of these coarser skeletal constituents were originally aragonitic. These deposits also lack rhythmic bedding, a striking contrast to the deeper-water part of the trend in southwest Texas and northern Mexico where monotonous rhythmic bedding is extremely well developed. Large oyster bioherms and calcisponges are quite common in these outcropping deposits and much of the coarser skeletal fraction has been highly biocorrelated. Finally, these sediments are dominated by a distinct shallow-water trace fossil, Thalassinoides.

In contrast to the shelfal sediments, the more basinal deposits exhibit more color variability and generally are darker. Bedding is more rhythmic but poorly developed. These sediments lack the abundant and diverse macrofaunal assemblage present in shelf sediments except at scattered intervals. These intervals are interpreted as allochthonous debris flows or partial turbidite sequences of shallower-water sediment transported off the shelf into more basinal settings. A distinctive deeper-water trace fossil assemblage dominated by Planolites, Chondrites and ring burrows is common in these more basinal chalks.

Consideration of these sedimentary parameters collectively indicates the shelf chalk sediments were deposited above wave base in waters a few tens of meters deep or less. Off the San Marcos Arch, water progressively deepened toward the ancestral Gulf of Mexico. The subsurface, more basinal chalks here were deposited in waters ranging in depths from tens of meters to a hundred meters or less. Periodically, the shallower-water shelf sediments were transported into deeper-water areas of the trend.

Recognition of the depositional setting provides an important framework for evaluating Austin Chalk diagenesis and porosity evolution across the trend in south-central Texas. Further, it helps explain how the initially high porosities (70-80%) of this fine-grained deposit have been reduced to the low values observed today.

Relatively shallow-water Austin Chalk sediments outcropping in the Austin-San Antonio area average 20% porosity and 0.3 millidarcies permeability but have never been deeply buried. Porosity reduction is attributed to early physical
compaction (dewatering) followed by exposure to fresh water and dissolution of abundant aragonitic skeletal grains. Intimately related to this dissolution was a cementation event which occluded primary intraparticle porosity in microfossils, secondary moldic porosity, as well as fine microporosity in the micritic matrix. Cements are non-ferroan calcites. Relatively low bulk iron (average 370ppm) and strontium (average 620ppm) concentrations resulted from this diagenesis and support petrographic evidence for fresh water diagenesis.

Deeper-water, more basinal buried Austin Chalk sediments exhibit porosities ranging from less than a few percent to about 16%. Permeabilities are usually less than 0.05 millidarcies and in many cases, less than 0.01 millidarcies. These values are derived from cores obtained between present-day depths of 1,000-7,500 feet. The oil-productive Austin Chalk averages about 5% porosity. Porosity reduction in the Austin Chalk subsurface trend is attributed to three diagenetic processes: (1) early physical compaction (dewatering); (2) cementation related to the stabilization of aragonitic material (where present) during burial; and (3) pervasive pressure solution and concomitant cementation. There is no evidence of fresh water diagenesis.

Early physical compaction can account for a 20-30% porosity reduction simply by expelling pore fluids. As burial proceeds and ambient temperatures rise, any aragonite in the system can be expected to convert to stable low magnesium calcite, prior to the onset of pressure solution. In most cases, this transformation involves dissolution of aragonitic skeletons, creation of moldic porosity and generation of calcite cement. Because the conversion of aragonite to calcite involves over an 8% volume increase, this diagenetic process can play a significant role in occluding the chalk's porosity, depending, of course, on the abundance of aragonitic material. In some deposits, cementation related to stabilization of aragonite created a lithified sediment framework sufficiently rigid to retard later porosity loss by pressure solution.

The major diagenetic process responsible for porosity reduction in the subsurface Austin Chalk trend is pervasive pressure solution and associated cementation. Well-developed stylolites, extensive interpenetration of grains and numerous wispy microstylolites document the large amount of pressure solution these deposits have been subjected to. The latter structures are the most common expression of pressure solution in the buried Austin Chalk. Wispy microstylolitic seams are not primary clay laminae contorted by compaction but are diagenetic seams along which carbonate material dissolves. These seams are composed of insoluble material, chiefly pyrite and organic matter.

