

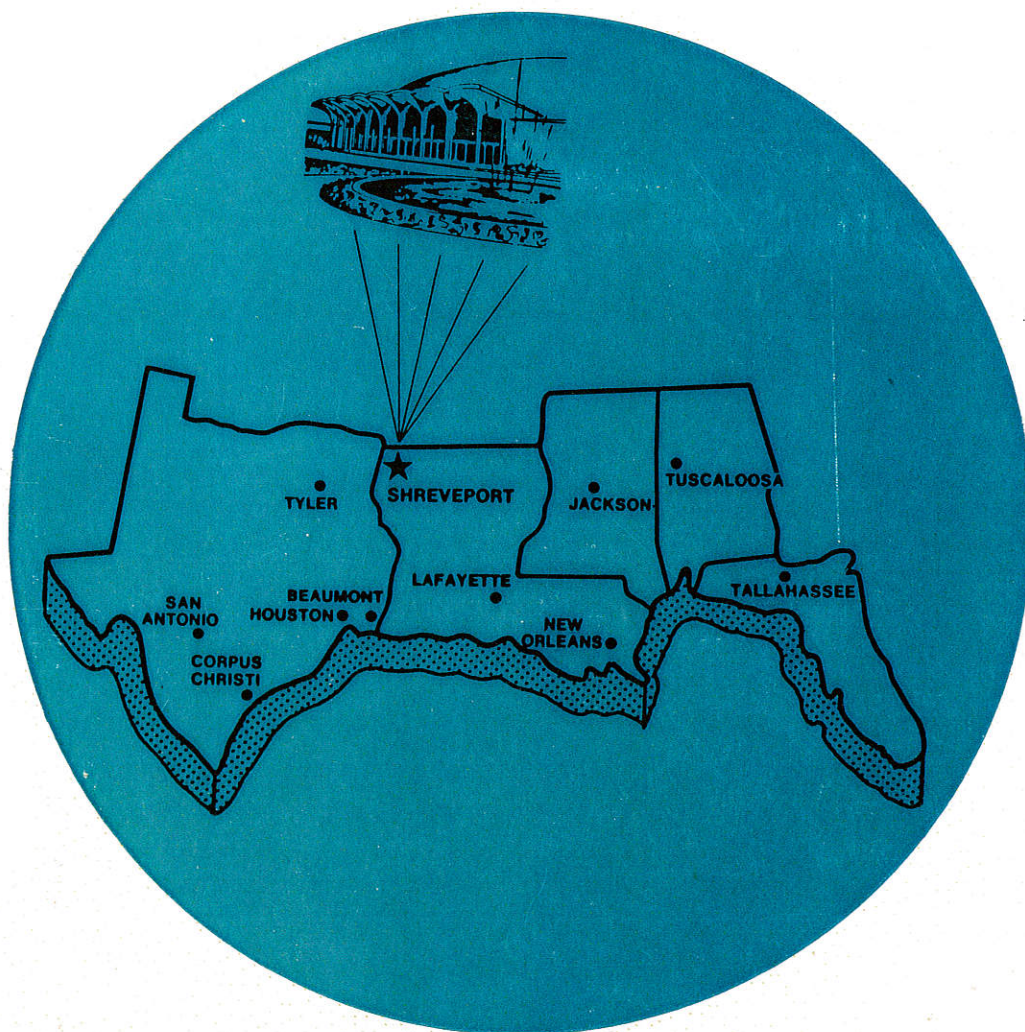
Neil M. Sullivan
GULF COAST ASSOCIATION of GEOLOGICAL SOCIETIES

TRANSACTIONS

20th ANNUAL MEETING

Theme:

*Exploration Concepts
for the Seventies*



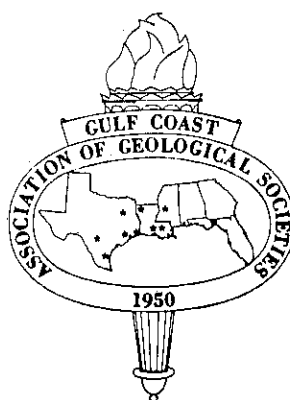
SHREVEPORT, LOUISIANA • OCTOBER 28, 29, & 30, 1970

