

PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

January, 1966

Number 1

ASSOCIATION ACTIVITIES

SEA LAB II FEATURED AT LONG BEACH CONVENTION

As one of the highlights of the Pacific Section Convention March 24-25 in Long Beach, the A.A.P.G.-S.E.G.-S.E.P.M. joint luncheon on Thursday, March 24, will feature a talk on the Sea Lab II undersea project at La Jolla, to be presented by Scott Carpenter or one of his associates in the recent project. The A.A.P.G. Technical Sessions will stress the theme, "Offshore Oil." The Society of Exploration Geophysicists is arranging a technical program which will feature digital computing and processing.

PRESIDENT ANNOUNCES 1966 PACIFIC SECTION CANDIDATES

The Nominating Committee, under the chairmanship of Spencer Fine, has announced the following nominees for 1966-67 officers of the Pacific Section, A.A.P.G.:

President:	Andrew Alpha	- Mobil
	Robert Knapp	- Standard
Vice-President:	John Curran	- Consultant
	Ed Hall	- Union
Secretary:	Bill Edmondson	- Consultant
	Jim C. Taylor	- Shell
Treasurer:	Gardner Pittman	- Tidewater
	Tom Wright	- Standard

CALNDAR

- January 17 LOS ANGELES, Monday evening,
7:00 P.M., Mobil Auditorium,
612 South Flower Street,
"Silurian - Lower Devonian
Paleogeography and Animal
Geography," by Mr. Arthur
Boucot, Division of Geologic
Sciences, California Institute
of Technology.
- February 3 LOS ANGELES, Thursday noon,
Rodger Young Auditorium,
963 West Washington Boulevard,
"The Structure of the Elwood
Trend," by Mr. Douglas Traxler,
Signal Oil and Gas Company.
- February 7 BAKERSFIELD, Monday evening,
7:30 P.M., Bakersfield College,
Science & Engineering Building,
Room 56, Biostratigraphic
Seminar, "Dinoflagellate
Morphology and Relationships,"
by Dr. W. R. Evitt, Stanford
University.
- February 8 BAKERSFIELD, Tuesday evening,
6:30 P.M., American Legion Hall,
17th & L Streets, Bakersfield,
San Joaquin Geological Society,
"Iran, Land of Colorful Geology"
by Howard Anderson, Standard Oil
Company of California. Ladies'
Night.
- February 21 LOS ANGELES, Monday evening,
7:00 P.M., Mobil Auditorium,
612 South Flower Street,
"Tectonics of the 1964 Alaskan
Earthquakes," by Mr. George
Plafker, Research Geologist,
Alaskan Branch, U.S.G.S.,
Menlo Park.

Our constitution provides for additional candidates, as follows: "... The slate of candidates shall be announced in the Pacific Petroleum Geologist at least one month prior to the election. Additional nominations may be made by a written petition of twenty-five or more members of the Pacific Section in good standing, received by the Secretary within two weeks following the publication of the nominating committee slate of candidates."

E. R. Orwig

LOS ANGELES DINNER MEETING

On December 13 at the Rodger Young Auditorium, Dr. Thane H. McCulloh, Research Geologist, U.S.G.S., presented a talk entitled, "Precise Borehole Gravimetry in Petroleum Exploitation and Exploration."

ABSTRACT

The vertical gradient of gravity underground is related to rock density in situ, gravimetric effects of nonlevel surfaces of equal rock density beneath and around the borehole, topographic effects, and the local "free-air" vertical gradient of gravity.

Accurate determinations of average rock density in situ could be calculated from properly interpreted borehole gravimeter measurements. The interval thickness for which such determinations could be calculated depends upon gravimeter sensitivity, rock density, and the required accuracy of the determination. Such determinations would be relatively free from effects of rock damage due to drilling or invasion by mud filtrate, could be made in cased wells, would be based on much larger volumes of rock than are sampled by any other method, and would be independent of core analysis data. Such determinations would, therefore, provide a standard against which such data (as well as conclusions drawn from gamma-gamma, acoustic velocity, or other logs) could be reliably judged.

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NEXT DEADLINE - JANUARY 14

Conversely, independent knowledge of rock density around a surveyed borehole would permit separation of those gravimetric effects due to the known geology from those more distant and deeper effects naturally integrated in the borehole gravimeter measurements. Thus, the attenuated and "smoothed" gravimetric effects of deep geology seen in surface gravity surveys would be seen in subsurface gravity measurements in greater detail and without the attenuation and smoothing, after corrections for known geology.

Ideally, precision of a borehole gravimeter should be ± 0.001 milligal to permit completely effective use in the full variety of interesting applications foreseeable in petroleum exploitation and exploration. A precision of ± 0.02 milligal would be marginally useful. Other instrumental and operational characteristics of an experimental prototype borehole gravimeter are described.

(Publication authorized by Director, U. S.
Geological Survey.)

S.E.G. ANNOUNCES DIGITAL SEMINAR

The Pacific Coast Section of the Society of Exploration Geophysicists is pleased to announce that a series of eight "Digital Seminars" will be given in Los Angeles beginning on January 14, 1966. Each seminar will take place on a Friday afternoon from 1:30 - 3:30 P.M. at the Mobil Auditorium, 612 South Flower Street, Los Angeles, California.

The basic purpose of the seminar is educational and is intended to acquaint geologists, geophysicists, and exploration managers with the language concepts and application of geophysical digital field recording and processing techniques. The discussion level will be aimed at the Bachelor of Science level. As you are well aware, these new processes are revolutionizing our industry in the field, and we should all become versed in the fundamentals of these new techniques.

We are inviting among other groups, the Pacific Coast Section of the A.A.P.G., S.E.P.M., and other geological societies in California, in addition to the Society of Exploration Geophysicists members.

A listing of the seminars with their topic follows:

- | | |
|-----------|--|
| Seminar 1 | <u>January 14, 1966</u> |
| | Title: "Introduction to Digital Technology" (terms, need, cost, limits). |
| Seminar 2 | <u>January 21, 1966</u> |
| | Title: "Digital Hardware" (geophone, amplifiers, A & D converters, multiplexors). |
| Seminar 3 | <u>January 28, 1966</u> |
| | Title: "Digital Recorder" (tape formats, storage, parity checks). |
| Seminar 4 | <u>February 4, 1966</u> |
| | Title: "Digital Computer Theory and Hardware" (memory). |
| Seminar 5 | <u>February 11, 1966</u> |
| | Title: "Input - Output Devices Associated with Digital Computers" (disc storage, magnetic tape storage, printers). |
| Seminar 6 | <u>February 18, 1966</u> |
| | Title: "Machine Language" (Binary, Octal, Fortran, Holworth). |
| Seminar 7 | <u>February 25, 1966</u> |
| | Title: "Autocorrelation" (what, how, why examples and Fourier Transform). |
| Seminar 8 | <u>March 4, 1966</u> |
| | Title: "Convolution & Cross Correlation" (what, how, why, examples). |

The seminars will be conducted by members of the contract geophysical organizations, computer manufacturers and instrumentation manufacturers.



Boris Laiming at a well in San Joaquin Valley (possibly Pioneer Anticline) in 1926.



Boris Laiming (Texaco- retired) about 1926, mapping on west side of San Joaquin Valley.



Dr. Paul P. Goudkoff at well in San Joaquin Valley (possibly on Pioneer Anticline) in 1926.

(Photos courtesy of Louis Simon)

COAST GEOLOGICAL SOCIETY

On Wednesday, November 17, at a dinner meeting in the Colonial House, Oxnard, the Coast Geological Society was addressed by the A.A.P.G. Distinguished Lecturer, Michel T. Halbouty. Mr. Halbouty presented a stirring talk on the impact of modern economics in the petroleum industry on the function of the geologist in exploring for oil and gas. He stressed the need for original ideas and concepts and for intellectual flexibility that the profession has not always shown, in order that the burgeoning market for petroleum products will not be pre-empted by competing industries. Admitting that the major oil companies have been less than enlightened in their personnel policies, tying them closely to day-by-day oscillations in the economy, he also castigated geologists for allowing many functions and responsibilities, both central and marginal to petroleum exploration, to slip into the hands of petroleum engineers, drilling engineers, and geophysicists, most particularly the all-important function of decision-making. The evening ended with a lively discussion on the floor between Mr. Halbouty and members of the society about specific problems which have frustrated exploration geologists in the last decade.

New officers of the Society elected at the dinner meeting are:

Stuart Keesling	-- President
Bruce Macomber	-- Vice-President
Allen Hanson	-- Secretary
Roy Miley	-- Treasurer

The annual dinner dance of the Society was held Saturday, December 4, at the Ventura Womens' Center, with champagne cocktails, a prime rib dinner, and music furnished by Leroy Andrews' band. The dinner was a gourmet's delight, the music intoxicating, and the assembled throng gradually imbibed the vast stock of bubbly to the point at which the evening took on the aspect of a Hollywood technicolor extravaganza. Your reporter is pleased to say that all hands enjoyed themselves to the brink of oblivion, and that it was unnecessary to call the police to terminate the festivities. We are exceedingly grateful to John Sisler, the Dance Chairman, and his cohorts for the hours expended toward arranging the party, and to the companies listed below who helped to make the dance possible through their generous contributions:

CONTRIBUTORS TO C.G.S. 1965 DINNER DANCE

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Geological Exploration, Inc.
Johnston Testers
Lane Wells
Petrolog
Schlumberger
Tri Counties Blueprint & Supply Co.
Welex
Western Offshore Drilling & Exploration

SAN JOAQUIN GEOLOGICAL SOCIETY

The San Joaquin Geological Society is holding its monthly meeting at the American Legion Hall at 17th & L Streets in Bakersfield. Eighty-three attended the December meeting and enjoyed a well-prepared steak dinner. The change of meeting places appears to have stimulated attendance. Gene Tripp asks everyone to be sure to send the cards back for a count of those planning to be at the January meeting.

At the December 14 meeting, Mr. Henry Neal presented an excellent paper on "The Profession of Geology, Fractionation, Erosion, Professional Responsibility, and the A.I.P.G." (Abstract below). A lively discussion followed Mr. Neal's paper.

THE PROFESSION OF GEOLOGY

Fractionation, Erosion, Professional Responsibilities and the A.I.P.G.

The geological profession in the last few years has suffered fractionation into various splinters of the profession, erosion of our functions by other professions and, to some extent, a lack of professional responsibility within the profession itself.

FRACTIONATION

Twenty-five or thirty years ago there was little tendency to split the profession of geology into various disciplines. Although a geologist might be a mining geologist or a petroleum geologist, their basic education was identical. Only after thorough ground work in general geology did they specialize.

Although development and expansion of the techniques of the science in the last few years has certainly indicated a need for specialization in the profession, there is still no reason to abandon the basic concept that a man is a geologist first and a specialist second. If this concept is followed, there is no reason why a geologist should be confined to one branch of the science provided he is competent in any of the branches which he intends to follow. Perhaps some of the reasons for this splitting of the profession has arisen from the great increase in college students following World War II, which produced a great increase in the number of schools granting degrees in geology. Many of the smaller schools did not have adequate staff or facilities to provide a complete geological education with the result that many geologists were unable to obtain employment in the broad field of geology and found it necessary to specialize in that part of the science for which their particular school had been able to prepare them.

The result of this fractionation is detrimental to the entire profession, because the public is not aware of the various branches of the science. To them a geologist is a geologist and any failures on the part of any discipline of the profession reflects on the profession as a whole.

EROSION

In addition to the splitting of our own profession, we have suffered from erosion of many of our functions by other professions. Perhaps the best-known example of this is that erosion of the geologists' functions by the civil and soils engineers. This work was started with the study of soil as a building material and the characteristics of homogeneous artificial fills. It has been expanded to include almost all naturally-occurring geological materials, without, however, sufficient geological knowledge to recognize the limitations which natural

variations impose on the application of engineering methods to such materials. A lack of knowledge of the complexity of geology is, perhaps, a reason why the engineering profession is so willing to attack a geological problem with often very expensive and even disastrous results.

Other types of erosion suffered by the profession are by oceanographers, seismologists, and geophysicists. The paradoxical contrast between the wide extent and the importance of all that is now studied in the field of geology and the general lack of appreciation of its significance is difficult to analyze. It may be that since geology is all around us and is a part of everyday life, it is so commonplace that the average person does not think about it any more than he thinks about breathing or the beating of his heart, and, perhaps, the average engineer feels that it is so common that its phenomena should be understood by everyone and, therefore, it is not necessary to consult a geologist for advice.

PROFESSIONAL RESPONSIBILITY

If the profession is to avoid inevitable fractionation and erosion, we are going to have to develop the professional responsibility which does not exist at the present. Although many definitions of the words "profession" and "professional" can be found, perhaps the most important thing to know is not the definitions of the terms, but what it is that actually makes a man a professional. Since a professional is essentially a man who serves his clients, he cannot be considered a professional unless he has a very discerning sense of client relationship. Geologists generally have two types of clients -- geologists and nongeologists. The client of an oil company geologist is ultimately the management, which is generally made up of nongeologists. The clients of a professor are usually his students who are geologists in the making, or other geologists. The clients of a U.S.G.S. man are usually other geologists.

One of the greatest failures of the geologist is not tailoring his reports to the needs and understanding of his client. Unless a geologist can recognize the needs of his client, perform his work so as to render the desired services and prepare a report with concise and definite conclusions and firm recommendations when such are called for -- and do this in a manner which is thoroughly understandable to his client and cannot be misrepresented -- he cannot be called a true professional.

The geologist cannot expect a nongeologist to interpret a series of geological facts as related in a report which is lacking in conclusions and recommendations. After the failure of a dam or other structure, the excuse that the geologist provided the engineers with all of the geological facts does not absolve the geologist from blame if he did not provide also a complete interpretation of the facts, recommendation of the action to be taken, and the consequences to expect if the geological conditions were ignored.

Unless the profession of geology can generate a satisfactory public image, we can expect a continued erosion and fractionation of our profession. The only way we can expect to have a satisfactory public image is to conduct our activities in such a manner that the public will know what our profession is, know what we can do, and have faith in our ability to do it.

The A.I.P.G. was formed to improve and support the profession of geology. It was not formed to help individual geologists; however, without a strong profession, the individual is helpless. The A.I.P.G. can help the profession, but only the geologist can help the A.I.P.G.

NORTHWEST GEOLOGICAL SOCIETY

The November meeting of the Northwest Geological Society was held at the Holiday Inn north of Tacoma on November 16. Guest Speaker was Dr. Gordon Atwater, Distinguished Lecturer of the A.A.P.G. An abstract of Dr. Atwater's talk follows:

The Effect of Decrease in Porosity with Depth
on Future Development of Oil and Gas Reserves
in South Louisiana

Geologists and engineers have frequently made the premise that the amount of gas in place per unit volume increases as greater depths are penetrated, because of the attendant higher reservoir pressures. In order to test the validity of this premise, a study was made of the effect of depth of burial upon the other variables in the standard formula used to calculate the amount of oil and gas in place.

Sandstone porosity data were obtained for more than 13,000 samples of conventional cores, including samples from 101 fields of South Louisiana. A curve constructed from these data demonstrates that the amount of void space per unit volume available for the accumulation of oil and gas decreases with increasing depth. This decrease in porosity, 1.265 per cent of total volume per 1,000 feet of burial, is the most important single factor controlling the amount of oil or gas in place per unit volume of sandstone reservoir rock. Exploration and development management should be conscious of the diminishing returns to be anticipated as greater depths are explored.

Porosities associated with abnormally pressured reservoirs were studied, as was the incidence of abnormally pressured reservoirs in South Louisiana as a function of depth of burial. The porosities of the abnormally pressured reservoirs, averaged by 1,000-foot depth increments, fit a straight line plot of porosities from all reservoirs.

It appears to be a reasonable hypothesis that the observed decrease in sandstone porosities with depth provides the mechanism creating the abnormal pressures so frequently encountered in oil and gas reservoirs of South Louisiana.

PERSONAL ITEMS

CHARLIE FRUITT, Shell, visited the Bakersfield area in time to attend the Shell Christmas party. Charlie was formerly a District Geologist in Bakersfield.

The Northern Division of Standard is finally getting acquainted with the new Superintendent, AL MARTINI. Al is back in the office after recovery from back surgery, and he now has a spring in his step to match his youthful appearance.

GEORGE WEBB, Standard's Oildale Development Geologist, and his family are spending the holidays in Hawaii. Several Service Company people offered to pay his fare one way, but George is planning on being back to keep them abreast of the latest development techniques.

MR. JOHN MANNING consented to present some information on local water problems at the May meeting.

GEORGE RUDKIN, Marathon, has finally settled in Bakersfield. He has sold his real estate in Sacramento and is now moved into a new home in the Southern City.

JOE BORDEN, long-time Pure geologist and more recently a Union hand in the Anchorage office, retired December 1 after 38 years service with Pure. Joe and his wife, Marion, are presently on an extensive vacation trip, which will include visits to California and Hawaii. After their travels, the Bordens plan to settle in Denver.

Named as District Exploration Geologist for Union in Anchorage is BOB SAUNDERS. Bob formerly headed the Pure office here.

The hazards of winter sports are all too real to JOHN LEVORSEN, Richfield. John, a recent transfer, fell on his first attempt at ice skating and fractured a wrist. That's not much of a welcome for a Cheechacko.

December 30 is drawing near and JOHN SWEET, Atlantic's chief in Anchorage, is eyeing Richfield's third story office suite from his second story building. The air is thinner up there, John.

FRANK SMITH, Standard, is in La Habra for a while to get thawed out. Meanwhile, DON MCGEE is thinking of home-steading at Anchor Point -- he has been well-sitting so long in the bush.

It was too quiet at the Marathon office with no recent earthquakes or fires, so TOM WILSON wrapped his brand new Ford around a telephone pole to liven things up. Tom blames icy streets and the other driver. Last word, the car is still in the shop, but Tom is O.K.