Calcium carbonate released by pressure dissolution is believed to reprecipitate locally as cement. Cements in these buried chalks are predominantly calcites and often are ferroan-rich. They occlude any remaining coarser primary intraparticle or secondary moldic porosity. More importantly, from a reservoir quality standpoint, much of the microporosity in the micritic matrices of these deposits is filled by micron-to submicron-sized overgrowth cements which precipitate on remaining matrix components. Preserved porosity in the buried Austin Chalk is dominantly microporosity. Relatively higher bulk iron (average 900ppm) and strontium (average 1000ppm) concentrations resulted from this burial diagenesis.

With progressive burial diagenesis, the Austin Chalk overall shows a decrease in porosity, an increase in the...
alteration of micritic matrix fabrics and depletion of oxygen-18. As the fine-grained, coccolith-bearing micritic matrix is progressively buried, primary coccoliths are gradually obliterated by pressure solution and microporosity is reduced by micron-sized overgrowth calcite cements. The general trend is for the deeply buried chalks to preserve relatively little (if any) coccolith material in the micritic matrix while retaining only very low microporosities. As a reflection of this diagenetic trend with burial, oxygen-18 is depleted from the system and bulk $\delta^{18}O$ values become progressively lighter with increasing burial. Anomalous porosity and $\delta^{18}O$ values do exist for deposits at similar burial depths, however. This fact implies that processes other than burial depth alone can influence Austin Chalk diagenesis and porosity evolution.

Porosity and geochemical trends support petrographic evidence that the Austin Chalk underwent a greater degree of diagenesis than did European and North Sea Chalks of similar age. Porosity in the buried Austin Chalk was destroyed earlier in its burial history and at shallower depths relative to typical North Sea Chalks (Figure 2). This porosity evolution reflects the Austin Chalk's primary mineralogical composition and the high degree of burial diagenesis it has undergone. Overall, the Austin Chalk exhibits a stable isotopic imprint distinctly different from typical monomineralic (low magnesium calcite) European Chalks but similar to shallow-water marine limestones, possibly confirming the presence of primary aragonite and its role in Austin Chalk diagenesis.

Although the Austin Chalk is capable of producing solely from its preserved (albeit low) matrix porosities, fracturing clearly enhances production. Natural fractures invariably are thin (millimeter or less), and vertical to sub-vertical in orientation. Not all cores studied were fractured nor did fractures occur continuously through a fractured core. Generally, fractures are present as multiple sets with lengths ranging from several centimeters up to a meter. Fractures are late-stage diagenetic events and most are healed by calcite cements. The occurrence of fracturing is difficult to predict but notably, argillaceous chalks did not fracture.

The Austin Chalk of south-central Texas represents a unique fine-grained carbonate play type that sources and seals at least some of the hydrocarbons it now reservoirs.
NOON MEETING—SEPTEMBER 30, 1981

ROBERT A. MORTON—Biographical Sketch

Bob Morton is an Associate Director of the Bureau of Economic Geology where he coordinates studies of geothermal energy and unconventional gas resources in Texas. His previous research at the Bureau involved coastal and marine geology and depositional processes. Prior to joining the Bureau in 1972, he was employed by Chevron Oil Company in New Orleans as a petroleum geologist engaged in evaluation of the offshore Miocene trend of south Louisiana. Bob received his bachelors degree from the University of Chattanooga and his masters and doctoral degrees from West Virginia University. He is a member of numerous professional societies including AAPG, SEPM, GSA, and AIPG.

METHANE ENTRAINMENT IN GULF COAST GEOPRESSURED AQUIFERS (Abstract)

Throughout the Gulf Coast region, substantial quantities of methane are contained within Tertiary sediments that exhibit abnormally high temperature and pressure gradients. The concentration of methane, which occurs as dispersed free gas and as solution gas, is directly related to formation temperature and fluid pressure and inversely related to salinity of formation waters. Multiple tests of geopressed aquifers have yielded between 20 and 55 scf/bbl of gas composed primarily of methane, but containing substantial quantities of CO2.