Neil M. Sullivan

TRANSACTIONS

Gulf Coast Association of Geological Societies

VOLUME XX 1970



A Section of the American Association of Petroleum Geologists

NOLAN G. SHAW
Editor

Prepared for the
**TWENTIETH ANNUAL MEETING OF THE
GULF COAST ASSOCIATION OF GEOLOGICAL SOCIETIES
AND REGIONAL A.A.P.G. MEETING**

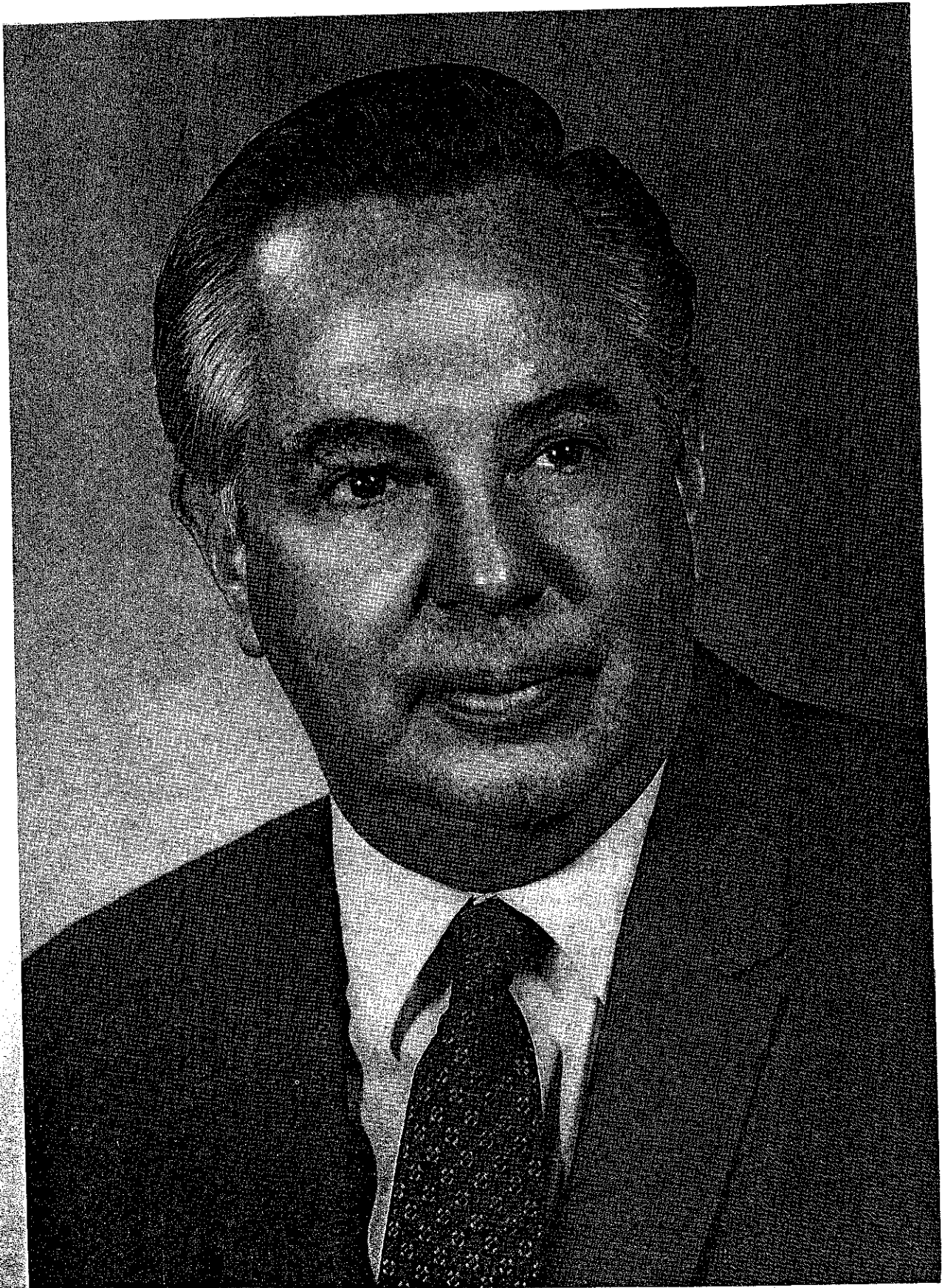
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SOCIETY OF ECONOMIC PALEONTOLOGISTS AND MINERALOGISTS