LUM LOVELY, well-known Anchorage consultant, is vacationing with his family in the South 48 over the holiday season.

Two staunch supporters of the Pacific Northwest are planning Christmas in California. DANA BRAISLIN of Union at Olympia is heading for old haunts in Pasadena. BILL LEWIS of Standard in Seattle will visit family in Tustin.

The Union-Pure merger has juggled two ex-Southern Californians now in the Gulf Coast area. JACK VAN AMRINGE has been transferred to Lafayette, Louisiana, as Union's District Exploration Geologist there, and DICK PERYAM has been named District Exploitation Geologist, remaining in New Orleans.

BUS IVANHOE spent the holidays in Rome after a stint in Ankara, Turkey, as consultant to the Turkish Petroleum Company. While there, Bus gave a talk on "Brackish Sediments as Favorable Oil-Source Rocks" to the Turkish Association of Petroleum Geologists.

NORM GEIDT, Standard in Seattle, was recently seen shopping for parkas and muk-luks in preparation for transfer to Anchorage in January.

Friends of NEAL CARROLL of Texaco will be interested to know he is "enjoying" the snow of the North Olympic Coast of Washington in his current assignment.

Getty Oil Company has not publicly announced the results of a new logging tool recently used. (Refer to November 23rd Munger Report.)

TOM MCCRODEN, Standard, La Habra, was recently married to the former Cleo Littlejohn. While Standard's District Geologist was honeymooning, its competitors broke a number of lease plays in the L. A. Basin. Company policy may dictate unannounced elopements in the future.

BIBLIOGRAPHY OF RECENT PUBLICATIONS

U. S. GEOLOGICAL SURVEY

Publications of the Geological Survey, 1964. 79 p. Free

Professional Paper 464: Devonian rocks and paleogeography of central Arizona, by Curt Teichert \$3.75

Professional Paper 503-E: Revision of some Paleozoic coral species from the Western United States, by W. J. Sando \$0.65

Bulletin 1187: Quicksilver deposits of southwestern Alaska, by C. L. Sainsbury and E. M. MacKevett, Jr. \$2.85

Water Supply Paper 1809-P: Water-supply potential from an asphalt-lined catchment near Holualoa, Kona, Hawaii, by S. S. W. Chinn \$0.15

Water Supply Paper 1809-R: Electrical-analog analysis of hydrologic data for San Simon basin, Cochise and Graham Counties, Arizona, by N. D. Wite and W. F. Hardt \$0.60

Water Supply Paper 1812: Public water supplies of the 100 largest cities in the United States, 1962, by C. N. Durfor and Edith Becker \$2.00

Geophysical Abstracts 226, November, 1965, by J. W. Clarke, D. B. Vitaliano, V. S. Neuschel, and others \$0.35

Circular 499: Selected references on saline ground-water resources of the United States, by J. H. Feth. 1965. 30 pages. Free

Circular 516: Index of surface-water records to December 31, 1963 -- Alaska, by H. P. Eisenhuth, 1965. 17 pages. Free

Circular 522: Resources of oil, gas, and natural-gas liquids in the United States and the world, by T. A. Hendricks Free

MAPS:

GQ 428: Geologic map of the Blackcap Mountain quadrangle, Fresno County, California, by P. C. Bateman \$1.00

Map I-449: Geologic map and sections of the Ely 3 SW quadrangle, White Pine County, Nevada, by A. L. Brokaw and D. R. Shawe \$0.75

SUMMARY OF OPERATIONS, CALIFORNIA OIL FIELDS, vol. 50, no. 2, 1964 (California Division of Oil and Gas, Sacramento)

Subsidence and Repressuring in Wilmington Oil Field, by Wallace F. Huey

Del Valle Oil Field, by D. Lande

Canoga Park Oil Field, by R. V. Rothermel

English Colony Oil Field, by A. G. Hluza

Southeast area of Wheeler Ridge Oil Field, by J. A. Barnes

Dutch Slough Gas Field, by William J. Hunter

Guadalupe Oil Field, by Eugene D. Lawrence

Lynch Canyon Oil Field, by Elbert R. Wilkinson

CALIFORNIA DIVISION OF MINES AND GEOLOGY (Mail order to: Ferry Building, San Francisco)

Special Report 85: Economic geology of the French Gulch quadrangle, Shasta and Trinity Counties, California, by John P. Albers. \$2.00 (plus 8¢ tax)

Geologic map of California: BAKERSFIELD SHEET, in envelope with explanatory data sheet. \$1.50 (plus 6¢ tax)

THE ORE BIN, vol. 27, no. 11, November, 1965

Coastal landslides of Northern Oregon, by William B. North and John V. Byrne

CALIFORNIA OIL WORLD, vol. 58, no. 20. Second issue, October, 1965

East Wilmington development moves fast, by Louis F. Jobst, Jr.

CALIFORNIA OIL WORLD, vol. 58, no. 21, First issue, November, 1965

Sealab II experiment valuable to oil industry, by Louis F. Jobst, Jr.

Oil's most exclusive club, by Bill Rintoul.

JOURNAL OF GEOPHYSICAL RESEARCH, vol. 70, no. 20, October 15, 1965

The paleolatitude of Tertiary oil fields, by E. R. Deutsch.

Eigen vibrations of the earth after the Alaskan Earthquake, by Ali A. Nowroozi.

JOURNAL OF GEOPHYSICAL RESEARCH, vol. 70, no. 22, November 15, 1965

Geophysical investigation of the southern Puget Sound area, Washington, by Z. F. Danes, M. Bonno, E. Brau, W. D. Gilham, T. F. Hoffman, D. Johansen, M. H. Jones, B. Malfait, J. Masten, and G. O. Teague.

Gravity, isostasy, and crustal structure in the Southern Cascade Range, by T. R. LaFehr.

JOURNAL OF GEOLOGY, vol. 73, no. 6, November, 1965

The quantitative mapping of directional minor structures, by David Elliott.

THE AMERICAN MINERALOGIST, vol. 50, no. 9, September, 1965

Revised chemical analyses of traskite, verplanckite and muirite from Fresno County, California, by John T. Alfors and George W. Putman.

GEOLOGICAL SOCIETY OF AMERICA BULLETIN, vol. 76, no. 10, October, 1965

Late Cenozoic deformation in the central Coast Ranges of California, by M. N. Christensen.

Stepped topography of the southern Sierra Nevada, by Clyde Wahrhaftig.

Geology of Richardson Rock, Northern Channel Islands, Santa Barbara County, California, by Harold D. Palmer.

ECONOMIC GEOLOGY, vol. 60, no. 7, November, 1965

Hydrothermal alteration in GS-3 and GS-4 drill holes,
Main Terrace, Steamboat Springs, Nevada, by
Robert Schoen and D. E. White.

OIL AND GAS JOURNAL, vol. 63, no. 46, November 15, 1965

It's hunting season in Kaiparowits, by John C. McCaslin.

OIL AND GAS JOURNAL, vol. 63, no. 47, November 22, 1965

Organic-walled microfossils aid oil search,
by Graham L. Williams.

OIL AND GAS JOURNAL, vol. 63, no. 48, November 29, 1965

Soil mechanics may offer clues to stratigraphic
traps, by Donald J. Belcher and Eugene L. Schepis.

OIL AND GAS JOURNAL, vol. 63, no. 49, December 6, 1965

New gas and oil strikes spur drilling in south-
eastern Colorado.

The score is high in Uinta, by John C. McCaslin.

"Doodlebug" to map subsea geology.

ENGINEERING AND MINING JOURNAL, vol. 166, no. 11,
November, 1965

Saudi-Arabia's new mineral development program.

CHANGES OF ADDRESS

	Armour Kane Schlumberger Well Surveying Corp. P. O. Box 472 Bakersfield, California	L. C. Lovely, Jr. 440 East 15th Avenue #4 Anchorage, Alaska 99501
Peder Grimstad c/o Shell Oil Company 1008 West 6th Street Los Angeles, California 90054	John C. Kirkpatrick Superior Oil Company Box 200 Casper, Wyoming 82601	George C. Lutz Shell Oil Company 1008 W. 6th Street Los Angeles, California 90054
Siegfried Hamann c/o International Petroleum Company Talara Peru	Raymond L. Knight c/o Mobil Oil Company 10737 S. Shoemaker Road Santa Fe Springs, California	Edward Mayer 470 Peralta Avenue Long Beach, California 90814
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William J. Hunter 12100 Montecito Road No. 80 Los Alamitos, California 90720	R. S. Lamon 520 North Rossmore Avenue Los Angeles 4, California	Mary McNeil 3357 Stewart Avenue Los Angeles, California 90066
Richard H. Jahns School of Earth Sciences Stanford University Stanford, California 94305	G. W. Ledingham Nigerian Gulf Oil Company P.M.B. 2469 Lagos, Nigeria	James I. Mercier Occidental Petroleum Corporation 5000 Stockdale Highway Bakersfield, California
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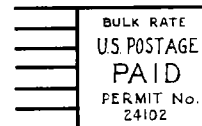
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PACIFIC PETROLEUM GEOLOGIST
PACIFIC SECTION. A.A.P.G.
P.O. BOX 17486. FOY STATION
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Volume 20

Number 1

Return Requested



Richard L. Hester
Pauley Petroleum, Inc.
10000 Santa Monica Blvd.
Los Angeles, Calif. 90067

DA

PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

February, 1966

Number 2

ASSOCIATION ACTIVITIES

PAPERS, FIELD TRIPS ANNOUNCED FOR "OFFSHORE OIL" CONVENTION AT LONG BEACH

Details of program and field trips for the 1966 Pacific Section A.A.P.G. - S.E.G. - S.E.P.M. Convention, to be held March 24-26 in Long Beach, have been announced by General Chairman William D. Emerson. The Lafayette Hotel will be convention headquarters; registration, technical sessions and exhibits will be located nearby at the Long Beach Municipal Auditorium. This waterfront location is appropriate to the theme, "Offshore Oil," and will facilitate the principal field trip, a tour of the various offshore oil installations in Long Beach Harbor and San Pedro Bay.

For this sea-going field trip, scheduled for Saturday, March 26, geologists will board the Shearwater at Pierpont Landing and cruise past the THUMS facilities at East Wilmington and the Belmont, Surfside, and Huntington Beach drilling islands. In place of the usual road log, a 1" = 2000' map will be provided showing lease boundaries, drilling islands, coreholes, and available geological data. Refreshments will be available on board. At the conclusion of the four-hour cruise, participants may transfer directly to a bus for a two-hour tour of the nearby Long Beach (Signal Hill) and Seal Beach fields.

Special events, to be held at the Lafayette Hotel, will include the A.A.P.G. - S.E.G. - S.E.P.M. joint luncheon on Thursday, March 24, which will feature a talk on the Navy's Sealab II project. At the S.E.P.M. Dinner Meeting, also on Thursday, Dr. Orville Bandy, U.S.C., will describe "Time-Transgressive Problems of the California Cenozoic." Friday night's Dinner Dance will be preceded by a Cocktail Hour. Other scheduled events include the Convention Cocktail Party, Thursday afternoon, and college alumni luncheons on Friday. Women's activities will include a cruise around the Inner Harbor on Thursday and a visit to Ports of Call for luncheon and shopping on Friday.

Program Chairman, Robert C. Spivey, has released the following partial list of papers to be presented at the A.A.P.G. and S.E.P.M. Technical Sessions (an additional ten papers will be presented by the S.E.G.):

PARTIAL LIST OF PAPERS TO BE PRESENTED AT PACIFIC SECTION, A.A.P.G.-S.E.G.-S.E.P.M. JOINT ANNUAL MEETING, MARCH 24, 25, 1966, LONG BEACH, CALIFORNIA

Adshead, Patricia C. Univ. of So. Calif.	"Taxonomic Significance of Pseudopodial Development in Living Planktonic Foraminifera
Allen, D. R. and Stockton, Douglas Long Beach Department of Oil Properties and California Division of Oil and Gas	"Injection Water Sources Wilmington and East Wilmington Oil Fields"

February 4

February 7

February 7-8

February 8

February 11

February 14

February 15

CALENDAR

LOS ANGELES, Friday afternoon,
1:30 P.M., Mobil Auditorium,
612 South Flower Street, S.E.G.
Digital Seminar #4, "Digital
Computer Theory and Hardware,"
by Mr. Howard Marks, Control
Data Corporation.

BAKERSFIELD, Monday evening,
7:30 P.M., Bakersfield College,
Science & Engineering Building,
Room 56, Biostratigraphic
Seminar, "Dinoflagellate
Morphology and Relationships,"
by Dr. W. R. Evitt, Stanford
University.

STANFORD, Monday and Tuesday
afternoons, 4:00 P.M., Room 320,
Geology Building, "Sediment of
the Aleutian Trench," by
Dr. George W. Moore, U.S.G.S.,
Menlo Park.

BAKERSFIELD, Tuesday evening,
6:30 P.M., American Legion Hall,
17th & L Streets, Bakersfield,
San Joaquin Geological Society,
"Iran, Land of Colorful Geology"
by Howard Anderson, Standard Oil
Company of California. Ladies'
Night.

LOS ANGELES, Friday afternoon,
1:30 P.M., Mobil Auditorium,
612 South Flower Street, S.E.G.
Digital Seminar #5, "Input-
Output Devices Associated with
Digital Computers," by Serge R.
Helfer, I.B.M. Corporation.

STANFORD, Monday afternoon,
4:00 P.M., Room 320, Geology
Building, "Permafrost: Some
Engineering Problems and Their
Geological Implications," by
Dr. Robert F. Legget, Consulting
Geologist, Ottawa, Ontario.

STANFORD, Tuesday evening,
7:45 P.M., Dinkelspiel Auditorium,
"The Canadian North, An
Illustrated Tour Including
Remote Places Seldom Seen by
Travellers," by Dr. Robert F.
Legget, Consulting Geologist,
Ottawa, Ontario.

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February 25

LOS ANGELES, Friday afternoon,
1:30 P.M., Mobil Auditorium,
612 South Flower Street, S.E.G.
Digital Seminar #7, "Autocorre-
lation," by Mr. Mel Carter,
Geophysical Services, Inc.

February 28 -
March 1

STANFORD, Monday and Tuesday
afternoons, 4:00 P.M., Room 320,
Geology Building, "Geology and
Ore Deposits of the Bradshaw
Mountains and the Jerome Area,
Arizona," by Dr. Charles A.
Anderson, U.S.G.S., Menlo Park.

March 3

LOS ANGELES, Thursday noon,
Rodger Young Auditorium, 936
West Washington Boulevard, "Near
Shore Sediment Circulation," by
Mr. James Vernon, Consultant.

March 7

BAKERSFIELD, Monday evening,
7:30 P.M., Bakersfield College,
Science and Engineering Bldg.,
Room 56, Biostratigraphic
Seminar, "Spores, Pollen and
Dinoflagellates of the Panoche
Hills Area," by Dr. Warren S.
Drugg, Chevron Research Corp.

March 8

BAKERSFIELD, Tuesday evening,
5:30 P.M. (Happy Hour), 6:30 P.M.
(Dinner), American Legion Hall,
17th and L Streets, San Joaquin
Geological Society, "Rejuvena-
tion of a Tired Oil Field," by
Jack W. Kappler and James G.
Herblin, Tidewater.

NEXT DEADLINE - FEBRUARY 14

SEPM QUESTIONNAIRE RESULTS

The results of a recent survey of the membership of the Pacific Section, S.E.P.M. have finally been tabulated. The survey was made to obtain a better understanding of the background and desires of the membership for future conventions, field trips, etc.

Member's Present Affiliation

<u>Oil</u>	<u>Academic</u>	<u>Government</u>	<u>Consulting</u>	<u>Other</u>
55 o/o	28 o/o	4 o/o	8 o/o	5 o/o

Member's Specialty or Main Area of Interest

Micropaleontology	44 o/o
Geology	27 o/o
Macropaleontology	9 o/o
Stratigraphy and Sedimentation	6 o/o
Palynology	5 o/o
Nannofossils	3 o/o
Oceanography	2 o/o
Mineralogy	2 o/o
Vertebrate Paleontology	1 o/o
Paleomagnetism	1 o/o

Mort Polugar

February 18

LOS ANGELES, Friday afternoon,
1:30 P.M., Signal Auditorium,
1010 Wilshire Boulevard, S.E.G.
Digital Seminar #6, "Machine
Language," by Seismic Data
Systems.

February 21

LOS ANGELES, Monday evening,
7:00 P.M., Mobil Auditorium,
612 South Flower Street,
"Tectonics of the 1964 Alaskan
Earthquakes," by Mr. George
Plafker, Research Geologist,
Alaskan Branch, U.S.G.S.,
Menlo Park.

February 21-22

STANFORD, Monday and Tuesday
afternoons, 4:00 P.M., Room 320,
Geology Building, "World-Wide
Systems of Oceanic Ridges," by
Dr. Henry W. Menard, Professor
of Earth Sciences, U. S.,
San Diego.