The thickest sandstone reservoirs were deposited near the shelf margin in deltaic and strandplain environments, whereas surrounding thick shales of prodelta, shelf, and slope origin act as permeability barriers that retard migration of fluids. Successful development of these unconventional energy resources depends primarily on the (1) structural and stratigraphic continuity of sandstone aquifers, (2) porosity, permeability, rock compressibility, and drive that together determine reservoir quality, and (3) fluid properties within the reservoir. These factors determine the ability of aquifers to produce large volumes of hot, high pressure fluids at rapid rates for extensive periods of time.

HGS MEMORIAL SCHOLARSHIP FUND

The Society's Memorial Scholarship Fund recently received contributions in the following categories: Mr. Billy Hagan P. O. Box 53848 OCS Lafayette, Louisiana 70505 Stratagraph, Inc. P. O. Box 53848 OCS Lafayette, Louisiana 70505 Carl E. Norman Secretary

The Executive Board of the Houston Geological Society takes pleasure in announcing that Dr. Harry J. King won the Best Paper Award for 1980-81. His paper, entitled, "North Tisdale Oil Mine, Johnson County, Wyoming," was presented at the September 24, 1980 meeting. Dr. King received an appropriate plaque and a check for $150 at the Guest Night and Awards Banquet on June 18, 1981. The criteria for judging papers are geologic merit and pertinence as well as presentation. Judging of the papers is the responsibility of the Awards and Student Loan Committee.

Harry J. King is Director of Exploratory Projects for Conoco Inc. in Midland, Texas. Prior to his assignment, he worked in Houston as Area Geologist and in Casper, Wyoming, as Geoscience Supervisor. He received his B.S. from the University of Missouri at Columbia and an M.S. from St. Louis University. After several years with the Standard Oil Company of California organization, he left industry to pursue a Ph.D. at the University of Missouri at Rolla. From 1968 to 1974, Dr. King was Assistant Professor of Geology at Southwest Missouri State University. In 1974 he joined Conoco in Casper.

During his academic career, Dr. King was awarded a NATO scholarship for continental-drift studies in Europe and an NSF grant for carbonate studies in the Caribbean.

NORTH TISDALE OIL MINE, JOHNSON CO., WYOMING (Abstract)

The North Tisdale anticline was drilled by Conoco Inc. first in 1952. Unfortunately, the structure had been breached by erosion and the solution gas to drive the oil had escaped long before. Many million barrels of oil had been left behind without sufficient energy to enter a borehole. The increasing value of oil made the recovery of this oil viable, and a unique method of liquid oil recovery was begun.

An adit was driven into the reservoir and the liquids drained into a gallery for recovery. Color slides provide the opportunity to view the inside of this producing oil reservoir. Also, revealing information about perforating and cementing techniques can be gained by studying the results in this mine. The practicality of mining liquid oil, despite the problems associated with such an operation, adds another dimension to recovery of more of the oil left in the ground by conventional recovery methods.

1981 HGS TENNIS TOURNAMENT

The 1981 HGS Tennis Tournament was held at Pine Forest Country Club on May 22nd. The society would like to recognize the following sponsors for this event: Dresser Atlas, Cameco Geological Services, Schlumberger, Data Log, Stratagraph, and Southland Drilling. The winners of this year's tournament were:

A Flight: 1st Place - Bill Howell & Richard Frost
2nd Place - Jerry Glaser & Bob Cossum
3rd Place - Rick Ealand & Gary Hamill

B Flight: 1st Place - Mark Holifield & Stewart Wright
2nd Place - Bob Young & Gil Hamill
3rd Place - Dave Rapp & John Conner

Special thanks should also be given to the members of the tennis committee (Bill Howell, Bill Hintze, Bill Sherman, Tom Higgins, and Rick Ealand) for giving their time and effort to organize the tournament.