OCTOBER 28, 29, 30, 1970

SHREVEPORT, LOUISIANA

Published at
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DR. C. O. 'CLAY' DURHAM

**DEDICATION OF 1970 GCAGS TRANSACTIONS VOLUME
TO DR. C. O. "CLAY" DURHAM
DIRECTOR OF GEOSCIENCE
LOUISIANA STATE UNIVERSITY**

The officers and committee chairmen of the GCAGS for 1969-70 dedicate the 1970 Transactions Volume to Clay Durham, Professor of Geology in recognition of his some twenty years of outstanding work in Gulf Coast Geology at LSU. Further, for his contributions to geology in the State of Louisiana, especially as concerns the mapping of the northern Louisiana parishes, which affect the Shreveport geological group. We further wish to grant Clay Durham this recognition in that never has Clay Durham been requested to lead a field trip in northern Louisiana, or our knowledge, in any other part of the Gulf Coast, that he did not take of his personal time to work out the necessary details in order to convenience the geological group in question. It is our considered opinion he is as well known, and as well thought of by the geological fraternity, as any practicing geologist in Louisiana.

Clay Durham, born October 20, 1920, in Victoria, Texas, is married to Louise Smith of Shreveport, Louisiana, and has two daughters. He has a B.S. degree from the University of Texas, 1942, a Professional Certification in Meteorology from the University of Chicago, 1943, and a Ph.D. from Columbia University in 1957. He has been associated with Louisiana State University since 1951, acting as instructor, assistant, and associate professor, and chairman of the Department of Geology, 1965-1969, as well as director of Geoscience (formerly the School of Geology), 1966 to the present time. He is a member of a number of honorary societies and holds a membership in a number of professional societies including the American Association of Petroleum Geologists, Lafayette Geological Society, the New Orleans Geological Society, and complimentary member of Corpus Christi Geological Society. His professional activities since 1949 include serving as leader of four field trips for the Shreveport Geological Society, leader and chairman of four field trips for the Geological Society of America in the Mississippi Delta area, Visiting Lecturer for the American Geological Institute, Member of Academic Advisory Committee of the AAPG, and regularly teaches various courses in geology. He has been the major professor for twelve dissertations and nineteen theses, and from his regular teaching activities and directing of dissertation and theses, makes a most important contribution to the training of geological students at LSU.

Clay Durham has published either individually or in association with geologists at LSU, twenty-four different papers in the time interval from 1949-1969. The more important of these papers are Upper Cretaceous-Paleocene Sedimentary Pattern from Central Texas to Northern Mexico; Iron Ore Deposits of Central North Louisiana; Tectonics and Stratigraphy of the Gulf Basin; A Guided Geological Tour through North and Central Louisiana; and Louisiana Midway-Wilcox Correlation Problems.

The Gulf Coast Association officers and committee chairmen from Shreveport who have represented the association during the past year and are staging the 1970 annual convention in Shreveport, are most pleased to dedicate the 1970 Transactions Volume to Clay Durham.

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PRESIDENT'S REPORT

The Gulf Coast Association of Geological Societies was formed twenty years ago, in 1950, and is celebrating its twentieth meeting with the annual convention held in Shreveport, Louisiana. The *Transactions* of the Association represent the finest collection of regional geological literature in existence, and all the members of the Association have reason to be proud of their participation in the Association's affairs over the past two decades. The meeting this year represents the first meeting in the seventies, and the theme of our convention is "Exploration Concepts for the Seventies." We have invited certain specific speakers who would give us their views on the future of the various phases of the exploration industry in the Gulf Coast. Our program also contains papers published by the National Petroleum Council on the "Possible Future Petroleum Province of the United States - Western Gulf Basin." We are pleased to be able to bring this suite of excellent exploration papers by experienced geologists who have worked a number of years in the Gulf Coast area, and wish to pay particular tribute to our current program chairman, Lane Sartor, and our current editor, Nolan Shaw. It is believed that each individual who attends this meeting and attends the program will derive exploration ideas and concepts which he can use to further the exploration work of his company or group.