HAVE YOU MAILED YOUR BALLOT ON CONSTITUTIONAL REVISION?
Refer to December, 1965, Newsletter

CONVENTION ABSTRACTS - Cont. from Pg. 1

- | | | | |
|--|--|---|--|
| Attlesey, W. H.
Global Marine, Inc.
Los Angeles | "Pacific Offshore Drilling and Completion Techniques" | Herron, R. F.
Edgerton, Germeshauser & Grier, Inc.,
Santa Barbara | "Sub-Bottom Investigation Techniques" |
| Bandy, Orville L.
Univ. of So. Calif. | "Faunal Evidence of Miocene-to-Recent Paleoclimatology in the Antarctic" | Hsu, K. J.
University of California, Riverside | "Structural Evolution of the Santa Lucia Range, California" |
| Barnes, D. F., Lucas, W. H., Mace, E. V., Malloy, R. C.
U.S. Geological Survey, Menlo Park, California, and U.S. Coast and Geodetic Survey, Seattle, Washington and Washington, D. C. | "Reconnaissance Gravity and Other Geophysical Data From the Continental End of the Aleutian Arc" | Kulm, L. D.
Oregon State Univ., Corvallis | "The Influence of Cascadia Channel on Abyssal Sedimentation" |
| Brown, G. A.
Geotechnical Consultants, Inc., Glendale, Calif. | "The AEG's Position on Registration of Engineering Geologists" | Mayuga, M. N.
City of Long Beach
Department of Oil Properties | "Recent Developments in the Wilmington - Long Beach Unit Oil Field" |
| Burk, C. A.
Socony Mobil Oil Co., Inc., New York | "Alaska Peninsula" | Noble, F. J.
Union Oil Co.
Santa Fe Springs | "Huntington Beach Offshore - Parcel 14" |
| Byrne, J. V., Kulm, L. D., Maloney, N. J.
Oregon State Univ., Corvallis and Universidad De Oriente, Cumana, Venezuela | "Textural Trends of Recent Sediments from River to Abyssal Plain Off Oregon" | Paschall, R. H.
California State Board of Equalization | "Options for Geologists in Selecting a Professional Status" |
| Chilingar, G. V., Hoylman, M. W., and Karim, M. F. | "Studies on Direct Approach to Exploration for Oil and Gas" | Ptacek, Anton D.
San Diego State College | "Chronology of Deformation of the Paleozoic and Tertiary Succession Near Railroad Valley, Nevada" |
| Corey, W. H.
Los Angeles, Calif. | "Southern California and Offshore Tertiary Basins" | Riendl, J. A.
Precision Exploration Consultants, Anchorage | "Closing the Onshore-Offshore Gap" |
| Dietz, R. S. and Holden, J. C.
U.S. Coast and Geodetic Survey
Washington, D. C. | "Mioclines in Space and Time" | Rothwell, W. T., Jr.
Atlantic Refining Company, Long Beach | "Stratigraphic Facies Prediction and Recognition in Young Offshore Basins from Studies of Fossil Environments" |
| Elliott, W. J.
San Diego State College | "Gravity Survey and Analysis of the San Diego Embayment, Southwest San Diego County, California" | Rusnak, G. A.
U.S. Geological Survey, Menlo Park | "The Continental Margin of Northern and Central California" |
| Enlows, H. E. and Coles, K. F.
Oregon State Univ. | "Authigenic Silicates in the Marine Spencer Formation at Corvallis, Oregon" | Solanas, D. W.
U.S. Geological Survey, Los Angeles | "Santa Barbara Channel Federal Sale" |
| Forman, J. A.
Mobil Oil Company
Santa Fe Springs | "Diving Geology" | Spaulding, A. O.
Petroleum Administrator
City of Los Angeles | "Oil and the Asphalt Jungle, Part II" |
| Fowler, G. A.
Oregon State Univ.
Corvallis | "Stratigraphy of the Montesano Formation, Washington" | Story, R. F.
Shell Oil Company
Los Angeles | "Middle Ground Shoal Field" |
| Gastil, G. and Allison, E. C.
San Diego State College | "An Upper Cretaceous Faultline Coast" | Taylor, D. M.
Brown and Root, Inc. | "Project Mohole" |
| Gerard, Robert
Lamont Geological Observatory | "JOIDES Ocean Drilling on the Continental Margin Off Florida" | Traxler, J. D.
Signal Oil and Gas Co.
Los Angeles | "Elwood Field" |
| Heintz, L. O.
North Hollywood, Calif. | "Seasonal Distribution of Magnetite and Ilmenite in the Beach Sand of Malaga Cove, California" | Walker, Charles T.
California State College at Long Beach | "Boron as Paleosalinity Indicator Not Affected by Carbon in Clay Fractions" |
| | | Wilson, H. D.
Ocean Systems, Inc.
Santa Barbara | "Advanced Diving Systems" |
| | | Wright, F. F.
University of Southern California | "The Sedimentary Regime of San Miguel Gap" |
| | | Youngquist, Walter
University of Oregon,
Eugene | "The Oregon and Washington Eugeosyncline" |

SAN JOAQUIN GEOLOGICAL SOCIETY

The American Legion Hall has proved to be an excellent meeting place for the San Joaquin Geological Society monthly meetings. We owe a special vote of thanks to Mr. Harry Feder for arranging the use of the Hall for these gatherings.

On January 11, 1966, Dr. Newell J. Trask of the U.S.G.S. presented movies and explanation in an outstanding paper entitled "Stratigraphy of the Moon." His abstract follows.

A resolution was passed by the Society to make geological interpretations available to the appointed committee for the choice of locations for the new campus of Kern State College. The following statement was presented:

Statement To
Kern County State College Site Advisory Committee
(Thursday, January 13, 1966 - 8:30 A.M.,
Bakersfield Police Auditorium)

The San Joaquin Geological Society is the largest local geological society west of the Rocky Mountains, with a membership of over 200 geologists. In the interest of the public safety of present and future residents of the southern San Joaquin Valley, the Society feels a professional responsibility to make this statement. A resolution to do so was made and passed by the membership on January 11, 1966.

We recommend that this committee have reports prepared by competent geologists concerning any present or potential geologic hazards which may exist on or adjacent to each of the proposed sites. Geologic hazards which could endanger the safety of persons or property include, among others, subsidence, landslides and active faults. Such reports are now mandatory in several California counties and in the City of Los Angeles.

We further recommend that these geologic reports be given due consideration prior to the final selection of a site.

Rodney G. Colvin, President
John Thomson, Vice President
Wayne Estill, Secretary
Eugene Tripp, Treasurer

Beginning on Thursday evening, January 20, 1966, and continuing each week thereafter until March 10, 1966, at Bakersfield College, Math and Science Building, Room 2, the "Geophysical Digital Seminar" will be presented by industry leaders. This series of seminars is also being presented by the S.E.G. in Los Angeles.

STRATIGRAPHY OF THE MOON

by Newell J. Trask

U. S. Geological Survey, Menlo Park, California

Abstract

The principles of superposition and intersection can be applied to classify the surface materials of the Moon according to relative age. Reconnaissance geologic mapping at a scale of 1:1,000,000 has resulted in the recognition of a well-defined stratigraphic column in the north-central part of the lunar earthside hemisphere, in the vicinity of Mare Imbrium. A regional blanket of material surrounding the Imbrium basin is the oldest well-established unit. It is overlain by plains-forming materials of at least two separate ages including the widespread dark material of the lunar "seas." Crater materials of four separate ages occur throughout the column. All of the formations have been grouped into three time-stratigraphic systems. Mapping in other parts of the Moon has shown that parts of these systems can be extended beyond the Mare Imbrium region, but that local

rock-stratigraphic units must be employed in order to map large parts of the lunar terrae. The correlation of these local units with the standard column is a major problem of lunar geology.

In the same way that terrestrial geology deals with earth history, the object of lunar geologic mapping and stratigraphic studies is the determination of the history of the Moon and of the processes that have given rise to its present condition. Both impact processes and volcanic processes appear to have played large roles in shaping the present lunar surface.

Stratigraphy and structure can also be mapped at larger scales by use of photographs obtained by Ranger spacecraft. A series of experimental geologic maps have been produced from the Ranger photographs. These maps necessarily employ a local stratigraphic column in each small area. Maps of this type will form the basis for planning the geologic objectives of manned lunar missions. An example of a two-man traverse planned with a geologic map base shows that a considerable variety of materials and structures can be examined and sampled on the lunar surface in early Apollo missions. The combination of small-scale and large-scale mapping from photographs, together with manned landings at carefully selected points, will provide important clues to the history of the Earth-Moon double planet system.

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

At the regular Monday luncheon meeting of January 10, the New Year was started by an excellent and informative talk by Gordon I. Atwater on the "The Effect of Decrease in Porosity with Depth on Future Developments of Oil and Gas Reserves in Southern Louisiana." A record crowd (for NCGS) of 57 geologists and petroleum engineers heard Dr. Atwater's Matson Award-winning talk on this subject. Since he was in San Francisco, Gordon started with the broad-minded statement that "Neither race, creed, or color is being allowed to influence in any way the porosity of sands in southern Louisiana."

He said that the statement has frequently been made that the amount of gas in place per unit volume increases as greater depths are penetrated, mainly because of the attendant higher reservoir pressures. The study conducted by Atwater and his associates of New Orleans was made on the effect of depth of burial upon the other variables in the standard formula used to calculate the amount of oil and gas in place. Over 17,000 samples were studied and permeability studies were made on over 6900 samples. The results of this study demonstrate that the amount of void space per unit volume available for the accumulation of oil and gas decreases with increasing depth. This decrease in porosity amounts to approximately a 1.3 percent reduction per 1000 feet of depth. This is the most important single factor controlling the amount of oil or gas in place per unit volume of sandstone reservoir rock. Management especially should understand the diminishing returns which may be anticipated as greater and greater depths are explored.

Gordon discussed also the porosities associated with abnormally pressured reservoirs, a number of which occur in southern Louisiana. In conclusion, he said that there appears to be a reasonable hypothesis that the observed decrease in sandstone porosities with depth provides the mechanism creating the abnormal pressures so frequently encountered in oil and gas reservoirs of southern Louisiana.

The results of this research, although dealing entirely with oil and gas fields of southern Louisiana, carry implications of considerable value for consideration in other areas, including the oil and gas reservoirs of California.

CLASSIFICATION COMMITTEE

The A.A.P.G. Classification Committee and the Conservation Committee have announced their new lists of "California Oil Field and Pool Names," and "California Gas Fields and Pools" effective January 1, 1966. Copies may be obtained by contacting M. C. Barnard, Jr., The Atlantic Oil Refining Co., Richfield Building, 555 South Flower Street, Los Angeles, or by phoning 629-4111, Ext. 2312.

Members of the Classification Committee are:

M. C. Barnard, Jr.	- The Atlantic Refining Co.
Cliff Edmundson	- Shell Oil Company
R. R. Knapp	- Standard Oil Company
Al Lilley	- Texaco, Inc.
Bernard Minch	- Union Oil Company
D. E. Ritzius	- Division of Oil and Gas
T. H. Sisk, Jr.	- Humble Oil & Refining Co.
J. D. Traxler	- Signal Oil and Gas Co.
W. R. Wardner, Jr.	- Conservation Committee of California Oil Producers
M. T. Whitaker	- Mobil Oil Company

ALASKA GEOLOGICAL SOCIETY

The December luncheon meeting featured a movie-illustrated talk on the "McNeal River Project" by Jerry R. Harris, Chief of Electronics Survey Section Bureau of Land Management. Systems used for this project are described in the following resume:

Upon attaining statehood in 1959, Alaska was given twenty-five years in which to select an area of more than 103 million acres from the public lands, an area larger than the State of California. To date, selections have totaled only about 13 million acres, which is slightly more than the combined area of Vermont, New Hampshire, and Rhode Island. Less than 1 percent of the 365 million acres of Alaska had been surveyed prior to statehood. So, nearly all of the 103 million acres to be selected require surveying.

The Bureau of Land Management's Division of Engineering in Alaska has the responsibility for surveying the lands selected by the State. The boundaries of State-selected areas are monumented at specified intervals, generally at an average spacing of two miles around the boundaries of each township. Intermediate monuments need not be set on rectangular system subdivision corners, but they are set on township lines. Other monuments are usually set on ridge crests, at major streams, and near lake shores. Alaska, in its vastness, has some extremely rough terrain, ranging from impassable swamps to rugged mountains with large glaciers, numerous rivers, and many lakes. All of these make the conventional methods of cadastral surveys extremely difficult, if not impossible. To establish the boundaries of State-selected lands economically, BLM's Division of Engineering has pioneered in developing new methods and in adapting existing methods to the greatest advantage for operations that must be compatible with air-borne supply and conducted during a short field season.

Advantages which Alaskan operations enjoy are excellent maps of the majority of the areas of operation and extensive nets of horizontal control established in connection with the mapping programs of the Federal Agencies. Modern electronic surveying techniques make it feasible to determine geodetic positions in any area with an ease and economy not possible previously.

The accessibility of control and the newer techniques permit us to make the greatest use of protraction sheets, prepared by the Division of Engineering, showing the geographical values for every township corner. Through use of electronic computer programs, the plane coordinate values for any corner, are readily obtained. By electronic survey methods, monuments are established by techniques more of a geodetic nature than by the conventional transit-and-tape methods customarily used in cadastral surveys. Lines are not run on the ground, but rather monuments are established at predetermined positions. Actually, the operation is the reverse of the geodetic technique, in which values are determined for monumented stations; our operation requires placing the monument at a predetermined location, utilizing previously established horizontal control stations. The most desirable surveying method would be one by which monuments could be rapidly set and which would afford a checked position. Techniques previously used, although attaining reasonable economy, did not afford positive checks against error or mistake in all instances. The AirBorne Control System has overcome this difficulty.

The AirBorne Control (ABC) System equipment was developed largely by the U. S. Geological Survey. We have been working closely with the USGS during the development of this system.

The method, outlined herein, using this system for cadastral surveys was developed by the Electronic Survey Section of the Division of Engineering and was used on several large projects in Alaska for approximately five months in 1963.

The first operation, after it has been determined to use the ABC method for a project, is the office planning. The protraction grid, the approved plan of monumentation, and all horizontal control are carefully plotted on topographic maps or photo mosaics. Then it must be determined where intermediate monuments are required and the approximate coordinates are scaled from the map. A listing is prepared of the coordinate positions for proposed monumentation and of the horizontal control stations to be used in establishing the monument locations. This listing is submitted to the Branch of Computations for the electronic computing of angles and distances from control stations to monuments.

In the use of the ABC System, a helicopter serves as a transportation medium for the survey party, and then by hovering serves as an aerial platform whereby the survey party is positioned over a ground point at a height necessary to provide line of sight for angle and distance measurements from one or more ground stations. This system is built around the Hoversight, a device developed and patented for the U. S. Geological Survey by Mr. Hugh B. Loving of their Topographic Division, Branch of Research and Design. (An excellent paper by Mr. Loving on this system is in the March, 1963, issue of AGSM.)

The ABC System offers economy in cost per monument placed. Since the hovering helicopter serves as an aerial platform, it is not necessary to build expensive towers nor to cut long sight lines. Also, this system affords checked positions. Another advantage is flexibility; monument density may be increased or decreased readily.

From the experience gained to date, it appears that the ABC technique described here will have wide application to cadastral surveys in Alaska. This system will also be utilized extensively in Alaska to obtain the position of isolated U. S. Surveys located within State-selected areas.

PERSONAL ITEMS

R. L. (Bob) LISKA has been transferred to Texaco Petroleum, Inc., in Bogota, Colombia. He joins three other California expatriates, WARREN GILLIES, KEN MYRON, and JIM TAYLOR. Bob left this country fully equipped with an armored jacket to ward off poisonous darts.

JOHN CASS has retired from the real estate business and is attempting to complete his move to Long Beach. Presently, John is in Ventura sharing the measles with his two-year-old daughter.

Old "Huff and Puff" LOU CANUT (E. B. Hall) has recently been seen patronizing the local blacksmith shops in the Wilmington area.

VIRGIL ST. CLAIR, formerly with Pure Oil Company, is now Union's District Geophysicist for the Southern District and California Offshore, at Santa Fe Springs. Other new faces among Union's Southern District geologists are JIM HARMS, transferred from Midland, Texas, and DAVE COURTIS, recently graduated from the University of Michigan.

BILL BASSINGER is now Union's Northern District Geophysicist in Bakersfield -- he was formerly with Pure in Houston.

LUM LOVELY (Consultant, Anchorage) and family are spending some time in sunny Southern California and points south. He leased a plane and spent part of his time vacationing in Mexico before coming north to California for business and pleasure. He expects to return to Alaska about February 1.

TOM ROY (Marathon, Casper) is reported to be writing an E-log interpretation evaluation for his company.

ED JOUJON-ROCHE is retiring from Shell on February 1, 1966, after thirty years of faithful service. He plans on going into consulting on ground water geology with Dr. John Manning.

BOB MORRISON, recently with Richfield, has been employed by Occidental effective January 10, 1966.

CHERYL LACKEY and DICK ANGERER (Standard, Oildale) announce their engagement. The impending marriage will take place after Cheryl graduates from Long Beach City College.

DON FRAMES will continue his consulting practice from Raymond, California, in Madera County after March 8. The Frames apparently like country living.

STEPHEN M. LEVY joined the Exploration Department for Standard at Oildale the first of the year. He was educated at the University of Oklahoma and San Diego State College.

BILL THOMPSON also hired into Standard's Oildale Exploration Department in December, 1965. He attended Montana School of Mines.

RUSSELL R. SIMONSON has opened a consulting office at 811 West Seventh Street (Havenstrite Building) Room 1106, Los Angeles, California. Telephone 626-1167. Russ has been traveling and doing consulting work in Europe and Africa since August. He resigned his position as Division Geologist for Marathon Oil Company July 1, 1965, after 23 years of service.

WAYNE FELTS, Assistant to Division Manager, Texaco, Inc., in Anchorage, has been transferred to Houston, Texas, on special assignment. Wayne and his wife, Betty, left within 6 days of notification of transfer. Probably record time, but then it has been 10 to 20 degrees below zero, with snow up to our armpits.

HERB WHEELER, a Signal engineer from Huntington Beach, has just been transferred to Sacramento to straighten out the geologists there.

SWISS HOLMES, the omniscient Shell scout at Sacramento, was observed parked by the side of Highway 80, west of Vacaville, on December 12. He was in company with a gentlemen in a black and white Dodge, and for one Swiss seemed to be listening. . . .

CHARLIE GUION, the Humble scout at Sacramento, has just received orders to transfer to Los Angeles. The effective date will be around March 1. The big question is, will Charlie build another Iowa Hill?