Charles Moseley
PROFESSIONAL AND ORGANIZATIONAL NEWS

PROFESSIONAL AND ORGANIZATIONAL NEWS may be sent to Mrs. Virginia Lee Bick, 2632 Yorktown, S. 533, Houston, 77056 or these items may be phoned in to her at 840-9562 or 961-0406. Due to shortage of space, only news regarding members of the HGS may be printed in the Bulletin. Information must be sent six weeks prior to publication date of each issue. Sorry, no photos can be used.

James F. Hofmann, has joined Panterra Petroleum Company, Houston, as Exploration Manager. Previously he was with Patrick Petroleum Company as Houston Division Exploration Manager and before that with General Crude Oil Company and Texaco.

William M. Frew has opened his own geological consulting firm at 2100 West Loop So., Suite 1410, Houston, Texas 77027. Telephone No. 960-8128.

TRANSCO EXPLORATION COMPANY, has opened an exploration office in Tyler, Texas. J. K. (Ken) Liles, area Exploration Manager heads this office. Liles joined Transco Exploration last December after 31 years of service with Enserch Exploration, Inc. Liles has a B.S. in Geology from the University of Texas.

Deborah M. Fritz has recently joined Souders & Associates, Petroleum Exploration and Management; 9800 NW Freeway, Suite 101, Houston, 77018 as Senior Geologist. Ms. Fritz was previously employed by Ladd Petroleum.

Lawrence A. Jamison has joined Monterrey Petroleum Corp. as Chief Geophysicist and is located at Suite 3160, First International Plaza. Tel. 650-1605. Lawrence was previously with Pennzoil.

MCZ, Houston based oil and gas exploration production company, has announced the appointment of Daniel Ray Glaiser as Exploration Manager. Glaiser, a graduate of Texas A & M University, has been practicing geology for six years. He previously was with Transco Exploration Company.

David Engel, formerly Division Onshore Geologist for W. L. Tidwell & Associates, has been promoted to Vice President, Geology, for that firm. Engel is a graduate of Texas A & M and was most recently employed by Michigan Wisconsin Pipe LINE Company.

Mesa Petroleum Company announced the employment of Lynn E. Baker as exploration geologist in the Company’s Gulf Coast division office, Houston, Texas. Baker was formerly an exploration geologist for Exxon USA and is a graduate of Texas Tech with a B.S. and M.S. in Geology.

Officers and directors for American Prospectors, Inc. (API) have been announced for the 1981-1982 year. Tom Purcell is President and Garry Morrison, Vice President. American Prospectors Inc. carries out geological research in Texas Gulf Coast and offshore waters and E. Texas, No. La. and So. Arkansas.

HGS PUBLICATIONS

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The contributions of these sponsors provided a very successful year and are greatly appreciated. We look forward to their help in this coming year.

ESTIMATES FOR OIL AND GAS RESERVES IN GULF OF MEXICO OCS UPDATED

As of December 31, 1980, about 3.05 billion barrels of petroleum liquids (both oil and natural gas liquid), and about 40.2 trillion cubic feet of natural gas are estimated to exist as “remaining recoverable reserves” in 419 known fields of the Gulf of Mexico Outer Continental Shelf (OCS), according to the U.S. Geological Survey.

Original recoverable reserves are estimated to have been 8.04 billion barrels of oil and 88.3 trillion cubic feet of gas from 435 fields under the federal submerged lands off the coasts of Louisiana and Texas.

PASSAGES

We have received notice of the passing of the following members:

Otis Bernard Allred, 59, died January 18, 1981 in Tyler, Texas. He was a geologist with Champlin Petroleum Co.

Max Adolf Bornhauser, 78, died March 30, 1980 in Houston, Texas. He was well known for his work on salt domes and activities in various professional groups. He was with Dillard-Waltermire, Inc.

William Howell Locke, Jr., 57, died March 15, 1981 in Vail, Colorado. He was an independent oil investor.


Howard Cutler Warren, 75, died March 18, 1981 in Corpus Christi, Texas. He was a partner in Gintler, Warren and Co.
MEMBERSHIP REPORT

At the beginning of the 1981-1982 year, membership in the HGS stands at 3,875 members. This includes 17 Honorary Life members, 3,725 active members, and 133 associate members. A total of 638 new members joined HGS this past year.