Your Association is in good financial shape even after having published the "Bibliography of Gulf Coast Geology." This two volume bibliography of Gulf Coast literature through 1968 has been most carefully edited by Mr. Jules Braunstein, who completed the compilation of references begun by Walter E. Hallgarth. The bibliography was published with the cooperation of the U. S. Geological Survey.

We recommend the purchase of this two volume set of books, and feel that it will be of value to you in exploration work for years to come. The other major project of the G.C.A.G.S. is the publishing of a Tectonic map of the Gulf Coast Basin, under the supervision of A. T. Green, Vice Chairman of the Special Projects Committee, and Mr. Harold Hickey, Chairman of the Tectonic Map Committee. The map should be available for sale to the G.C.A.G.S. and the A.A.P.G. membership at the spring meeting of the A.A.P.G. in 1971. These two special projects have been working for several years, and we are pleased to report the completion of one project and the near completion of the other. The chairman of the Special Projects Committee, the current G.C.A.G.S. Vice President, Lee Meltzer, is considering the future of the committee and would be amenable to suggestions for future projects from the membership.

This convention is being staged under the direction of Mr. John Goffe, as General Chairman, who took over in March, 1970, from Gilbert Boyd, following Gil's move to Kansas, and I wish to pay particular compliments to Mr. Goffe, Mr. Boyd, and all the members of their committee, and personally thank everyone of the committee for the considerable amount of effort and work put forth to insure the success of this Twentieth Annual Convention of the G.C.A.G.S. The Association also owes a debt of gratitude to Charles Brown, Secretary, and Bill Tucker, Treasurer, for many hours spent on Gulf Coast Association affairs.

I consider it a distinct privilege to have served as your president during the 1969-70 year.

HENRY TYLER
Phillips Petroleum

REPORT OF THE GENERAL CHAIRMAN TWENTIETH ANNUAL MEETING 1970

The Shreveport Geological Society is the host for the 20th Annual Meeting of the Gulf Coast Association of Geological Societies and the Gulf Coast Section of the Society of Economic Paleontologists and Mineralogists. Gilbert H. Boyd, the initial General Chairman, should be recognized for his efforts in selecting the various committee chairmen and preparing the organization for its future work schedule. Reports received from the chairmen of the committees of last year's Miami meeting were of great benefit.

The theme of the meeting, "Exploration Concepts for the Seventies," was chosen for obvious reasons. Not only the concepts will be aired in numerous papers, but future petroleum provinces of the Gulf Coast will complement the concepts. The objective of having a balanced program seems to have been accomplished. It is hoped that in the ensuing years, the 1970 *Transactions* will become a standard reference text for the Gulf Coast geologist.

Special thanks go to the GCAGS officers, the Vice General Chairman, the Committee Chairmen, their assistants, the Desk and Derrick Club of Shreveport, and the Shreveport Geological Society for their cooperative effort in making this meeting a success.

John O. Goffe

REPORT OF THE EDITOR

Authors of manuscripts for the 1970 *Transactions* deserve special recognition for the quality of their creativity. Their cooperative spirit was repeatedly demonstrated through prompt submission of manuscripts and return of galley proofs and numerous helpful suggestions.

The various committee chairmen of the GCAGS have been most helpful in obtaining information relevant for inclusion in the volume. Tom E. Fanning, Marathon Oil Company, proved to be especially adept as a critical reader of manuscripts, good-naturedly accepting and critiquing an endless series of pages, some requiring countless hours.

The Gulf Coast Section editor of SEPM, Dr. Willard P. Leutze, is commended for his excellent job of compiling, editing and organizing manuscripts and his catalytic action in requiring that they be turned in to the printer by the deadline.

The general arrangement of the 1970 *Transactions* is patterned after the 1969 volume, however, advertisements have been randomly placed through the book rather than at the end.

Knowledge concerning exploration concepts for the 1970's should be enhanced and expanded by the diversity of papers presented in this volume.

Nolan G. Shaw

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REPORT OF THE PRESIDENT GULF COAST SECTION, SEPM 1970

As we enter the decade of the Seventies our Section, now in its seventeenth year, continues in a fruitful manner to carry out the object of its founders; namely, "to promote the science of stratigraphy in the Gulf Coast states through research and paleontology and sedimentary petrology, especially as it relates to petroleum geology." Also as was the objective in the beginning, our Section has enjoyed a close, harmonious relationship with the Gulf Coast Association of Geological Societies. We are grateful and proud of this mutually beneficial association and trust that it will long endure.