The Sacramento Petroleum Association Christmas dinner and dance was held December 17 at the Candlerock Lounge. Bob Poor, of Cook Testing, was the social director. There was preliminary debate as to whether the Association would furnish a case of whiskey for the function and murmurings of coddling the members, but Exploration Logging and N.C.P.R.T. contributed to the event. Note that forty-nine (49) attended. Does this imply a case of polygamy?

ART HAWLEY, consultant of Sacramento, has just left for a trip to Tahiti to see if it's true what they say about the Polynesian girls before the tourists spoil everything.

JACK ANDERSEN of Schlumberger, Sacramento, has just returned from 22 days off the coast of Oregon on the Blue (and Rough) Water rig.

NURSERY NEWS

DOLORES and BOB HOFFMAN, Consultant, Bakersfield, their 4th child, first boy, Steven Grant, on January 13, 1966. Weight: 6 lb. 8 oz.

NANCY and NORMAN JOKERST, Standard, Oildale, a son, Charles Vincent, on January 13, 1966. Weight: 8 lb. 14 oz.

PAULA and JIM GROOM, Union, Bakersfield, a girl, Elizabeth, on December 28, 1965. Weight: 7 lb. 3 oz.

BILL and RUTH CREEEL, Schlumberger, Sacramento, a new baby girl-type, Tanya, born December 29.

DICK and SUSY COLLINS, Schlumberger, Sacramento, a new baby girl, Crissie, born December 20.

BIBLIOGRAPHY OF RECENT PUBLICATIONS

U. S. GEOLOGICAL SURVEY

Professional Paper 352-F: Clastic sedimentation in Deep Springs Valley, California, by L. K. Lustig. \$1.00

Professional Paper 467: Geology of the Prescott and Paulden quadrangles, Arizona, by M. H. Krieger. \$3.50

Professional Paper 542-A: Effects of the earthquake of March 27, 1964, at Anchorage, Alaska, by W. R. Hansen. (The Alaska earthquake, March 27, 1964 -- Effects on communities) \$1.75

Bulletin 1194-H: Mesozoic formations in the Comobabi and Roskrige Mtns. Papago Indian Reservation, Arizona, by L. A. Heindl. \$0.10

Bulletin 1197: Bibliography of North American geology, 1961. \$2.00

Water Supply Paper 1592-B: Cross-channel transfer of linear momentum in smooth rectangular channels, by R. W. Cruft. \$0.15

Water Supply Paper 1810: Summary of floods in the United States during 1961, by J. O. Rostvedt. \$0.40

Geophysical Abstracts 227, December, 1965, by J. W. Clarke, D. B. Vitaliano, V. S. Neuschel, and others. \$0.35

Circular 512: Index of surface-water records to December 31, 1963--Part 12: Pacific slope basins in Washington and upper Columbia River basin, by H. P. Eisenhuth. 39 p. Free

Circular 523: Organic-rich shale deposits in the United States and world land areas, by D. C. Duncan and V. E. Swanson. 30 p. Free

MAPS

Map I-446: Reconnaissance geologic map of the Adel quadrangle, Lake, Harney and Malheur Counties, Oregon, by G. W. Walker and C. A. Repenning. \$0.75

Circular 525: Tectonic creep in the Hayward Fault Zone, California, by Dorothy H. Radbruch, M. G. Bonilla, B. J. Lennert, F. B. Blanchard, C. L. Laverty, L. S. Cluff, and K. V. Steinbrugge. Free

OPEN FILED REPORTS (Inspection only)

Structure contours on top of the Vedder sand, southeastern San Joaquin Valley, California, by Everett E. Richardson. 15 pages, 1 plate, 3 figures. Map scale 1:125,000. Area, approx. 35 miles by 70 miles.

U. S. BUREAU OF MINES (Publications Distribution Section 4800 Forbes Avenue, Pittsburgh, Penn. 15213).

Report of Investigation 6658: Oil well scale formation in waterflood operations using ocean brines, Wilmington, Calif., by G. L. Gates and W. H. Caraway. 28 pp. 12 figs. Free

NEVADA BUREAU OF MINES (Reno, Nevada)

Report 10: Isotopic age determinations of Nevada rocks, by John H. Schilling. \$1.50

Map 28: Preliminary geologic map of a part of the Stillwater Range, Churchill County, Nevada, by Ben M. Page. \$2.00

Map 29: Earthquake epicenter map of Nevada, by David B. Slemmons, J. I. Gimlett, A. E. Jones, Roger Greensfelder, and James Koenig. \$0.75

Map 30: Map of intrusive rocks in Nevada, by R. V. Wilson and R. R. Paul. \$1.00

STATE OF NEVADA, DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Water Resources Bulletin No. 30: Interim inventory of surface water resources of Nevada, by R. D. Lamke and D. O. Moore.

ARIZONA STATE LAND DEPARTMENT (Phoenix, Arizona)

Water-Resources Report Number 23: Geohydrology of the Dateland-Hyder area, Maricopa and Yuma Counties, Arizona, by W. G. Weist, Jr.

CALIFORNIA DIVISION MINES AND GEOLOGY (Ferry Building, San Francisco, California)

Special Report 85: Economic geology of the French Gulch quadrangle, Shasta and Trinity Counties, California, by John P. Albers, with a section on: Geophysical survey of the Iron Mountain Mine, by C. H. Sandberg. \$2.00

MINERAL INFORMATION SERVICE, vol. 18, no. 12, December, 1965

Giant wave in Lituya Bay, the biggest splash in history.

THE AMERICAN MINERALOGIST, vol. 50, no. 10, October, 1965

Mineral Studies (dedicated to Paul Francis Kerr).

Differences in the minor element composition of beryl in various environments, by Mortimer H. Staatz, Wallace R. Griffiths, and Paul R. Barnett.

Zeolite filling and replacement in fossils, by Lloyd W. Staples.

GEOLOGICAL SOCIETY OF AMERICA BULLETIN, vol. 76, no. 11, November 1965

Sediment ponding in the deep sea, by J. B. Hersey.

Right-lateral strike-slip faulting in the Walker Lane, west-central Nevada, by R. L. Nielsen.

Geology of a rhyolite plug, Pinal County, Arizona, by Harold Bohmer.

AMERICAN JOURNAL OF SCIENCE, vol. 263, no. 10, 1965

The relation of free meander geometry to stream discharge and its geomorphic implications, by Charles W. Carlston.

Is uniformitarianism necessary?, by C. R. Longwell.

JOURNAL OF GEOPHYSICAL RESEARCH, vol. 70, no. 24,
December 15, 1965

Predictor equation for beach processes and
responses, by W. Harrison, N. A. Pore, and
D. R. Tuck, Jr.

Seepage through Earth dams, by Abdel-Ariz I. Kashef.

Can the state of stress be determined from hydraulic
fracturing data, by P. E. Gretener.

SCIENCE, vol. 150, no. 3705, December 31, 1965

Lead isotopes and the age of the earth, by
G. R. Tilton and R. H. Steiger.

Migrant sound scatterers: Interaction with the
sea floor, by J. D. Isaacs and R. A. Schwartzlose.

GEOTIMES, vol. 10, no. 5, December 1965 - January 1966

National Center for Earthquake Research,
by William T. Pecora.

Earthquakes and explosions. . .and predictions,
by William B. Heroy, Jr.

OIL AND GAS JOURNAL, vol. 63, no. 52,
December 27, 1965

Data swap may reduce number of twin coreholes
off California.

On Alaska's arctic slope wind is a problem in
the summer, by John C. McCaslin.

OIL AND GAS JOURNAL, vol. 64, no. 1, January 3, 1965

Gas exploder innovation cuts offshore seismic costs.

Big exploratory play shapes up in Central Saskatchewan.

Sea knowledge growing quickly.

Cache -- a real uplift, by John C. McCaslin.

OIL AND GAS JOURNAL, vol. 64, no. 2, January 10, 1966

Here's a new look at Santa Barbara Channel
potential, by M. J. Castro.

OIL AND GAS JOURNAL, vol. 64, no. 3, January 17, 1966

Recoverable shale oil: 190 billion bbl.

Oil heads for a banner year in Alaska.

One of the best new exploratory tools may be a
geological lab in space.

Utah could be prime target for oil hunters.

WORLD OIL, vol. 161, no. 7, December 1965

How to find productive limits of hydrocarbon
reservoirs (Part 3), by Ralph W. Jackson.

Crude oil composition -- a clue to migration,
by Edwin W. Biederman, Jr.

CALIFORNIA OIL WORLD, vol. 58, no. 23 (First Issue),
December, 1965

Drilling goes to sea, by Louis F. Jobst, Jr.

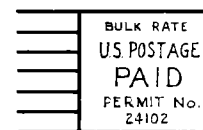
CALIFORNIA OIL WORLD, second issue, vol. 58, no. 24,
December 1965

Progress in Alaska.

PACIFIC PETROLEUM GEOLOGIST
PACIFIC SECTION. A.A.P.G.
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LOS ANGELES, CALIF. 90017

Volume 20

Number 2



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PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

March, 1966

Number 3

ASSOCIATION ACTIVITIES

LONG BEACH CONVENTION, MARCH 24-26, TO FEATURE DISCUSSION OF LICENSING, REGISTRATION

The issue of State registration or licensing, which was the subject of much legislative activity a year ago and which almost certainly will demand a legislative solution during the 1967 session (in view of recent landslide controversies in Los Angeles, etc.) will be the subject of a three-part discussion on Thursday morning, March 27th, at the 1966 Pacific Section AAPG-SEG-SEPM Convention in Long Beach. John Kilkenny (Union) will review "Geologist Registration Problems," Glenn A. Brown (Geotechnical Consultants, Inc.) will present "The Association of Engineering Geologists' Position on Registration of Engineering Geologists," and Robert H. Paschall (California State Board of Equalization) will discuss "Options for Geologists in Selecting a Professional Status." At the conclusion of their talks, these speakers will be available for questions. Many California petroleum geologists have not become acquainted with the problems and alternatives involved in State registration, etc. This session represents their best opportunity to inform themselves on an issue vital to their future professional lives.

The convention location, at the Lafayette Hotel and Long Beach Municipal Auditorium on the Long Beach waterfront, is appropriate to the convention theme, "Offshore Oil-The First Seventy Years." This waterfront location facilitates visits to the U.S.C.-Hancock Foundation research vessel Velero IV, which will be moored in the Long Beach harbor during the convention. Also, an offshore cruise and field trip on Saturday, March 26th, from 8:00 A.M. to 3:00 P.M. will view offshore oil facilities from Long Beach to Huntington Beach. Brochures and reservation cards for the convention and its many functions have been mailed to members of the Pacific Section, A.A.P.G., S.E.G., and S.E.P.M.

The Dinner Dance on Friday evening will be a Semi-Formal affair (Tuxedo or dark suit; long or short dress).

ELECTION OF 1966-67 PACIFIC SECTION OFFICERS ANNOUNCED

Newly-elected officers of the Pacific Section, American Association of Petroleum Geologists, for the 1966-1967 term are:

President	Robert Knapp
Vice-President	John Curran
Secretary	Bill Edmondson
Treasurer	Tom Wright

They will take office at the Pacific Section Convention in Long Beach on March 24th.

AAPG CONTINUING EDUCATION COMMITTEE PLOTS LOS ANGELES PROGRAM

Ted L. Bear, chairman of the Pacific Section's Continuing Education Committee, has announced preliminary plans for inaugurating this series of geological "refresher courses" in the Los Angeles area in the late Spring or early Fall of this year. Organized by the National AAPG, this program features nationally-known geologists lecturing on new concepts and techniques in their fields of specialization.

Subject to availability of speakers, the Pacific Section program will commence with the series on Stratigraphic Geology. Courses include: Principles and Practice; Studies of Recent Sediments; and Sandstones. According to present plans, each course will be given in four 3-hour lectures, Monday through Thursday evenings, at the Union or Mobil auditoriums in downtown Los Angeles. Cost for each participant will be \$10-\$15, depending on enrollment (each course will cost approximately \$850 to present) and will be reimbursable for many geologists under their companies' educational refund plans. The possibility of holding some of the courses in Bakersfield is being investigated.

A QUESTIONNAIRE AIMED AT DETERMINING MEMBERS' INTEREST AND PREFERENCES IN THIS PROGRAM APPEARS ON PAGE 7. THIS IS YOUR OPPORTUNITY TO STEER THIS PROGRAM TOWARD YOUR OWN NEEDS. PLEASE USE IT.

CALENDAR

March 3

LOS ANGELES, Thursday noon, Rodger Young Auditorium, 936 West Washington Boulevard, "Tectonics and Stratigraphy of the Montezuma Basin, Solano, Contra Costa and Sacramento Counties" (Rio Vista-Kirby Hills area), by Mr. Rodney Nahama, Consultant.

March 4

LOS ANGELES, Friday afternoon, 1:30 P.M., Mobil Auditorium, 612 South Flower Street, S.E.G. Digital Seminar #8, "Convolution and Cross Correlation."

March 7

BAKERSFIELD, Monday evening, 7:30 P.M., Bakersfield College, Science and Engineering Bldg., Room 56, Biostratigraphic Seminar, "Spores, Pollen and Dinoflagellates of the Panoche Hills Area," by Dr. Warren S. Drugg, Chevron Research Corp.

EXECUTIVE COMMITTEE, PACIFIC SECTION
AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

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PACIFIC PETROLEUM GEOLOGIST

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NEXT DEADLINE - MARCH 17

March 8

BAKERSFIELD, Tuesday evening,
5:30 P.M. (Happy Hour), 6:30 P.M.
(Dinner), American Legion Hall,
17th and L Streets, San Joaquin
Geological Society, "Rejuvena-
tion of a Tired Oil Field," by
Jack W. Kappler and James G.
Herblin, Tidewater.

March 15

LOS ANGELES, Tuesday noon,
University of Southern
California, Room 101, New
Science Lecture Hall, near 37th
and Hoover Street, "Sedimentary
Environments and Submarine
Geomorphology of a part of the
Florida Continental Shelf" by
Norman Hyne, Graduate Student
in Geology.

March 29

LOS ANGELES, Tuesday noon,
University of Southern
California, Room 101, New
Science Lecture Hall, near 37th
and Hoover Street, "The Geologic
Significance of Nannoplankton,"
by James A. Wilcoxon, Research
Paleontologist, Chevron Research
Co.

March 29

SEATTLE-TACOMA, Tuesday evening,
7:00 P.M. (Social Hour at 6:00),
Poodle Dog Cafe, Fife,
Washington, Northwest Geological
Society, "A Geologist Tours
Europe," by Dr. Ewart Baldwin,
University of Oregon, Ladies'
Night.

April 11

BAKERSFIELD, Monday evening,
7:30 P.M., Bakersfield College,
Science and Engineering Bldg.,
Room 56, Biostratigraphic
Seminar, "Modern Foraminiferal
Faunas from off the Oregon Coast"
by Dr. Gerald A. Fowler, Oregon
State University.

April 19

BAKERSFIELD, Tuesday evening,
5:30 P.M., (Happy Hour), 6:30
P.M. (Dinner), American Legion
Hall, 17th and L Street, San
Joaquin Geological Society,
"Economics of Producing Oil
Shale by the Nuclear In-Situ
Retorting Method," by Michael
Lekas, Project Engineer,
Special Projects Division of
Atomic Energy Commission,
Berkeley.

CHRISTMAS DANCERS ASKED TO CHECK CHECKS

Pacific Section A.A.P.G. Treasurer Jack Nair has asked
that those persons who bought their tickets at the door,
by check, for the Holiday Dinner Dance last December 10th
in La Canada please check their bank statements to
determine whether their check has been cashed. Nair
reports that these last-minute checks, mailed to him by
the dance committee, were never received. Hope for their
recovery faded when postal investigators, asked for
assistance in tracing the missing letter, addressed their
reply to "Jack Narr, c/o Treas. AA, Petroleum Jerry,
Pacific Sec., 3000 Wilshire, Los Angeles!"

So, if your last-minute check for the Dinner Dance has
gone uncashed, please stop payment on it and send a
duplicate to:

Jack D. Nair, Treasurer
Pacific Section AAPG
3600 Wilshire Blvd., Room 1720
Los Angeles, California 90005

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

Edwin C. Buffington of San Diego was a guest of Ian
Campbell at the Northern California Geological Society
luncheon on Valentine's Day. Ed did graduate work at
Cal Tech in the early forties and has been a member of
AAPG since 1947. For the past several years he has been
oceanographer and marine geologist at the U.S. Navy
Electronics Lab in San Diego where he is now supervisor of
the sea floor studies section.

In the evening, several members of the Society joined
local members of AIME to hear him give a fascinating
talk, accompanied by films and slides, on "Sea floor
exploration by diving saucer." He discussed various
remote sensing methods in the marine environment, such as
the sonoprobe, and the results of his firsthand review of
such data by direct observations from the diving saucer.

COAST GEOLOGICAL SOCIETY

On Tuesday, January 18, 1966, the dinner meeting of the Coast Geological Society was held at the Jet Room, Ventura. Dr. James W. Vernon of U.S.C. and General Oceanographics was the guest speaker and presented an amply illustrated talk on "Near Shore Sediment Circulation." His abstract follows.

On Tuesday, February 8, the Society gathered at the Jet Room for another dinner meeting, which was addressed by H. H. "Hank" Neel, Consultant and President of the California Section of the A. I. P. G. His subject was "The Profession of Geology: Fractionation, Erosion, and the A. I. P. G." In the first portion of this talk Mr. Neel described the deterioration of the public image of the geologist owing to the activities of a few unscrupulous individuals, a situation which resulted in headlines last week when Mayor Yorty complained that the city has no way of preventing builders who obtain favorable geological reports from erecting houses on slides like those at Pacific Palisades. In the terminal portion of his lecture, Mr. Neel described the history and merits of the Institute, its objectives, and why these objectives (principally the uniform licensing of the profession) are in harmony with the betterment of geologists and other associations, like the A. A. P. G.