A look at the listing by companies (boy, does that change a lot) shows the following figures: consultants, independents, retirees or self-employed total 525 members; 504 members have a company name but are the only member with that company; using the Oil & Gas Journal's 27 major companies as a base, 1,229 members are with the 24 companies represented in Houston; 551 members are employed by other companies who have at least 10 members on their staff; that leaves 1,066 members with companies that have 2-9 fellow members on their staff.

The numbers listed above are for one point in time. The number of membership file changes amounts to about 50 per month. Incidentally, when reporting changes of address to the HGS office, please report all items that change, not just address changes. Our computer file is used for many purposes besides making mailing labels. So please report phone numbers, company affiliation, job title, and any other information that changes as well as address changes.

Maintaining an up-to-date computer file is especially important when a membership directory is to be published, and we plan to publish another directory this year. Therefore, please check that all information on the computer file sheet sent with your dues statement is correct and return it with your check. Then, if anything does change during the year, don't hesitate to call the HGS office and report the change.

Several times each year a membership application form is published in the Bulletin. If you know of a colleague who is not a member, hand him the form and suggest he join up. That is the best way that we have to reach non-members who are eligible to join HGS.

John H. Hefner
Membership Chairman

MEETINGS . . .

Oct. 5-6, 1981, The University of Texas at Dallas will sponsor a symposium entitled "Some Recent Advances in Geophysics" in honor of Dr. Anton L. Hales. Held in Richardson, Tx.


Oct. 20-23, 1981, GCAGS annual meeting, see larger announcement, this issue.

EIGHTH INTERNATIONAL SYMPOSIUM ON OSTRACODA

University of Houston Central Campus
July 26-31, 1982

The Geology Foundation and the Department of Geology of the University of Houston will sponsor the Eighth International Symposium on Ostracoda - Applications of Ostracoda to Economic and Scientific Problems - during the week of July 26-31, 1982. This interdisciplinary colloquium will feature papers and demonstrations on applied ostracology - the use of Ostracoda for biostratigraphy, paleoecology, paleo-oceanography, paleogeochimistry, environmental management, and petroleum exploration - and on fundamental problems in ostracode research. Pre- and post-Symposium excursions will collect ostracoda from Paleozoic, Cretaceous, Lower Tertiary and Recent coastal environments of Texas.

You may obtain additional details from:
Dr. Rosalie F. Maddocks
Department of Geology
University of Houston
Houston, Texas 77004

September 1981

<table>
<thead>
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Houston Geological Society Bulletin, September 1981
To be eligible for active membership, an applicant shall: (1) have a degree in geology or an allied science from a recognized college or university and shall be directly engaged in the application of geology, or shall (2) have been engaged in geological work during at least the preceding five years.

Please print

LAST NAME FIRST INITIAL

To the Executive Board:

I hereby apply for ☐ ACTIVE ☐ ASSOCIATE membership in the Houston Geological Society and pledge myself to abide by its Constitution and Bylaws.

Signature: ________________________________

This application must be endorsed by two active members.

Name (print): ________________________________ Signature: ________________________________

Name (print): ________________________________ Signature: ________________________________

HGS Directory & Membership File

Last Name First Initial Nickname

Last Name First Initial Nickname

Company Position or Title

Company Mailing Address City State Zip Code Company Phone

Home Address City State Zip Code Home Phone

School Degree Major Year

Professional AFFILIATIONS: Aapg ☐ GSA ☐ SEG ☐ SEPM ☐ AIME ☐ SPWLA ☐

AFFILIATIONS: APG ☐ PS ☐ AGU ☐ SPE ☐ SPE ☐ OTHER

Local AFFILIATIONS: GSH ACTIVE ☐ GSH HON. ☐ SEPM G. C. SEC. ☐

Spouse’s Name: ________________________________ Preferred Mailing Address Bus. ☐

Outlook of Experience: ________________________________

Space below to be used for processing only

Action of Membership Committee:

Received: ________________________________ Approved for ☐ ACTIVE ☐ ASSOCIATE membership

Membership Chairman: ________________________________ Date: ______________

Action of Executive Board:

Approved: __________________________________ (Secretary) Date: ______________

Annual dues, $15.00 must accompany application. HGS operates on a fiscal year: July 1 - June 30.