Again this year many of our members have responded with significant scientific papers as reflected in the annual program. Numerous other members have been active in other ways giving of their time and sharing their knowledge and leadership.

Because of our rather widespread geographical distribution, it is difficult for our membership to convene except at our annual meeting. Consequently, in the areas of our largest concentration of members--New Orleans, Lafayette and Houston, local meetings are held independently throughout the year. Each of these local groups has been active, with the New Orleans group particularly to be commended for their excellent "Colloquium on Paleoecology" in January. Robert N. Davids and Hubert C. Skinner deserve credit for their leadership and organization of this effort, and we are grateful for the following members whose papers made the program possible: Ron Gonsalves, Ralph Biel, Lawrence C. Menconi, Harry W. Anisgard, Gray S. Robinson, Ralph Dobbins, A. D. Ellis, Jr., Gerald R. Stude, and John B. Dunlap, Jr. Doris M. Curtis serves as Business Representative for this very active New Orleans group. As a further tribute to the success and interest generated by this program, many of the papers have been included in our annual program.

As of June 4, 1970, our total membership was 351. Of this total, 31 are new members. Efforts are continually being made to enlarge our membership. Delinquent members pose a continual problem and every effort is being made to keep these figures as low as possible. An up-to-date 1969-70 membership list along with three newsletters were sent to all members. Our special thanks to Robert K. Sylvester, Secretary, for preparing the new membership list and getting all these mailings out.

Your President attended the annual meeting in Calgary, being present for both the incoming and outgoing council sessions as well as a special meeting of section presidents with incoming President, Dr. Edward C. Dapples, and retiring President, Dr. Lloyd C. Pray. Attendance at these meetings was very helpful in providing a closer relationship and better understanding between our Section and the national SEPM. Dr. Lloyd C. Pray is to be commended for his efforts in bringing about a closer liaison between each of the Sections and with the national organization during his tenure in office. Our Gulf Coast Section was honored to have Dr. Edward C. Dapples, SEPM President, attend the Shreveport convention and address the Presidential luncheon.

For the first time in the history of our annual meetings a best-paper award program was initiated this year. Recognition of these awards will follow in the next *Transactions* with the awards to be presented at the next annual meeting. Credit is due the past president and council of our Section for initiating this program.

Dr. Richard P. Zingula, Chairman of our Type Locality Project, has again secured a number of significant new additions to this project for which we are grateful. These are now published each year in the *Transactions*. Dr. Louis de A. Gimbrede, Chairman of our Topotype Project, is completing work on the old Danville Landing locality to serve as a standard for work on other localities. Other new projects are being considered and hopefully work on one or more will be initiated soon.

One of the most difficult and time-consuming tasks each year is that of securing a sufficient number of outstanding papers for our annual meeting and the problems involved with the editing of these papers. In this regard we are indebted to our Editor, Dr. Willard P. Leutze, who has done an excellent job.

Don G. Vieaux has performed yeoman's duty this year, serving both as our Program Chairman and the organizer and leader of our field trip. We sincerely appreciate his contribution of time and talent.

My sincere appreciation and thanks are extended to each member of the outgoing council: Kenneth J. Loep, Vice President; Robert K. Sylvester, Secretary; C. Wylie Poag, Treasurer, and William A. Atlee, Past President; for their enthusiastic support and teamwork throughout the year. Last, but not least, I would like to extend my deep appreciation to each of our local Business Representatives whose efforts are so vital to the continuing success of our Section.

FRED L. SMITH, JR.

REPORT OF THE EDITOR, GULF COAST SECTION—S.E.P.M.

The Editor of the Gulf Coast Section — S.E.P.M. acknowledges assistance from the local societies and business representatives soliciting papers. Our president, Fred Smith, Jr., was particularly diligent in this effort. Richard P. Zingula assembled and edited the type locality descriptions. My associates at Atlantic Richfield, B. J. Sloane and Douglas Gardner, assisted in editing portions of several manuscripts. Authors submitted a total of approximately three hundred manuscript pages. It is the Editor's opinion that our members have submitted the highest quality papers this year that he has ever had the pleasure of reading.