NEAR SHORE SEDIMENT CIRCULATION - ABSTRACT

Along the shoreline the waves move toward the shore in varying patterns and wavelengths. Water circulates with an orbital motion until it reaches shallow depths of about one half the wave length. Other currents are generated, most common of which are felt in the surf as surge and riptides. All these forces generate oscillatory current motions on bottom, which moves sediment in varying patterns.

Using fluorescent dyed sands, samples were placed at measured locations. After specific periods of time, the distribution of the samples was sampled and measured quantitatively and was often photographed in color. It was found that the fine sand moved much faster than the coarse. Sample locations along the deeper depths (20' ±) indicated there would be a "null point" on that position where sand will move neither shoreward nor seaward.

Samples were studied of many points along the south L. A. Basin coastline and Santa Catalina Island. Movies were taken using time lapse photography methods. These defined movement of water currents and ripple marks. The study will be continued sponsored by the U. S. Army Corps of Engineers.

NATIONAL AAPG OFFICERS NAMED

Michel T. Halbouty, Houston, Texas, has been elected 1966-67 president of the American Association of Petroleum Geologists. He will succeed Dr. Orlo E. Childs, president of the Colorado School of Mines.

Elected vice-president was Daniel A. Busch, Tulsa, Okla., consulting geologist.

John D. Moody, executive vice-president for exploration and production, Mobil Oil Company, New York, N. Y., was elected secretary-treasurer.

John C. Hazzard, coordinator for exploration research, Union Oil Company of California, Los Angeles, was re-elected the association's editor.

The new officers will take office April 28 in St. Louis, Mo., on the final day of the association's 51st annual meeting.

ALASKA GEOLOGICAL SOCIETY

The January and February meetings were highlighted by geophysically oriented talks. Joe Reindl of Precision Exploration Consultants spoke to the Society in January on "Seismic Field Operations in Alaska." Joe's company has pioneered in Alaska with a mud-flats crew that fills the void between onshore and offshore seismic control.

Kenneth E. Burg, Vice-President, Technical, of Geophysical Services, Inc., addressed the Society at an evening meeting in February on "A Geological Look at Digital Technology." Although Ken left the geologists in a maze of computerized deconvolutions and subsurface impulse responses, his talk was keenly followed with much interest.

ABSTRACT

Digital Seismic Technology is becoming an effective tool in many areas. To utilize this new tool in the most effective manner, the explorationist needs to be familiar with the basic concepts of digital technology, some of the details of the system, and its capabilities, and with the various processes as they become available. Although the Digital Seismic System is complex, requiring software, hardware and "brainware," its operation and utilization can be explained in easily understood terms.

AAPG-SEG-SEPM DIRECTORY

Directory revisions will be available at the AAPG-SEG-SEPM Pacific Section Convention in Long Beach.

PRICE LIST	WILL CALL	MAIL
Complete directory and all revisions	\$6.00	\$6.50
1966 Revision	2.00	2.50
1965 Revision	1.00	1.50
1964 Binder and directory pages	3.00	3.50

After the convention send checks payable to Pacific Section AAPG to Mr. W. R. Brown, Buttes Gas and Oil Co., 3132 18th Street, Bakersfield, California.

SACRAMENTO PETROLEUM ASSOCIATION ELECTSSEPM MEMBERS-ATTENTION!

New officers of the Sacramento Petroleum Association are:

President	Bob Paschall, State Board of Equalization
Vice-President	Lowell Garrison, Signal
Secretary-Treasurer	Hans van den Berge, Standard

S.E.P.M. members attending the National Convention in St. Louis are urged to attend the S.E.P.M. Business Meeting on April 27th at 1:30 p.m., in Assembly Hall 1, Kiel Auditorium. Important business is to be transacted.

NURSERY NEWS

PAT and BILL POLSKI (Shell, Bakersfield), their second daughter, Linda Kay, born February 14th, 7 lbs., 3 oz.

PERSONAL ITEMS

LOUIS CHRISTIAN, Mobil, has been transferred from the Philippines to Libya. In London en route(?), he collected a wife -- Gerrie Noble, formerly of Boston -- and reports "a delightful week in London, then a couple of days in Paris en route to Tripoli, where we are now firmly established among all the other ancient ruins."

JIM EYMANN, formerly consulting geologist for Victory Oil Co., has opened an office in Marysville for H. P. Block, tax consultants.

CHARLIE BOOTH, Shell, New Orleans, claims to be a "Naturalized Cajun" now, but hopes to see a few more West Coast faces out his way. If you've got your own key to the Playboy Club, Charlie, we'll be on the next plane.

ED DOBRICK, Division Supt. for Standard in Seattle, had an operation on his knee recently. Don't know if he'll be able to play football but he expects to be walking better than ever soon.

DEAN JOHNSON, Standard in Seattle, has transferred to American Overseas and will soon be doing geology in Libya -- so let the Arabs beware.

Crystal Mountain near Mt. Rainier was the site of a recent skiing vacation for BOB BLAISDELL (Standard in Seattle). Bob and wife, Pat, are now convinced that skiing is here to stay.

DENNIS WEEDEN (Texaco) has been transferred to Long Beach from Bakersfield where he'd just gotten settled after a move from Sacramento six months ago.

ROD COLVIN (Mobil) has been transferred from Producing - Bakersfield to Exploration - Santa Fe Springs, where he will be in charge of San Joaquin Valley activities.

GEORGE LA PERLE (Bakersfield consultant) went to Hawaii to sign up leases and lost his land maps, but managed to beg and borrow replacements.

PHIL RYALL (Shell, Bakersfield) is in Houston for three months of Company schooling.

MONZELL LOUKE has resigned from Atlantic (Bakersfield) and will work for Dames & Moore, Foundation Engineers, in San Francisco.

BILL FLAHERTY (Atlantic) is moving from Long Beach to Bakersfield where he will take the place of retiring SLIM CURRY as District Manager.

Standing joke(?) at local Atlantic (ex-Richfield) offices, "If my boss calls, get his name and phone number."

**BIBLIOGRAPHY
OF RECENT PUBLICATIONS****U. S. GEOLOGICAL SURVEY**

Professional Paper 422-F: Sediment yield of the Castaic watershed, western Los Angeles County, Calif. ---A quantitative geomorphic approach, by L. K. Lustig .65

Professional Paper 525-D: Geological Survey Research 1965, Chapter D \$2.00

Bulletin 1194-I: Mesozoic (?) rocks in the Baboquivari Mountains, Papago Indian Reservation, Arizona, by L. A. Heindl and C. L. Fair .10

Water Supply Paper 1610-C: Waterpower resources in Nehalem River basin, Oregon, by L. L. Young and J. L. Colbert, with sections on Geology of sites, by D. L. Gaskill and A. M. Piper \$1.25

Geophysical Abstracts 228, January 1966, by J. W. Clarke, D. B. Vitaliano, V. S. Neuschel, and others .35

Maps:

GQ 429: Geologic map of the Mount Goddard quadrangle, Fresno and Inyo Counties, Calif., by P. C. Bateman and J. G. Moore \$1.00

GQ 437: Geologic map of the Devils Postpile quadrangle, Sierra Nevada, Calif., by N. K. Huber and C. D. Rinehart \$1.00

Geologic map of New Mexico, by C. H. Dane and G. O. Bachman. (Prepared with the cooperation of the New Mexico Institute of Mining and Technology, State Bureau of Mines and Minerals Resources Division and the University of New Mexico, Department of Geology). \$2.50/set

Circulars:

C 519: Geothermal energy, by D. E. White, 17 pages Free

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, vol. 49, no. 10, October 1965

World offshore petroleum resources, by L. G. Weeks

Personal factors in professional careers, by Edgar W. Owen.

Maximum brain power: New exploration breakthrough, by Michel T. Halbouty.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, vol. 49, no. 11, November 1965

Rocky Mountain Sedimentary Basins

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, vol. 49, no. 12, December 1965

Supply and demand for geologists and geophysicists, 1965-67, by J. S. Royds, H. L. Thomsen, and J. W. Strickland

Relation between petroleum and source rock, by Dietrich H. Welte

Stratigraphic nomenclature of Iranian Oil Consortium Agreement Area, by G. A. James and J. G. Wynd

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, vol. 50, no. 1, Jan. 1966

Late Mesozoic stratigraphy and tectonic history, Port Orford-Gold Beach area, Southwestern Oregon Coast, by John G. Koch

Sedimentology and dispersal pattern of a Cretaceous flysch sequence, Patagonian Andes, Southern Chile, by Kevin M. Scott

Stratigraphic-trap possibilities in Upper Jurassic rocks, San Marcos Arch, Texas, by Michel T. Halbouty

SCIENCE, vol. 150, no. 3703, 17 December 1965

Isoprenoid hydrocarbons in Recent sediments: Presence of pristane and probable absence of phytane, by Max Blumer and W. Dale Snyder

SCIENCE, vol. 150, no. 3705, 31 December 1965

Lead isotopes and the age of the earth, by G. R. Tilton and R. H. Steiger

Migrant sound scatterers: Interaction with the sea floor, by John D. Isaacs and Richard A. Schwartzlose

Strontium-Rubidium age of an iron meteorite, by G. J. Wasserburg, D. S. Burnett and C. Frondel

SCIENCE, vol. 151, no. 3708, 21 January 1966

Earth's viscosity, by Don L. Anderson

Absolute date and the astronomical theory of glaciation, by Wallace S. Broecker

SCIENCE, vol. 151, no. 3707, 14 January 1966

Biological material in meteorites: A review, by Harold C. Urey

AMERICAN JOURNAL OF SCIENCE, vol. 264, no. 2, February 1966

Orogeny and geochronology, by James Gilluly

Cordilleran infrastructure in the Eastern Great Basin, by Richard Lee Armstrong and Edward Hansen

CALIFORNIA DIVISION OF MINES AND GEOLOGY

Bulletin 185: Geology of the east half of the Mount Hamilton quadrangle, California by Soliman H. Soliman. \$3.00

Special Report 84: Stratigraphy, structure, and mineral deposits in the Oro Grande series near Victorville, California, by O. E. Bowen, Jr. and W. E. Ver Planck. \$1.50

Map Sheet 7: Geology of the northern part of Old Dad Mountain quadrangle, San Bernardino County, California, by Richard A. Barca

TRANSACTIONS OF THE ILLINOIS STATE ACADEMY OF SCIENCE, vol. 58, no. 4, 1965.

The Bird Spring Group, Chesterian through Wolfcampian, at Arrow Canyon, Arrow Canyon Range, Clark County, Nevada, by V. A. M. Langenheim and R. L. Langenheim, Jr.

AMERICAN FORESTS, vol. 72, no. 1, 1966

The Public Domain--Heart of the republic. Part 1, by William W. Porter, II.

JOURNAL OF SEDIMENTARY PETROLOGY, vol. 35, no. 4, December 1965

Source of Upper Cenozoic sediments in Colorado delta region, by Richard Merriam and Orville L. Bandy

Hydraulic factors controlling the shape of laminae in laboratory deltas, by Alan V. Jopling

A study of maximum load for small-diameter sieves, by Dean A. McManus

Cementation as a clue to structure, drainage patterns, permeability, and other factors, by Mont M. Warner

Devonian paleoecology of Northeastern Alberta, by D. M. Loranger

Tectonic polish of pebbles, by H. Edward Clifton

Antidune cross-bedding in a large flume, by G. V. Middleton

OIL AND GAS JOURNAL, vol. 64, no. 6, February 7, 1966

California's crude-oil output heads for a new peak in 1967, by Ted A. Armstrong

Data-stacking technique helps geophysical interpretation, by John C. McCaslin

Drillers probing Utah's French Seep area, by Robert B. Schick

BOOKS

Annotated Index of Aerial Photographic coverage and mapping of topography and natural resources. Undertaken in the Latin American Member Countries of O.A.S. Issued for Countries of: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama. 1965. Spanish and English \$3.00 each

Natural Resources Unit, Department of Economic Affairs O.A.S., Pan American Union, Washington, D. C.

Plant indicators of soils, rocks, and subsurface waters (Consultants Bureau, New York, 1965. 222 pp. \$27.50), edited by A. G. Chikishev.

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Yes Maybe No

I would like to attend courses held in Los Angeles			
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I would like to attend courses held in _____ (elsewhere)			
	(check each line)		
I would pay \$10 for a 12-hour course			
I would pay \$15 for a 12-hour course			
I would pay \$20 for a 12-hour course			
	(check one only)		
I would prefer that the courses be given-			
At least two weeks apart (twice monthly)			
At least one month apart (monthly)			
At least two months apart (bi-monthly)			
	(check each line)		
I would attend a course given-			
Afternoons- Monday-Thursday 1-4 pm			
Late Afternoons- Monday-Thursday 3-6 pm			
Evenings- Monday-Thursday 7-10pm			
	(check each line)		
I would like to attend a course in-			
Stratigraphic Geology- { * by L. L. Sloss			
Principles and practice { by R. J. Weimer			

*Course will be presented by only one of the listed speakers - check each one if each is acceptable.

-OVER-

CUT HERE (OR XEROX)

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	Yes	Maybe	No
Studies of recent sediments and their depositional environments { *	by Tj. H. van Andel		
	by J. R. Curray		
	by D. E. Feray		

(check each line)

Sandstones-Applied subsurface stratigraphy; significance and methods of reconstructing paleodepositional environments { *	by D. A. Busch		
	by J. A. Peterson		
	by E. H. Rainwater		

(check each line)

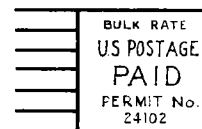
Origin and migration of hydrocarbons { *	by W. C. Gussow		
	by J. M. Hunt		

(check each line)

PACIFIC PETROLEUM GEOLOGIST
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Volume 20

Number 3



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PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

April, 1966

Number 4

ASSOCIATION ACTIVITIES

812 GEOLOGISTS ATTEND LONG BEACH CONVENTION

The Forty-First Annual Meeting of the Pacific Sections-A.A.P.G., S.E.G., and S.E.P.M., held at the Long Beach Municipal Auditorium on March 24th and 25th, once again demonstrated the lure of an out-of-town location as registration reached a record high for recent years. Under the theme, "Offshore Oil", highly appropriate to the convention's waterfront location, 46 technical papers were presented. A.A.P.G. Best Paper Award went to Frank J. Noble (Union) for his paper entitled, "Development Geology of "Parcel 14", Offshore Huntington Beach, California."

The Joint Luncheon on Thursday, March 24th, featured a talk and film on the Navy's Sealab II project, presented by Denzil Pauli of the Office of Naval Research. Retiring President, E. R. Orwig, Jr., presided over the luncheon, which also included the presentation of honorary life memberships to W. P. Winham by Graham Moody and to Frank Morgan by Hank Neel. National President-elect Michel Halbouty spoke briefly and to the point regarding the need to make better use of our most effective exploratory tool - the geologist's head.

The "amphibious" field trip on Saturday, March 26th, was favored by calm seas and warm weather as a capacity boat-load of geologists cruised through Long Beach Harbor and down the coast, viewing a half-dozen offshore drilling islands and platforms and learning of their geology and development. The return trip was the occasion for lunch and ample refreshments. The group then disembarked at the Long Beach Marina and boarded buses to continue their trip through the Seal Beach and Long Beach Fields. Several stops on Signal Hill were enlivened by the salty commentary of Ed Pickett (Westates), a Long Beach native who participated, as a "rough-hand," in the boom days of Signal Hill development.

BUSCH TO PRESENT SANDSTONE COURSE JUNE 6-9

Ted L. Bear, Chairman of the Pacific Section-A.A.P.G.'s Continuing Education Committee, has announced that the first of a series of "refresher courses" for petroleum geologists will be held in Los Angeles on June 6th through 9th. Dr. Daniel A. Busch, Consulting Geologist of Tulsa, will present four 3-hour lectures on: Sandstones-Applied subsurface stratigraphy; significance and methods of reconstructing paleodepositional environments. Details of time and place will be announced later. Interested geologists who have not yet returned the questionnaire provided in last month's Pacific Petroleum Geologist are urged to do so.

CALENDAR

April 7

LOS ANGELES, Thursday noon, Rodger Young Auditorium, 936 West Washington Boulevard, "Shelf Sediment Transport Deduced from Fluorescent Tracer Studies Using Scuba Diving," by Mr. James Vernon, General Oceanographics, Inc.

April 11

BAKERSFIELD, Monday evening, 7:30 P.M., Bakersfield College, Science and Engineering Bldg., Room 56, Biostratigraphic Seminar, "Modern Foraminiferal Faunas from off the Oregon Coast" by Dr. Gerald A. Fowler, Oregon State University.

April 12

LOS ANGELES, Tuesday noon, University of Southern California, Room 101, New Science Lecture Hall, near 37th and Hoover Streets, "Antarctic Foraminiferal Biofacies" by Ronald J. Echols, Ph.D. Candidate in Geology

April 12

VENTURA, Tuesday evening, 7:30 P.M., (Happy Hour 6:30 P.M.) Jet Room, 1944 Thompson Avenue, Coast Geological Society, "The Anatomy of an Anticlinal Giant (Santa Fe Springs Field)," by Thane H. McCulloh, U.S.G.S.

April 13

BERKELEY, Wednesday afternoon, 4:00 P.M., University of California, 141 Earth Sciences Building, "The Crystal Chemistry of Scapolite," by James J. Papike, U.S.G.S., Washington, D.C.

April 18

LOS ANGELES, Monday evening, 7:00 P.M., Mobil Auditorium, 612 South Flower Street, Petroleum Geological Forum, "Petroleum Geology of the Arabian-Persian Gulf Area," by Mr. Richard L. Hester, Pauley Petroleum, Inc.

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NEXT DEADLINE - APRIL 15

April 27

BERKELEY, Wednesday afternoon,
4:00 P.M., University of
California, 141 Earth Sciences
Building, "Remote Determinations
of Chemical and Mineralogical
Composition of Terrain," by
Ron Lyons, Department of
Geophysics, Stanford University.