Upon completing this application, please return entire form along with your dues to:

Houston Geological Society
6916 Ashcroft
Houston, Texas 77081
771-8315

Houston Geological Society Bulletin, September 1981
DELTAS IN THEIR GEOLOGIC FRAMEWORK

AND

DELTAS - MODELS FOR EXPLORATION

NEW

HOUSTON AREA ENVIRONMENTAL GEOLOGY: SURFACE FAULTING, GROUND SUBSIDENCE, LEGAL IMPLICATION.

TOPICS INCLUDE:

▲ Liability for Geological Hazards
▲ Legal Responsibilities of Consultants
▲ Origin and Mapping of Surface Faults
▲ Ground Water Withdrawal and Land Subsidence
▲ Photographs of Houston Area Faults and Fault-Related Damage
1981 GCAGS-SEPM CONVENTION HOUSING REGISTRATION

NAME __________________________ PHONE ( ) __________________________

FIRM __________________________

ADDRESS ______________________ CITY ___________________ STATE _______ ZIP _______

GCAGS _______ SEPM _______ EXHIBITOR _______ GUEST _______ STUDENT _______

CIRCLE DATES DESIRED OVERNIGHT ACCOMMODATIONS:

ARRIVAL DATE __________________ AM ____ PM __

DEPARTURE DATE __________________ AM ____ PM __

NAMES OF ADDITIONAL OCCUPANTS:

HOTEL PREFERENCE:
MARK 1, 2, 3, 4 in "CHOICE" COLUMN and CIRCLE RATE

1. TRAVELODGE $35-50 $50-65
2. RAMADA INN $40-50 $55-65
3. LA QUINTA ROYALE $50-60 $65-75
4. QUALITY INN $35-50 $50-65
5. SHERATON MARINA $50-60 $65-75
6. HOLIDAY INN-EMERALD BEACH $50-60 $65-75
7. MASTER HOST INN $30-40 $45-55
8. INTERNATIONAL INN $30-40 $45-55
9. LA QUINTA INN, NORTH $40-50 $55-65
10. HILTON INN $40-55 $45-65
11. TALLY-BO $30-40 $45-55
12. NORTH PADRE ISLAND BEACH HOTEL $50-60 $65-80

CONDOMINIUMS
1 BR $70 $90
2 BR $70 $90

MAIL TO: GCAGS-SEPM HOUSING/430 WILSON BLDG./CORPUS CHRISTI, TX. - 78409-
You are cordially invited to become a member of the HOUSTON GEOLOGICAL AUXILIARY for the year 1981-82.

The AUXILIARY is a social organization for the wives of members of the Houston Geological Society as well as any female geologist. The purpose is to encourage social relations among its members and to assist the Houston Geological Society in any manner they shall request. There are four meetings each year. Three of these are luncheons, and one an evening function to which the husbands are invited.

The **Fall Luncheon** will be held **Wednesday, September 30, 1981**, at the Inn on the Park. This new Four Seasons Hotel, nestled along the tree-lined Buffalo Bayou, will provide an elegant setting for a book review by Sara Owen-Gemoets.

The **Winter Luncheon** will be held at the Houston Country Club on **Thursday, December 10, 1981**, with the Tuesday Music Club Chorus presenting beautiful holiday music.

A **Couples Party** will be held at the Regal Ranch on **Saturday night, February 27, 1982**. With Rodeo fever in the air at that time, we invite all members and guests to join us for an evening of live Western music and delicious food.

To conclude the year, a **Spring Luncheon and Business Meeting** will be held at the River Oaks Country Club on **Wednesday, May 5, 1982**, with an inspiring program by Elsa Rosborough - a beautiful lady considered to be the epitomy of the Houston model.