Willard P. Leutze

BEST PAPER AWARDS NINETEENTH ANNUAL MEETING MIAMI, FLORIDA



First Prize: To Mr. Perry O. Roehl, a Research Associate with Union Oil Company of California at their research center in Brea, California, for his paper entitled "Permeability and Anisotropy in Micro Sucrosic Dolomites." He received a B.S. degree from Ohio State University, a M.S. degree from Stanford University, and a Ph.D. from the University of Wisconsin. Prior to joining Union Oil Company of California, Mr. Roehl worked as an Exploitation Engineer and Senior Production Geologist for Shell Oil Company from 1955 to 1962. From 1962 to 1966, he was a Senior Exploration and Research Geologist for Shell Development Company in Houston. Mr. Roehl has conducted research studies covering all phases of carbonate geology and petroleum reservoir development. He is presently Chairman of the A.P.I. Carbonate Advisory Committee and a member of the A.P.I. Planning Committee on Geology.

Second Prize, also Levorsen Award for 1969: To Mr. James K. Rogers, Consulting Geologist, Houston, Texas, for his paper "Possible Ground Water Influence on the Habitat of Oil in the Gulf Coast." He received his A.B. from Syracuse University and his M.A. and Ph.D. from the University of Cincinnati. Mr. Rogers was employed as a Petroleum and Research Geologist with Arkansas Fuel and Cities Service Oil Company from 1935 until his retirement in 1969. Since retirement, Mr. Rogers has been a consulting geologist in Houston, Texas.



Third Prize - Tie: To Mr. Donald F. McNamee, Exploration Manager for Union Texas Petroleum in the Gulf Coast District covering the Texas Gulf Coast, East Texas, and North Louisiana, for his paper entitled "Glen Rose Reef Complex of East Texas and Central Louisiana." He received a B.S. degree from Beloit College in Wisconsin in 1951 and joined Tidewater Oil Company that same year. He joined Union Texas Petroleum in 1957 and since that time has worked for them in both Midland and Houston.

Third Prize: - Tie: To Mr. L. Frank Brown, Jr., Research Scientist, Bureau of Economic Geology, University of Texas at Austin; Lecuter, Department of Geology, for his paper entitled "Geometry of Fluvial and Deltaic Sandstones (Pennsylvanian and Permian) North Central Texas." He received a B.S. degree from Baylor University, and his M.S. and Ph.D. degrees from the University of Wisconsin. Mr. Brown's previous experience includes Exploration Geologist, Standard Oil Company of Texas; and Associate Professor of Geology, Baylor University. Mr. Brown is now conducting depositional facies studies of Upper Paleozoic rocks in North and West-Central Texas; and environmental geology of the Texas Gulf Coast.