May 3

LOS ANGELES, Tuesday noon,
University of Southern
California, Room 101, New
Science Lecture Hall, near
37th and Hoover Streets,
"Sand Bypass at Point Reyes
and Bodega Bay, California,"
by Dr. Robert E. Arnal,
Professor of Geology, San Jose
State College.

May 4

BERKELEY, Wednesday afternoon,
4:00 P.M., University of
California, 141 Earth Sciences
Building, "Franciscan
Metamorphic Rocks" by Eric
Essene, Department of Geology
and Geophysics, U.C. Berkeley.

May 9

BAKERSFIELD, Monday evening,
7:30 P.M., Bakersfield College,
Science and Engineering Building,
Room 56, Biostratigraphic
Seminar, "Foraminifera from the
Lower Cretaceous of the Devils
Den Area, Kern County,
California," by Mr. C. C. Church,
Paleontological Consultant,
Bakersfield.

May 10

BAKERSFIELD, Tuesday evening,
6:30 P.M., (Happy Hour,
5:30 P.M.), American Legion
Hall, 17th and L Streets,
San Joaquin Geological Society,
"Resume of Ground Water
Hydrology in the Southern
San Joaquin Valley, California,"
by Dr. John Manning,
Hydrodevelopment, Inc.,
Bakersfield.

U.C. BERKELEY OFFERS SHORT COURSE
IN MARINE GEOLOGY

The University of California at Berkeley, in cooperation
with Scripps Institution of Oceanography, is offering
a three-day lecture-seminar program on the Marine
Geology of the Pacific Basin, to be held on the
Berkeley campus Friday through Sunday, June 24-26.
Topics to be discussed are bathymetry and structure of
the continental shelf and slope; composition, environment
and geochemistry of marine sediments; oceanographic
instrumentation; and the Federal role and interest in
marine geology. The faculty includes Gustaf O.
Arrhenius, U.C. San Diego; Joseph R. Curran, U.C.
San Diego; Kenneth S. Deffeyes, Oregon State University;
Robert S. Dietz, Institute of Oceanography, E.S.S.A.,
Washington, D.C.; and Donn Gorsline, University of
Southern California.

This program is an attempt to satisfy interest in marine
geology by providing post-graduate training for earth
scientists and others in related fields. Tuition rates
are: Professional, \$125; Student (presently enrolled in
a graduate program at an institution of higher education),
\$60. On-campus housing is available for married couples
as well as single men and women. For further information
please write or telephone Letters and Science Extension,
University of California, Berkeley, California 94720;
Thornwall 5-6000, extension 1061 (area code 415).

April 19

LOS ANGELES, Tuesday noon,
University of Southern
California, Room 101, New
Science Lecture Hall, near
37th and Hoover Streets,
"Sedimentology, Andaman Sea,"
by Kevin S. Rodolfo, Ph.D.
Candidate in Geology.

April 19

BAKERSFIELD, Tuesday evening,
5:30 P.M., (Happy Hour), 6:30
P.M. (Dinner), American Legion
Hall, 17th and L Street, San
Joaquin Geological Society,
"Economics of Producing Oil
Shale by the Nuclear In-Situ
Retorting Method," by Michael
Lekas, Project Engineer,
Special Projects Division of
Atomic Energy Commission,
Berkeley.

April 26

SEATTLE-TACOMA, Tuesday evening,
7:00 P.M. (Social Hour at
6:00 P.M.), Poodle Dog Cafe,
Fife, Washington, Northwest
Geological Society, "The
Relation Between Tectonics
and Volcanism in the Tertiary
of Western Washington and
Oregon," by Parke D. Shavely,
U.S.G.S., Menlo Park.

HAROLD B. RATHWELL

Harold B. Rathwell, retired Continental Oil Company geologist, passed away on February 14, 1966, at his home in Paradise, California.

"Rats" was a long-time Ventura resident and for many years was active in the development of the San Miguelito Field.

He was a member of AAPG, Pacific Section and the Coast Geological Society. He is survived by his wife, Grace Brady Rathwell.

COAST GEOLOGICAL SOCIETY

On Thursday, March 17, at their monthly dinner meeting, the Coast Geological Society heard a very interesting paper on the Stevens Channel Sand development in the McKittrick Field titled "Rejuvenation of a Tired Oil Field," which was presented by N. Jack Kappeler and Jim Herblin, production geologists in Tidewater Oil Co. They traced the history of McKittrick from the days of open-pit "oil mining" and Klondike Oil Company's Shamrock 1 Potter sand discovery well through flank exploration in the '40's to the penetration of the Stevens sand by a well which failed to discover the oil pool and, finally, that of a competitor which did. At present, some 43 Stevens wells have delineated a (submarine) channel sand extending from McKittrick through Asphalto to Elk Hills from a northwesterly source. At McKittrick it is strongly tilted up to the southwest against the McKittrick fault; oil is trapped in numerous individual turbidite sands along updip pinch-outs with at least nine separate oil-water contacts. There is perplexing variation in oil gravity, gas/oil ratio, CO₂ content of the gas, and in sand character, various members of the Stevens containing everything from granite boulder conglomerate to fine silty sand. Messrs. Kappeler and Herblin concluded with a plea for more exploration beneath present oil fields along the lines of their Stevens play. In view of the 1-in-63 success ratio of economic discoveries to wildcats currently experienced in the U.S.A., the industry might well heed their advice.

SAN JOAQUIN GEOLOGICAL SOCIETY

One hundred twenty-eight geologists and friends attended the March meeting of the San Joaquin Geological Society. Attendance has been encouraged by the change of meeting place, preparation of our own steaks and addition of a raffle to pay for the liquid refreshments. Monetarily, these changes have been so successful that the Society has been able to buy a gavel and also a new projection screen.

Nominations for officers for the coming year are:

President:	Bob Ortaida, Standard Ernie Rennie, Tidewater
Vice-President:	Fred Green, Miller & York Jim O'Neill, Consultant
Secretary:	Chet Rudel, Standard Henry Walrond, Sunland Ref.
Treasurer:	Bob Hoffman, Consultant Lou Villanueva, Tidewater
Representative to Pacific Section AAPG	Hop Conger, Shell Bob Morrison, Occidental

An excellent paper was presented by Jack Kappeler and Jim Herblin of Tidewater entitled "Rejuvenation of a Tired Oil Field, McKittrick, Kern County, California."



MEMORIAL
W. R. Barlow

W. R. Barlow, Division Paleontologist and Biostratigrapher for the Northern California Division of Standard Oil Company of California in Bakersfield, was killed in an automobile accident near Gorman, California, Sunday morning, February 13, 1966. This sudden tragedy has robbed Bill's close associates and the petroleum industry at large of a talent that was considerable.

He was a true product of the industry, having been born the son of a driller in Whittier, California, on the 10th of January, 1925. During Bill's early years, the family moved to Taft, and it was there in the midst of the prolific westside producing area that he was raised and graduated from high school. With this background it was, perhaps, natural that Bill would select a career in petroleum. He attended the University of California in Berkeley from 1945 to 1949, graduating with a Bachelor of Science degree in geology.

In August, 1949, he was employed by the Standard Oil Company of California in Taft as a micropaleontologist. It was from this initial assignment that he gained an intense interest in biostratigraphy to the extent that he was from that time on a life-long student in this special area of the earth sciences. This interest, in addition to experience gained in paleontology and through various field assignments from Southern California to Alaska, especially equipped him with the tools to pursue his main area of interest: the integration of biologic and petrologic data into the meaningful model of geologic framework.

Bill's principal avocation was his abiding interest in his fellow man in general, but to those in need in particular. On the job, he was counselor and consultant to the younger geologists and paleontologists who would seek his help. Off the job, he was friend and confidant to many. During the past three years this interest led him to participate in youth counselling through Special Interest Petroleum Explorer Post 200, serving as Advisor and Committee Chairman. Through this particular association a number of high school members have identified geology and other vocations in petroleum as their preferred interest in planning for their college studies.

Bill was a member of the National AAPG and SEPM. He also belonged to the Pacific Section AAPG and was a former Chairman of the Bakersfield Biostratigraphic Seminars.

He gave freely of himself and whatever was his in a way that was special to the occasion.

He would not have it so, but his friends and associates, both contemporary and otherwise, mourn his untimely passing.

CAREER SYMPOSIUM AND EMPLOYMENT INTERVIEWS
AAPG-SEPM CONVENTION, ST. LOUIS, APRIL 25-28

A Symposium on geological careers and employment has been planned for Monday afternoon, April 25. This event will be an outstanding one, bringing together eight eminent geologists who will discuss various aspects of current and future trends in geological careers and employment opportunities. It is thus designed for the benefit, not only of students, but also of those with professional geological experience. Time will be allotted between talks for discussion from the floor. An outline of the program is as follows:

<u>Speaker</u>	<u>Topic</u>
1. Morgan J. Davis	"Future of the Petroleum Industry and its Impact on Geological Employment"
2. Eugene L. Jones	"Opportunities for Geological Research in the Petroleum Industry"
3. George V. Cohee	"Careers with the U. S. Geological Survey and other Federal Agencies"
4. Carl C. Branson	"Careers with State Geological Surveys"
5. Charles R. L. Oder	"Geological Employment in the Mining Industry"
6. Irving S. Fisher	"An Academic Career-Teaching Geology as a Profession"
7. Paul H. Price	"Opportunities for Employment in Construction and Highway Geology"
8. Howard A. Meyerhoff	"Relocation and Reorientation of the Unemployed Experienced Geologist"

"BEYOND THE BOREHOLE" TO BE THEME OF 16th
ANNUAL MEETING OF GEOLOGISTS IN DENVER

General Chairman Burdette A. Ogle of Denver has announced that 1500 Geologists and wives are expected to assemble in Denver for the 16th annual meeting of the Rocky Mountain Section of the American Association of Petroleum Geologists, which will be held October 23 through 27 at the Hilton Hotel. The Rocky Mountain Association of Geologists, the local society, will host this regional meeting.

The technical program, and the theme "Beyond the Borehole" is designed to emphasize the future potential of continued exploration for, and development of, new petroleum reserves and related energy sources in the Rocky Mountain area. The application of new methods and techniques in exploration, as well as attention to the future potential of oil shale and coal resources, will be stressed.

Dr. Robert J. Weimer, Program Chairman and professor at the Colorado School of Mines, has announced that the technical program will include approximately 40 papers. These will be presented in a series of six half-day symposia under the general headings of: 1) Regional Developments, 2) Research and Developments in Exploitation, 3) Use of Sedimentary Structures in Exploration, 4) Recent Advances in Exploration Tools, 5) Relationship of Petroleum to Regional Stratigraphy and 6) Stratigraphic Trap Case Histories.

Two field trips, on October 23 and 27, into the Colorado Front Range will be conducted in conjunction with the meeting. These trips will emphasize the study of sedimentary structures as applied to petroleum exploration.

A full round of social activities for both geologists and their wives has been scheduled for the meeting. Highlighting this aspect of the convention will be an art show at the Hilton Hotel featuring selected examples of art in various forms created by geologists and their wives in the Rocky Mountain area.

Facilities for employment interviews at the Convention will be available both to students and professionals seeking appropriate positions, not only in petroleum geology, but in other fields as well.

Committee chairmen responsible for the organization of this meeting have also been announced by General Chairman Ogle. They are Earl G. Griffith, Assistant Chairman; Robert J. Weimer, Program; Warren B. Scobey, Exhibits; Donald B. MacKenzie, Registration; Robert L. Rayl, Housing; George S. Garbarini, Technical Services; John H. Dolloff, Publicity; Donald S. Stone, Entertainment; Trowbridge Gross, Field Trips; J. F. DeChadenedes, Transportation; William W. Whitley, Publications; J. A. Mullinax, Finance; Charles Severy, Reception and Mary Lou Kincaid, Ladies Program.

REJUVENATION OF A TIRED OIL FIELD
McKittrick, Kern County, California

By
 N. J. Kappeler and J. G. Herblin

ABSTRACT

The McKittrick Oil Field, located 40 miles west of Bakersfield, California, in the San Joaquin Valley, was the scene of exploratory drilling along the Stevens Sand Channel deposit following the discovery of the Asphalto Oil Field. The Stevens pool of the McKittrick Oil Field was discovered in July, 1964, and, to date, 43 wells have been completed underlying shallow zone production. The pool, lying at a depth of 2250-4050 feet remained undiscovered for over 75 years, although several exploratory wells were drilled in the area. Rejuvenation of this field is demonstrated by the past 20 years of production from 427 wells which averaged slightly under 900,000 barrels annually as compared with 3.45 million barrels in 1965.

Nine individual oil and gas zones have been delineated within the pool which is located on the southwest edge of the channel deposit directly underlying shallow zone productive limits. Closure is entirely stratigraphic on the up-warped edge of these sediments which dip steeply to the northeast. Complex lithologic changes occur within the sands with resulting anomalous reservoir conditions. Individual oil gravities vary from 21 to 31 degrees API and gas encountered varies from 6.4 to 35 percent CO₂ content.

As a result of the development of this pool, the following conclusions were reached: (1) low permeability silty sands are susceptible to sand-fracturing in California, (2) redrilling nonproductive straight holes in a stratigraphic reservoir can pay off, (3) one, two or three exploratory dry holes in an old field do not necessarily condemn a potential sand reservoir, (4) new pool discovery statistics will improve in California if increased concentration is centered on drilling exploratory wells in old fields.

Cumulative pool production through December, 1965, was 2.06 million barrels of 21 to 31 degree API oil and 2038 MMCF gas from 42 wells; flowing, flumping and pumping, wells operated by Tidewater, Standard, W. W. Holmes, Atlantic and F. J. Stefanich.

AAPG SURVEY DESCRIBES SHORTAGE
OF GEOLOGY - GEOPHYSICS GRADUATES

More than 90 percent of the hundreds of job opportunities available to college graduates in the field of geophysics will go begging in the next three years.

According to an analysis and survey just released by The American Association of Petroleum Geologists here, there is a particularly acute shortage of geophysicists, a fact which is reflected in the higher starting salaries being offered new men in this field.

However, the over-all demand for both geophysicists and geologists, which declined from 1957 to 1962, now shows a modest but definite upswing.

At the same time, the numbers of geology and geophysics majors and graduates is increasing, but not at a great enough rate to eliminate anticipated shortages.

In fact, during the three-year period ending in 1967, it is probable, says AAPG, that the number of new geophysics graduates available for employment will not be more than ten percent of the job opportunities.

The report appears in the December issue of the "Bulletin of The American Association of Petroleum Geologists." It was compiled by three professional petroleum geologists, J. S. Royds, Continental Oil Co., New York, N.Y.; H. L. Thomsen, Shell Oil Co., New York, N.Y.; and J. W. Strickland, Continental Oil Co., Ponca City, Oklahoma.

The report points out that major oil companies provide almost 45 percent of the job opportunities, while universities, colleges, and Federal and state agencies account for another 35 percent.

In greatest demand are new graduates with Master's degrees who have had field courses and have stressed advanced geological and basic sciences in their academic work.

AAPG reports that the number of geology majors in U. S. schools reached an all-time high in 1958, but declined continuously through 1962. The study shows a continuous increase through 1967, but does not indicate that the 1958 peak will be reached.

Between 1962 and 1967, increases among seniors and graduate students majoring in geology will amount to 50 percent each. In the same period, there will be an 85 percent increase in seniors and a 150 percent increase in graduate students majoring in geophysics. However, these figures will be offset by the following factors:

About 7 percent of the graduates are foreign students who return to their native countries; many change majors, or for other reasons, do not go into geology or geophysics.

A significant number of graduate students in geoscience major in some other science at the Bachelor's degree level.

Some transfer to universities outside the U. S.

An increasing number are entering the armed forces or the Peace Corps.

There is an increasing tendency to prolong completion of graduate work while doing research sponsored by the Government, universities, industry, or other institutions.

"It cannot even be assured," states the survey, "that 100 percent of Ph.D recipients are available for employment, as an increasing percentage are going into post-doctoral research and some are foreign students returning to their own country."

The AAPG survey concludes that the excess demand for geophysicists will be satisfied principally from students graduating in other related fields, such as physics and engineering. In this area, however, the survey points out, employers must compete with the growing demand for these graduates in electronics, oceanography, and the space program, as well as in the traditional areas of demand.

While the domestic departments of major oil companies continue to be the largest present employers of geologists, this segment of the geologist population is not increasing, according to the AAPG report.

The greatest percentage increase in geologist employment is by mining companies (51 percent), university and college faculties (33 percent), international departments of major oil companies (23 percent), independent oil companies (20 percent), and Federal and state surveys (19 percent).

These employment statistics do not reflect about 2,800 self-employed geologists, nor geologists employed in the space program, or by miscellaneous state, county, and municipal agencies.

Major oil companies' domestic operations continue to be the largest employer of geophysicists and this segment is still growing, according to the AAPG survey. On the basis of percentage increase, however, the survey indicates that the most rapid future growth in geophysicist employment will be in university and college faculties, followed by service and consulting companies, mining companies, Federal and state surveys, and international departments of major oil companies.

Domestic operations of major oil companies offer maximum career opportunities during the next three years for new geological graduates and for geologists with more than five years' experience, the report forecasts. This employing group will seek 43 percent of total demand.

Major oil company domestic operations will also make the largest demand for geophysical graduates. Forty-five percent of the new geophysical graduates will be sought by the majors for domestic operations.

The survey indicates that in 1967 there will be approximately 1,667 senior geology majors and 2,802 graduate students. . .but only 274 Bachelor's degree graduates, 210 Master's degree graduates and 276 Ph.D graduates available for employment that year.

NURSERY NEWS

JIM RUHLE (Standard-La Habra) and his wife, Carolyn, announce the birth of their second child, a boy, Roger, born January 21, 1966.