If you are interested, please fill out the form below and mail together with your check in the amount of $10.00 (annual dues), made payable to the HOUSTON GEOLOGICAL AUXILIARY and return to me.

```
Mrs. Bruce Fraze
9906 Knobabk Dr.
Houston, Tex. 77080
```

The Auxiliary urges all Society members to take this Bulletin to their spouses so that they will be aware of the outstanding social programs planned for the coming year.

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**YEARBOOK**

<table>
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<th>(LAST NAME)</th>
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<th>(YOUR NAME)</th>
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**COMMITTEES**

(1st And 2nd Preference)

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<td>COURTESY MEMBERSHIP NOTIFICATION YEARBOOK</td>
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</table>

**COMMENTS**
The U.S. Geological Survey estimates that 36 billion barrels of oil and 178.5 trillion cubic feet of natural gas remain undiscovered in the Nation’s OCS.

NEW MEMBERS

ADAMS, GLENN E.
Sr. Exploration Geologist
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999-0858
ANDERSON, MICHAEL C.
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684-3401
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Geologist
Exxon Company USA
7800 Westglen
Houston, Texas 77063
656-9828

HOUSTON GEOLOGICAL SOCIETY

The Houston Geological Society was founded in 1923 and incorporated in 1975. Its objectives are to stimulate interest and promote advancement in geology for this area, to disseminate and facilitate discussion of geological information, to enhance professional interrelationships among geologists in the area, and to aid and encourage academic training in the science of geology.

The Bulletin is published monthly except July and August. Subscription price for nonmembers is $15 per year. Single copy price is $1.50. Claims for nonreceipt in the contiguous U.S. should be made within 2 months of the date of issue; claims from elsewhere within 4 months.

Communication about manuscripts and editorial matters should be directed to the Editor. Inquiries concerning advertising rates should be directed to the Advertising Chairman. Applications for membership in the Houston Geological Society may be obtained from the Society office, 6916 Ashcroft, Houston, Texas 77081.

COVER PHOTO

Natural rock arch in Hueco Tanks State Park, El Paso County, Tx. This arch, which may be the largest of its kind in the state, is unusual for it is carved in syenite rather than sedimentary rock. Photo Courtesy Danny Horowitz.
HOUSTON GEOLOGICAL SOCIETY
MEMBERSHIP PHOTO-DIRECTORY

The Houston Geological Society has published a photo-directory of its 1979-80 membership. Price to members is $10.00. Price to nonmembers is $15.00. Add $1.50 per directory ordered for mailing. Send an Order Form with your remittance to:

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________________________________________

City __________________________________ State _____ Zip ________

NEW ASSOCIATE MEMBERS

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940-4047

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LYTLE, FRANK C.
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840-5000

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Strata Energy Inc.
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Houston, Tx. 77002
966-4000