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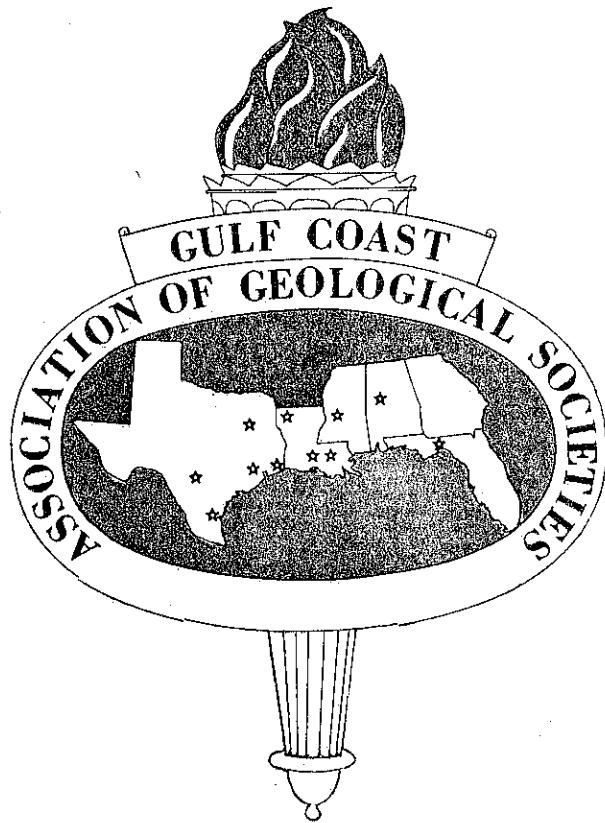
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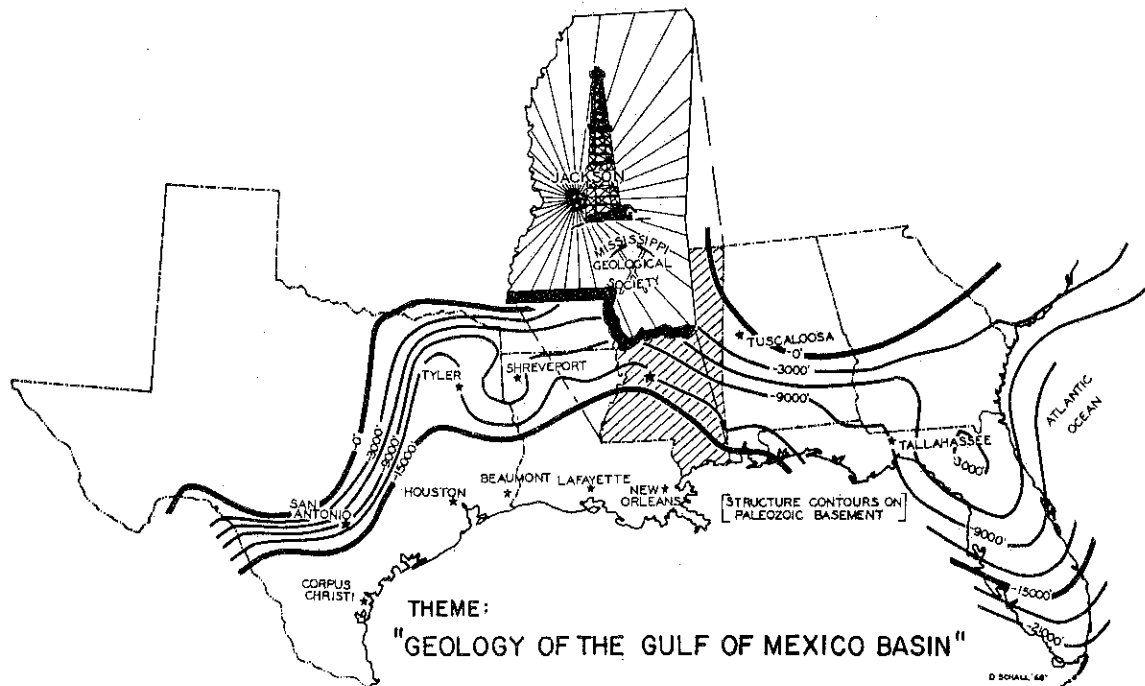
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TECHNICAL PAPERS



ACKNOWLEDGEMENTS

The 1969-1970 Officers, Executive Committee and Convention Committee of the Gulf Coast Association of Geological Societies wish to publicly thank Mr. Ira H. Cram of New York City, Chairman of Co-ordinating Sub-Committee of the National Petroleum Council Committee on Future Petroleum Provinces of the United States for his help in arranging with the National Petroleum Council for permission for the various authors to present at this meeting the National Petroleum Council papers affecting the Gulf Coast Area.

We also wish to thank Mr. Baird Mason, Regional Leader for Region 6 - Western Gulf Basin, and Chief Geologist for Humble Oil & Refining Company, for his effort on our behalf in urging each of the Region 6 National Petroleum Council authors to present this group of very excellent exploration papers to the Shreveport Gulf Coast Association of Geological Societies' meeting. Mr. John T. Rouse, Regional Leader for Region 11 - Eastern Gulf and Atlantic Coasts, and Consulting Geologist, formerly with Mobil Oil Corporation, arranged for Mr. E. H. Rainwater to give the Georgia-Florida Peninsula Paper which the Association appreciates. Further, we wish to thank Mr. Kenneth Crandall and Mr. Art Meyerhoff, President and Publications Manager of the American Association of Petroleum Geologists, for granting A.A.P.G. approval in allowing these papers to be presented. All of the National Petroleum Council papers on the Future Petroleum Provinces of the United States are to be published as A.A.P.G. Memoir 15 with Mr. Ira Cram as Editor, and therefore, the Gulf Coast papers are presented in the G.C.A.G.S. 1970 Transactions Volume as enlarged abstracts with one or two illustrations.