PERSONAL ITEMS

BOB LINDBLOM, Standard-La Habra, will not have any excuses for missing a tee-off time now. Bob won a walnut mantle clock for winning third place in the Standard Oil Southern Division Twilight Golf League. Approximately 40 golfers took part in this annual tournament held over a period of 5 months.

With only one week to go, the Standard Oil Exploration, La Habra, bowling team is leading the Men's Commercial League at the Highland Bowl. Captained by BILLY K. REED, other players are SHESS SCHIESSER, BOB McCRAE, BOB LINDBLOM, MARSH AYRES and JERRY WARD.

ORVILLE HART is a new hire in Standard's Exploration Department, La Habra. Orville hails from Texas and has a Ph.D. from Wisconsin.

JOHN SPANGLER, Standard-La Habra, recently returned from a month's Formation Evaluation school in San Francisco, but instead of gaining weight on that tour of duty he lost 7 pounds. No reasons were given other than hard work.

Most of the Humble Bakersfield Exploration Office force still can't believe that their move to Los Angeles is permanent. In fact, there are a few holdouts working in Los Angeles and commuting to Bakersfield.

Tidewater's HAROLD SUGDEN (Ventura) gathered a corps of other diving fanatics together, got into a fast motorboat, and made the long run out to San Nicolas Island last week for the express purpose of permanently altering the ecological balance between lobsters and abalone and the remainder of the marine population. He reported lobsters so large that when they were grabbed, it became a question of who was collecting whom.

Letters from former Shell geologist, SIG HAMANN, tell of pleasant, easy living in the International Petroleum Company's village at Talara, Peru. Sig is planning to visit California during the coming summer.

Effective in April, BOB KROPSCHOT is appointed Division Geophysicist for the Northern California Division of Standard, Oildale. NORM JOKERST replaces ROLANDO LARA as Division Geophysicist for the Southern California Division at La Habra. Norm is trying to figure out a way to have his swimming pool moved to the La Habra area at Company expense. Rolando is being transferred to the Home Office of Standard in San Francisco as Staff Geophysicist, effective in May.

JIM BENSLEY, Gulf, Bakersfield, says the way to win a golf match is to sprain an ankle and work on the sympathy of the opponents.

JOHN BEALL, Shell, has been transferred to the Marine Division from Bakersfield.

BOB BLOCHER, Shell, is the new District Geologist in Bakersfield, transferring from a similar position in Ventura.

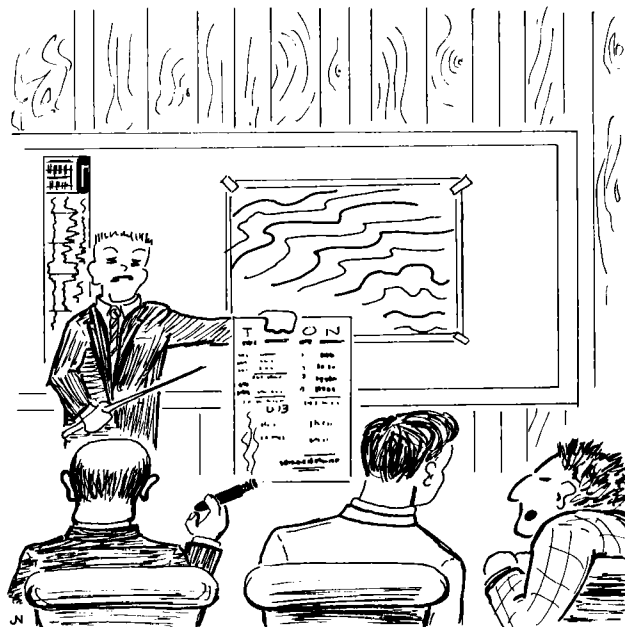
JACK CLARE and JIM O'NEIL have had greater success finding water than they have been having in finding oil. At any rate, their latest water well in the Olcese Ranch received front page coverage in the Bakersfield Californian.

ROGER NEWDECK, a February graduate from Colorado School of Mines, has joined the Exploration Department for Standard at Oildale.

WILLIAM L. EFFINGER, Assistant Chief Geologist, Standard Oil Company of California, Western Operations, Inc., who has been in San Francisco for the last several years in that capacity, announced his early retirement the other day. Bill has not reached the age of mandatory retirement by any means, but as he said, he's retiring while he is still able to get around and carry on active field work. He has plans to do some detailed urban and suburban geologic mapping in the Walnut Creek area of Contra Costa County near his home.

Bill has just completed over 31 years of service with Standard Oil Companies. He graduated from the University of California and obtained an M.S. degree in paleontology and in 1934 began a 9 months' tour of duty as an engineer in Richmond, and also as a geophysical scout for the company in the San Joaquin Valley. This was followed by a number of years in foreign areas. In the years 1935 - 1939, he was geologist in Colombia with Richmond Petroleum Company of Colombia, a Standard Oil subsidiary. This was followed by 3 years in Batavia in the Northeast Indies with NPPM. From 1942 to 1952, he was with the California Company, working in New Orleans and at times out of Tallahassee and in various eastern states. During this period he was, for a time, District Geologist in Lexington, Kentucky, and from 1949-52 was Exploration Superintendent for the company. From 1952-1955 he worked in San Francisco as Special Representative for RICAL, and from 1955-59 he was with California Exploration Company as Special Representative first, and then as Chief Geologist with headquarters in San Francisco. It was in 1959 that he joined Western Operations, Inc., as Assistant Chief Geologist to William F. (Bill) Barbat.

Our congratulations on his retirement and very best wishes for his self-imposed duties as a field geologist in the beautiful San Ramon Valley.



"If we can 'em both, we can afford that suite at Universal Towers."

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by P. E. Ward, S. H. Hoffard, and D. A. Davis \$1.00

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1964, by G. V. Conee and W. S. West \$0.30

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Maps:

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quadrangle, Alaska, by T. L. Pewe \$1.00

GQ-444: Geologic map of the Topopah Spring
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national Development, United States Dept. of
State (2 sheets, scale 1:2,000,000) \$5.00/set

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quadrangle, Alaska, by E. M. MacKevett, Jr. \$0.50

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Oil yield and chemical composition of shale from
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CALIFORNIA DIVISION OF MINES AND GEOLOGY

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Chapter 3: Chromite deposits of Shasta, Tehama,
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The settling of olivine in Kilauean magma as shown by lavas of the 1959 eruption, by K. J. Murata and D. H. Richter

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Volume 20

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Offshore gravity anomalies in the Santa Barbara Channel, California, by Roland von Huene and J. B. Ridlon

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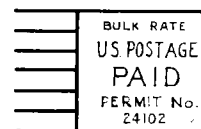
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DA

PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

May, 1966

Number 5

ASSOCIATION ACTIVITIES

CONTINUING EDUCATION COURSE SET FOR JUNE 13-16

Dr. Daniel A. Busch, Consulting Geologist of Tulsa, will present a four-lecture course on "Sandstones-Applied subsurface stratigraphy...significance and methods of reconstructing paleodepositional environments," at the Mobil Auditorium, 612 South Flower St., Los Angeles, on June 13, 14, 15, and 16 from 3 p.m. to 6 p.m. The fee (\$10 to \$15, depending on enrollment), will include a brief syllabus and will be reimbursable under most companies' educational refund plans.

This is the first of a series of courses to be presented under the A.A.P.G.'s Continuing Education Program. This program of geological "refresher courses" offers comprehensive coverage of recent and current developments in new concepts and techniques related to petroleum exploration. It has met with immediate nationwide response, with over thirty bookings received in the four months since the program was announced. Ted L. Bear is Chairman of the Pacific Section's program, being given in Los Angeles.

Dan Busch, lecturer for the first Los Angeles course, has worked in petroleum exploration and research for Carter Oil, Zephyr Petroleum and Huntley & Huntley, and has taught at Ohio State, University of Pittsburgh, University of Tulsa, and University of Oklahoma. He is the author of numerous publications on applied subsurface stratigraphy related to oil and gas occurrence in stratigraphic traps. One local geologist who participated in a short course on sandstones given by Busch in North Texas has rated it as the most valuable experience in his entire educational background. The course to be given in Los Angeles was recently presented to 171 geologists in Corpus Christi, Texas.

Announcements and registration cards will be mailed to Los Angeles area members in the near future. Interested geologists are urged to return the registration cards promptly, as the fee for the course will reflect the anticipated enrollment.

SPRING PICNIC, FIELD TRIP, GOLF TOURNEY SET FOR JUNE 3d

The Annual Spring Picnic will be held on Friday afternoon, June 3d, at the traditional Pico Canyon rendezvous, according to Picnic Chairman Don Hagen (Texaco, Ventura). Milt Zeni (Standard, Oildale), in charge of the Golf Tournament, has scheduled that event for the Elkins Ranch course at Fillmore. The meet will be limited to 25 foursomes, starting from 7:30 to 10:30 a.m. Cost per person will be \$4 (\$3 green fee, \$1 prize money).

The field trip is tentatively planned for the Simi Uplift/Santa Susana thrust area. Details and reservation cards for field trip, golf and picnic will be mailed to members in mid-May.

May 9

May 9

May 10

May 10

May 11

May 16

CALENDAR

STANFORD, Monday afternoon, 4:00 p.m. (Coffee at 3:45), Room 320, Geology Building, Journal Club of the School of Earth Sciences, "An experiment to measure the piezomagnetic effect in seismically active areas," by Sheldon Brenner, graduate student in Geophysics, and "Experimental Studies in the system Albite-Orthoclase-Water," by Hans Seck, research assistant in Geology.

BAKERSFIELD, Monday evening, 7:30 P.M., Bakersfield College, Science and Engineering Building, Room 56, Biostratigraphic Seminar, "Foraminifera from the Lower Cretaceous of the Devils Den Area, Kern County, California," by Mr. C. C. Church, Paleontological Consultant, Bakersfield.

BAKERSFIELD, Tuesday evening, 6:30 P.M., (Happy Hour, 5:30 P.M.), American Legion Hall, 17th and L Streets, San Joaquin Geological Society, "Resume of Ground Water Hydrology in the Southern San Joaquin Valley, California," by Dr. John Manning, Hydrodevelopment, Inc., Bakersfield.

VENTURA, Tuesday evening, 7:30 p.m. (Happy Hour, 6:30 p.m.), Jet Room, 1944 Thompson Avenue, Coast Geological Society, "An Analysis of the Stratigraphy and Hydrocarbon Reservoirs of the Santa Barbara Embayment with Emphasis on Offshore Potential," by Manuel Castro, Consultant.

BERKELEY, Wednesday afternoon, 4:00 p.m., University of California, 141 Earth Sciences Building, "The Serpentine Problem--Opus 2," by Norman Page, U.S.G.S., Menlo Park.

STANFORD, Monday afternoon, 4:00 p.m. (Coffee at 3:45), Room 320, Geology Building, Journal Club of the School of Earth Sciences, "Some of the Problems in Ethiopian and Rift Valley Geology," by Désirée Stuart-Alexander, graduate student in Geology.

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NEXT DEADLINE - MAY 16

May 16

LOS ANGELES, Monday evening,
7:00 p.m., Mobil Auditorium,
612 South Flower Street, Geo-
logical Forum, "Salt Diapirism,
the Importance of Temperature
and Energy Source of Emplace-
ment," by William C. Gussow,
Union Oil Co. Research Center,
Brea, Calif.

May 17

LOS ANGELES, Tuesday noon, Uni-
versity of Southern California,
Room 101, New Science Lecture
Hall, near 37th and Hoover
Streets, "Foraminiferal Biofac-
ies, Andaman Sea," by William
E. Frerichs, Ph.D., Candidate
in Geology.

May 18

BERKELEY, Wednesday afternoon,
4:00 p.m., University of Cali-
fornia, 141 Earth Sciences
Building, "Experimental Inves-
tigation of Thermal and Elec-
trical Osmosis in Clay-Water
Systems," by Donald H. Gray,
Department of Soil Mechanics,
U.C. Berkeley.

May 23

STANFORD, Monday afternoon, 4:00
p.m. (Coffee at 3:45), Room 320,
Geology Building, Journal Club
of the School of Earth Sciences,
"Petrology and structure of
Pre-cambrian rocks of a portion
of the Southern Front Range,
Colorado," by R. A. Wobus,
graduate student in Geology.

May 25

BERKELEY, Wednesday afternoon,
4:00 p.m., University of
California, 141 Earth Sciences
Building, "Proposed Origin of
Subsurface Thermal Brines,
Imperial Valley, California,"
by Fred A. F. Berry, Department
of Geology and Geophysics,
U.C. Berkeley.

May 30

STANFORD, Monday afternoon, 4:00
p.m. (Coffee at 3:45), Room 320,
Geology Building, Journal Club
of the School of Earth Sciences,
"Primary sedimentary structures
in Europe," by Mr. J. H. McD.
Whitaker, Senior Lecturer at the
University of Leicester,
Leicester, England.

June 2

LOS ANGELES, Thursday noon,
Rodger Young Auditorium, 936 West
Washington Boulevard, "Precam-
brian Sedimentary Features of
the Kingston Peak Formation,
Death Valley Region--Turbidite
or Tillite?" by Bennie W.
Troxel, California Division of
Mines and Geology.

June 14

BAKERSFIELD, Tuesday evening,
6:30 p.m. (Happy Hour, 5:30
p.m.), American Legion Hall,
17th and L Streets, San Joa-
quin Geological Society, "Upper
Paleocene Buried Channel in
Sacramento Valley," by J. L.
Payne and A. B. Dickas,
Standard Oil Co.

SAN JOAQUIN GEOLOGICAL SOCIETY OFFICERS ANNOUNCED

The newly elected officers of the San Joaquin Geological
Society are:

President	Robert A. Ortalda	Std. Oil Co. of Calif.
V. President	James L. O'Neill	Consultant
Secretary	Chester H. Rudel	Std. Oil Co. of Calif.
Treasurer	Robert D. Hoffman	Consultant
Delegate to Pacific Section AAPG	Robert R. Morrison	Occidental Petroleum Corporation

P. G. & E. GAS-CONTRACT POLICY QUESTIONED
BY SACRAMENTO PETROLEUM ASSOCIATION



LONG BEACH HARBOR FIELD TRIP, MARCH 26th, 1966. Atop Signal Hill, ED PICKETT (Westates) describes the boom days of the Long Beach field, while Convention General Chairman BILL EMERSON (Humble) holds the microphone.

PACIFIC SECTION EXECUTIVE COMMITTEE MEETING
APRIL 18, 1966

Present were Knapp, Curran, Edmondson, Wright, Terpening, Orwig, and Morrison.

A motion to extend a Voting Membership on the Executive Committee to the Northern California Delegate, and to invite the Sacramento area to share in this representation, was approved.

Committee appointments are nearly completed. They will include a representative on the AIPG Professional Status Committee who will provide liaison between the Pacific Section and the AIPG on matters affecting legislative efforts to regulate the geological profession.

A more efficient and economic scheduling of Distinguished Lecturer tours, under full Pacific Section financial sponsorship, is to be developed by Forum Chairman Bill Hughs, who will also investigate the possibility of scheduling occasional evening Forum meetings in Long Beach, Orange County, and other outlying areas more convenient to the homes of Los Angeles Basin geologists.

Possible AAPG-SEPM field trips to the northern Salinas Valley or the Channel Islands for the Fall of 1966 are being investigated.

The possible advantages of annual audit of Pacific Section accounts are being evaluated.

The May meeting of the Executive Committee will be held in Bakersfield on May 10th, at 1:00 a.m. at Skyway House, and will be open to interested Pacific Section members. The agenda will include:

1. organization of the Membership Committee, including a membership drive and improved mailing services
 2. review of the Cross-Section Committee's plans for new and revised correlation sections in West Coast basins
 3. discussion of Section activities, past and future, from a financial standpoint
 4. formulating a program of education and opinion-polling relative to State regulation of the geological profession
- additional items which may be discussed as a result of the National Convention; and other business.

The following letter concerns a subject vital to the health of our profession in California, and thus, deserves the consideration of every petroleum geologist. You may wish to call this matter to the attention of your State senator or assemblyman, most of whom will be more than normally eager to please between now and November.

SACRAMENTO
 PETROLEUM ASSOCIATION
 P. O. Box 214676
 Sacramento, California
 March 30, 1966

Mr. R. H. Gerdes
 Chairman of the Board
 Pacific Gas and Electric Company
 245 Market Street
 San Francisco, California

Dear Mr. Gerdes:

The Sacramento Petroleum Association is deeply concerned over the Pacific Gas and Electric Company's restrictive policy governing the purchase of northern California natural gas. This policy is damaging not only to the petroleum industry, but to the economy of northern California. For this reason, the Association is addressing itself directly to you in order to find a satisfactory solution to the problem.

The petroleum industry in northern California is confronted with a serious and perplexing problem: producers are selling less gas for less income in the face of a dramatically expanding market. Between 1950 and 1965, the volume of gas consumed in the northern market, according to PG&E, tripled. During the same period, the daily average production on a per well basis declined by fifty per cent.

Today, the gas-sales contract between PG&E and the producer of gas in northern California is, commonly, so minimal and restrictive that the investor, whether oil company or independent, has little or no incentive to explore for gas in this province. The explorer can no longer expect a return on his investment within a reasonable length of time. The producer must now anticipate having his exploration funds tied up for a long "no return" period. He must engage in lengthy contract negotiations; wait a year, on the average, to have his well(s) connected to the pipeline system, and wait an additional unreasonably long period to recover his initial investment. Moreover, the fact cannot be overlooked that the explorer usually invests considerable sums in dry holes before discovering new gas reserves. A discovery must, therefore, pay for both its wells and these dry holes, as well as for other exploration and leasing costs.

PG&E imports great volumes of natural gas. This, of course, has relegated northern California to a weak, secondary position as a source of gas supply. Today, the northern California province is, essentially, a "peak period" source of gas. This is an inequitable situation in view of the uninterrupted flow, throughout the year, of the imported gas. Increasing the flow of Canadian gas may be a long range necessity; however, by increasing the volume of gas imported and, at the same time, perpetuating the present policy regarding the purchase of local gas, the deterioration of the local gas economy will be rapidly accelerated. If present conditions are allowed to continue, it is entirely conceivable that a vital part of the Nation's natural gas resources will remain undiscovered.