GINGRICH, DANIEL R.
Geological Aide
Texas Gulf Oil & Gas Co.
1100 Milam Bldg. #3000
Houston, Tx. 77002
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LYTLE, FRANK C.
Vice President - Exploration
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877-8110
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<th>Name</th>
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<tr>
<td>R. P. AKKERMAN</td>
<td>Geologist, Exploration Engineer, Consultant</td>
<td>3425 Bradford Place, Houston, Texas 77025</td>
<td>(713) 668-4327</td>
</tr>
<tr>
<td>WAYNE Z. BURKHEAD</td>
<td>Consulting Geologist</td>
<td>713 Rocky River, Houston, Texas 77066</td>
<td>(713) 621-3077</td>
</tr>
<tr>
<td>Jack W. Craig</td>
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<td>1412 C &amp; I Building, Houston, Texas 77002</td>
<td>(713) 652-4980</td>
</tr>
<tr>
<td>PAUL H. ALLEN, JR.</td>
<td>Consulting Geologist</td>
<td>12625 Memorial Drive, #51, Houston, Texas 77024</td>
<td>(713) 467-3069</td>
</tr>
<tr>
<td>GUS B. BAKER</td>
<td>Energetics, Inc. Gulf Coast Exploration</td>
<td>614 Southwest Tower, At 707 McKinney, Houston, Texas 77002</td>
<td>(713) 759-0306</td>
</tr>
<tr>
<td>T. WAYNE CAMPBELL</td>
<td>Consulting Geologist, Paleo-Data, Inc.</td>
<td>6619 Fleur De Lis Drive, New Orleans, Louisiana 70124</td>
<td>(504) 488-3711</td>
</tr>
<tr>
<td>DONALD P. DEGEN</td>
<td>Petroleum Geologist</td>
<td>6200 Savy Suite 450, Houston, Texas 77036</td>
<td>Area Code: 713/771-0437</td>
</tr>
<tr>
<td>ANDRE P. DELFLACHE, Sc., P.E. &amp; KELLY G. ROBERTSON</td>
<td>Summit Geophysical International, Inc.</td>
<td>9896 Bassador, Suite 390, Houston, Texas 77026</td>
<td>(713) 988-0437</td>
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<tr>
<td>EARL H. BESCHER, JR.</td>
<td>Personnel Consultant</td>
<td>713/465-0150, 713/358-3282</td>
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<tr>
<td>GENEOS PETE COKINOS</td>
<td>Petroleum and Geological Engineering Consultant, Independent Producer and Operator</td>
<td>947 Hazel St, Beaumont, TX 77701</td>
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</tr>
<tr>
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<td>Consulting Geologists &amp; Palaeontologists</td>
<td>708 C &amp; I Building, Houston, Texas 77002</td>
<td>(713) 652-4987</td>
</tr>
<tr>
<td>DAVID L. DUNN</td>
<td>Consulting Geologist and Palaeontologist</td>
<td>6102 Old Oak Circle, Sugar Land, Texas 77479</td>
<td>(713) 999-9999</td>
</tr>
<tr>
<td>VIRGINIA LEE BICK</td>
<td>AAPG Group Insurance Program, SEG Group Insurance Program</td>
<td>2550 Turtle Creek, American Association of Petroleum Geologists</td>
<td>(713) 850-8555 (Bus), (713) 850-8555 (Res)</td>
</tr>
<tr>
<td>W. F. COOKE, JR.</td>
<td>Acco Oil &amp; Gas Co.</td>
<td>One Brer Olde Ct, Houston, Texas 77027</td>
<td>(713) 622-7070</td>
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<tr>
<td>EVARD P. ELLISON</td>
<td>Geologist</td>
<td>1401 The Main Building, Houston, Texas 77002</td>
<td>(713) 652-3816</td>
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<tr>
<td><strong>PAUL FARREN</strong></td>
<td>Geophysical Consultant, 5603 S Rice Ave (77081)</td>
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<tr>
<td><strong>ROBERT D. &quot;BOB&quot; FISH</strong></td>
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<tr>
<td><strong>STEWART H. FOLK</strong></td>
<td>Certified Professional Geologist, Energy &amp; Mineral Resources, 11907 Longleaf Ave, Houston, Texas 77024</td>
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<tr>
<td><strong>ERWIN E. GRIMES</strong></td>
<td>Oil &amp; Gas Exploration, Phone 1-512-866-5966, Grimes Resources, Inc, P.O. Box 403, Kerville, Texas 78028</td>
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<tr>
<td><strong>MICHEL HALBOUTY</strong></td>
<td>Consulting Geologist and Independent Producer and Operator, The Halbouty Center, Houston, Texas 77085</td>
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<tr>
<td><strong>Lane E. Horstmann, Sr.</strong></td>
<td>Geological Consultant, 8039 Katy Freeway, Building 200, Suite 210, Houston, Texas 77024</td>
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<tr>
<td><strong>WILLIAM E. HUMPHREY</strong></td>
<td>Geologist, 200 Fondren Road, Houston, Texas 77003</td>
<td></td>
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<tr>
<td><strong>W. B. MCCARTER &amp; C. E. MCCARTER</strong></td>
<td>Petroleum Geologists, 2929 Hazard Street, Houston, Texas 77009, (713) 929-1601, P.O. Box 528, Folkston, Georgia 31537</td>
<td></td>
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