The local and State governments in California are being directly affected by PG&E's gas-purchasing policy. The purchase of Canadian natural gas diverts American dollars from local economies to the Canadian economy. This, coupled with the serious decrease in local exploration activity, and the attendant reduction in expenditures, has the following adverse results:

1. The loss of tax revenues to the State of California.
2. The loss of property tax revenues to local governments in California.
3. The loss of income to Californians working in the petroleum industry and related fields.
4. The loss of lease rentals and production royalties to local California landowners.
5. The loss of income to businesses dealing directly or indirectly with the petroleum industry in northern California.

The petroleum industry expenditures in the Sacramento Basin during 1962 totaled 55 million dollars. The sum today is considerably below this figure.

The Sacramento Basin holds excellent potential for additional major reserves of natural gas. In spite of pronounced decreases in drilling activity in recent years - 289 wells drilled in 1964, in contrast to 183 wells in 1965 (a one-third decrease) - which is largely a result of PG&E's gas-purchase policy, significant gas discoveries are common: Lathrop (1961), Lindsey Slough (1962), Dutch Slough (1963) and Sherman Island (1965) gas fields. There is little question that major gas reserves remain to be discovered. Literally hundreds of square miles in this Basin remain unexplored.

Needless to say, the explorer searches for major accumulations of gas having large recoverable reserves. More often than not, however, what is actually found is less than anticipated. Gas-sales contracts based solely on producing recoverable gas in place (estimated by PG&E personnel) over a twenty year period make it uneconomical to complete many wells because of low reserve estimates. The substance of the contract today, virtually compels the producer to abandon small accumulations, thereby leaving the gas in the ground.

PG&E is the only purchaser of gas of any significance in northern California. Accordingly, the gas producer is compelled to look to PG&E to sell his gas. There is no apparent basis for the unrealistically low-minimum obligation gas-sales contract that PG&E now offers the local producers. Because of this, the Sacramento Petroleum Association is seeking to rectify the present inequitable situation and to find a solution which will produce a favorable economic environment.

The Association asks that the producers of northern California be given a fair share of the fast-growing market. It asks that the producer be permitted to produce his wells at a reasonable rate to insure a return on his investment within a realistic period of time. The result would be a more stimulated and healthier economy for northern California: exploration activity would increase, more jobs would be created, more taxes would be paid and gas reserves in this Basin would be significantly increased. What the Association asks is simply fairness and equality.

It would be appreciated very much if you would favor us with a reply at your earliest convenience.

Yours very truly,
Vern C. Jones
Chairman
Committee on Industry Relations
Sacramento Petroleum Association

The Professional Corner

WHAT IS AN ENGINEERING GEOLOGIST?

GEOTIMES for March 1966 carries a "Help Wanted" ad of special interest at the top of Page 42. The ad reads:

"Engineering geologist to explore mountainous sections of Western Interstate Highways. Experience in some or all of following helpful: air photo geology, resistivity, seismic, core drilling inspection, mapping, tunnels. Reply to Box 269."

With the exception of "Experience in...tunnels," the qualifying areas all apply to any experienced petroleum geologist. Past experience in California has indicated the difficulty of defining the specialty of engineering geology so that it would not preclude non-engineering geologists from practicing in certain fields. The fields which have given such concern in the past have been those of groundwater geology and landslide recognition and control.

It appears that the further inclusion of "air photo geology, resistivity, seismic, core drilling inspection, (and)...mapping" in the domain of engineering geology could impose serious restrictions on the professional freedom of petroleum and general geologists.

There have been no attempts to include these disciplines within engineering geology in the past. The fact that they are so included, however, in the country's only profession-wide news organ must be considered significant.

- R. H. Paschall -

COAST GEOLOGICAL SOCIETY

On Tuesday, April 12, at their monthly dinner meeting at the Jet Room in Ventura, the Coast Geological Society was addressed by Dr. Thane H. McCulloh of the Fuels Branch, U. S. G. S., concerning "The Anatomy of the Anticlinal Giant." Study of gravity data in the Los Angeles Basin drew Dr. McCulloh's attention to the marked negative anomaly centered on Santa Fe Springs Field, one of the giants of the region, with cumulative production of 600 million bbls, and still making about 1 million bbl per year. After describing the field's history, geometry, and reservoir characteristics, Dr. McCulloh effectively demonstrated that the gravity minimum is very likely the product of 1) original linear reservoir sediment distribution, 2) lesser density of both reservoir and non-reservoir rocks about the crest relative to those more deeply buried in the flanking synclines, and 3) lesser density of oil and gas accumulated in crestal producing zones relative to the water which saturates the rocks on the flanks. Rather than a product of tectonic forces, the anticline seems to have been created mainly by differential compaction. Dr. McCulloh expects to substantiate his synthesis of miscellaneous petrophysical and geophysical data with the Survey's new borehole gravimeter in the near future. He ended his presentation by noting that numerous major oil fields like Inglewood, Dominguez, and Long Beach have small gravity minima associated with their large

positive anomalies, and that properly interpreted gravity data may therefore be an important prospecting tool that has been overlooked in the past.

It took a brave man to do it, but our new Pacific Section Vice President, John Curran, stood up at the meeting, looked us all straight in the eye, and announced in stentorian tones that National AAPG dues will probably be raised \$4.00 this year. Someone in the peanut gallery demurred, and John was moved to quote the immortal works of "The Virginian," Mister, when you call me that, smile!" The question was immediately put from the floor about whether this was within the Administration's Wage & Price Guidelines, but ex-CGS President Jim Saunders mustered all his considerable talents for parliamentary in-fighting, quashed the debate, and ram-rodded through a unanimous vote in favor of higher dues before those who were smugly counting on the inertia inherent in the democratic process could rally in opposition. Probably economists of future years will record this incident as triggering the Great Inflationary Bubble of the Late Sixties.

NEW EDITOR NAMED FOR PACIFIC PETROLEUM GEOLOGIST

Pacific Section President Robert R. Knapp has announced the appointment of John N. Terpening as Editor of the Pacific Petroleum Geologist for the 1966-67 term. Terpening, for many years a geologist for Mobil in New York and on the West Coast, resigned that organization recently to become a partner in General Computer Services in El Segundo. His mailing address, for correspondents and others, is P.O. Box 90905, Airport Station, Los Angeles, Calif. 90009.

Appointed as Assistant Editors were Robert S. Yeats, Shell, Los Angeles, and Deane Oberste-Lehn, Rand Corp. Deane is an ex-Standard Oil geologist.

PERSONAL ITEMS

BOB LEVORSEN, Standard, is escaping the annual Alaska spring breakup by spending his vacation cruising on his 26-foot sail boat in the Caribbean.

A going away steak stag was held at Hart Park for departing NORM JOKERST, Standard's roving Division Geophysicist. Norm received many useful aids to geophysical studies from his Bakersfield friends. We take this opportunity to remind E. W. CHRISTIANSEN and M. POLUGAR that they were present also; as can be attested to by numerous peafowl at the park.

Great Basins Petroleum Corporation has opened a Sacramento office. Geologists are CHARLIE MANLOVE and CHARLIE FRYE.

Various transfers have been effected by Union Oil Company:

E. DEAN B. LAUDEMAN from Bakersfield to Anchorage as Manager of Exploration, Alaska District;
RICHARD A. LYON from Anchorage to Los Angeles as Assistant Manager of Exploration, Pacific Coast Division;
JOHN CLARK from Roswell, New Mexico to Anchorage as District Geophysicist, and GRAYDON H. LAUGHBAUM from Santa Fe Springs to Anchorage as Geologist;
HARVEY SCHLOTTHAUER has been named Coast Area Scout for Union at Orcutt. Harvey has been in Bakersfield.

Marathon has terminated its onshore exploration office in Bakersfield, with these resultant transfers and changes:

DICK ATCHESON, Geologist, and MORREY LOWMAN, Landman, are being transferred to Anchorage, Alaska.

GEORGE RUDKIN is being assigned to Los Angeles.

FRED SMITH, JR. has resigned and has joined the Consultant ranks, at least temporarily.

Marathon will continue a Production Office only in Bakersfield.

RUSSELL HOOPS is a new hire at Tidewater in Bakersfield. He was formerly with Amalgamated Petroleum in Australia and has had considerable experience as a mud logger both in Australia and South America.

GLENN LEDINGHAM has been transferred to Bakersfield as West Coast District Exploration Manager for Gulf Oil. His last assignment was Managing Director of Nigerian Gulf and he participated in Gulf discoveries there. Glen started for Gulf in Bakersfield in 1937 and, as have so many before him, he now returns to his old haunts.

Adieus are being said to DICK LYON who on May 1, will assume a new position in Los Angeles as Assistant Manager of Exploration for Union's Pacific Coast Division. Dick's house is available for any prospective transfers and he reports it is out of the "high risk" area besides.

Dick's replacement as Union's District Manager of Exploration in Anchorage will be DEAN LAUDEMAN from the Bakersfield office. Dean looked at Dick's house, but decided he wanted to locate a "fur piece" from the Cook Inlet bluff line. Sorry about that, Dick.

FORREST E. NELSON, Phillips geologist, has just been transferred to Anchorage from Bartlesville. Forrest has spent 4 summer seasons mapping in Alaska and liked it so well he asked to make it a permanent arrangement.

A large contingent of Alaskans journeyed to Long Beach for the recent Pacific Section meetings. We didn't notice too many suntans on the returnees so apparently the meetings were well-attended.

BOB LAMON has been transferred to Anchorage from Los Angeles to handle Mobil's growing exploration activities in Alaska.

Also Pan American is sending geologist JOHN H. MCKEEVER from Denver to Anchorage, to be coordinator for his firm's expanded drilling program.

The state of Alaska has added HARRY KUGLER, petroleum geologist, and OK GILBRETH, petroleum engineer, to the oil and gas branch reflecting the increased industry activity in the 49th state.

Standard's JOHN KOCH has been transferred to the company's Pacific Northwest Division Office in Seattle. Good luck, John.

LOYDE H. METZNER, Consulting Geologist, has announced the removal of his office to 401 Wilshire Boulevard, Suite 407, Santa Monica, California 90401 (Phone 213-393-4017).

Effective July 1, 1966, ROBERT C. BLAISDELL is being appointed Division Paleontologist for the Northern California Division of Standard Oil Company.

ERNIE RENNIE has resigned from Tidewater and he is currently among the unemployed.

R. G. HUPPI, Exploration Geologist, is being transferred from Seattle to Bakersfield for Standard effective about June 15, 1966.

PHIL SALSTROM, Standard, is also being transferred from Seattle to Bakersfield.

NURSERY NEWS

JO & BOB CRITCHLOW, Occidental, Bakersfield, a daughter, Julie, on April 4, 1966, weight 7 lbs. 9 oz.



"Sure it's easy to get a new field assistant, but he had all the notes with him."

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TEI 863: Geologic map of the Striped Hills quadrangle, Nye County, Nevada by Edward J. McKay and B. C. Burchfiel.

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Publication 41-2: Earthquake investigations in the Western United States, 1931-1964. 264 pages. 1965.

CALIFORNIA DIVISION OF MINES AND GEOLOGY (Mail orders to Ferry Building, San Francisco)

Geologic map of Santa Clara County (Plate 1 of Special Report 87) .25

Geologic Atlas of California. A loose-leaf, library size binder (15-1/2 inches). Included with the binder are enough adhesive strips to accommodate all of the sheets of the geologic map and all of the data sheets, as well as a title page and instruction sheets. \$7.00

CALIFORNIA DIVISION OF OIL AND GAS

Summary of Operations, California Oil Fields, Vol. 51, No. 1, 1965.

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PACIFIC PETROLEUM GEOLOGIST
PACIFIC SECTION. A.A.P.G.
P.O. BOX 17486. FOY STATION
LOS ANGELES, CALIF. 90017

Volume 20

Number 5

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DA



PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

June, 1966

Number 6

RECEIVED
JUN 8 1966

ASSOCIATION ACTIVITIES

SACRAMENTO PETROLEUM ASSOC. ANNUAL GOLF AND BAR-B-QUE. JUNE 17.

The Sacramento Petroleum Association will hold its annual Golf and Bar-B-Que on Friday, June 17, at the Yolo Fliers' Club. This is west of Woodland on Highways 16-24. \$5.00 for B-B-Q steak, \$5.00 for golf. There will be no starting line-ups, golf begins at 9:00, dinner at 6:00. For additional information contact JIM COGBILL, Go-Western in Woodland (916-662-4906), CHARLIE LUNDGREN, Exploration Logging in Sacramento (916-482-4950), or LOWELL GARRISON, Signal in Sacramento (916-482-6457).

EDUCATION

Dr. Daniel A. Busch will lecture on Sandstones - Applied subsurface stratigraphy, significance and methods of reconstructing paleo-depositional environments.

Time. June 13, 14, 15, 16. 3:00-6:00 PM
Place. Mobil Audit., Los Angeles
Fee. \$15.00 for 12 hours of lectures

Interested persons should contact Ted L. Bear,
MA 4-6964

COAST GEOLOGICAL SOCIETY

On Tuesday, June 7, the Coast Geological Society expects to have a LADIES NIGHT DINNER MEETING in Santa Barbara, at which Shell's SIG SNELSON will show a one-hour film about "Prospecting for Oil on the Arctic Slope of Alaska."

MOHOLE TWISTED-OFF (?)

Last month a local newsitem announced that the House Appropriations Committee eliminated funds from the Mohole Project for the next fiscal year. A request for \$19.7 million had been made to continue preparations for the drilling operation in the Pacific Ocean about 100 miles from Hawaii. The reason given for cancellation was "in view of the current world situation and the need to continually review priorities, the committee recommends that Project Mohole be terminated".

Subsequently, a Presidential request was made to the Committee to reconsider. Perhaps a final decision will have been made by the time this issue is distributed.

MINUTES OF THE EXECUTIVE COMMITTEE MEETING PACIFIC SECTION, AAPG MAY 10, 1966

The meeting was called to order by President Knapp at 1:15 p.m., at the Skyway House conference room, Bakersfield, California. Attending were R. R. Knapp, J. F. Curran, W. F. Edmondson, T. L. Wright, E. R. Orwig Jr., R. R. Morrison, G. B. Oakeshott, and J. M. Saunders. Invited guests were R. Ortalda, D. C. Callaway, and E. Espenschied.

Ernie Espenschied reported on the progress of the Continuing Education Program in the San Joaquin area. The first presentation will be held in June. It is hoped that coordination of later programs with the Los Angeles area be possible.

David Callaway (Cross Section Committee), reported that sections are planned for Sacramento Valley, San Joaquin Valley, Coastal, and Los Angeles Basin. It was suggested that sections for the Northwest area and Alaska (Cook Inlet) be considered. President Knapp expressed a desire that some of these sections be ready for the national convention to be held in Los Angeles in 1967, particularly the Los Angeles Basin section(s).

Secretary Edmondson read answer from Leo Newfarmer in reply to letter inquiring about existence or feasibility of forming a Geologic Society in San Diego. The Secretary was directed to make further attempts towards this objective through Blake Thomas of UCSD.

It was reported that correspondence had been received from the San Joaquin Geological Society offering to host the Pacific Section Convention for the Spring of 1968. It was unanimously recommended by this committee that Bakersfield be accepted for the 1968 Spring Convention.

It was reported that Don Weaver will not be able to lead a field trip to Santa Rosa Island this year. It was generally agreed that the Pacific Section, AAPG will not sponsor a field trip this fall and tentative plans will be made for a fall field trip in 1967.

EVENING FORUM MEETING

Seven P.M. June 20, 1966
Mobil Auditorium 612 So. Flower St.
Los Angeles

Speaker: W. W. LUMSDEN, California State College
at Long Beach

Topic: Structural Geology of the White Pine
Range, Nevada - A Case Study in Low
Angle Faulting.

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AMERICAN ASSOCIATION OF PETROLEUM GEOLOGIST

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Edward G. Dobrick, Jr.	Northwest
Dean L. Morgridge	Alaska

PACIFIC PETROLEUM GEOLOGIST

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ALASKA GEOLOGICAL SOCIETY

On April 13, at their monthly luncheon meeting at the Harbor House in Anchorage, the Alaska Geological Society was addressed by J. Childers of the USGS concerning "Breakout Floods at Lake George, Knik River, Alaska. Following is an abstract of his talk.

ABSTRACT

The U.S. Geological Survey has been making detailed observations of annual floods of the Knik River, 40 miles northeast of Anchorage, Alaska, since 1948. These floods are caused by the breakout of an ice dam 20 miles upstream which forms Lake George. The Survey has made detailed observations of the breakout of the ice dam since 1959. Flood hydrographs of changing river stage and discharge in relation to time and stage-time graphs of separate parts of Lake George have been made.

The breakout flood lasts about one week and takes place in mid-summer. During peak discharge, the maximum water level of the river has been measured at 14 feet above normal stage. Peak discharge has been measured at 360,000 cubic feet per second (the approximate flow of the Yukon River at Rampart, Alaska in mid-July.). A maximum total discharge of 1,900,000 acre feet of lake water has been measured during the breakout.

The ice dam which contains Lake George is formed by Knik Glacier. During the winter the glacier advances and forms a dam across the lake drainage by ice sealing against the steep north slope of Mt. Palmer. During the summer meltwater flow undercuts, seeps through and overtops the glacier contacts and causes the dam to fail. Lake George drops as much as 170 feet during the week of dumping. Lake George becomes three separate lakes as the water level drops during breakout. Peak discharge from Lake George exceeds by as much as 26 percent the peak discharge at the Glenn Highway Bridge which is 20 miles downstream from the lake. The difference in discharge goes into temporary intervening channel storage.

Data pertaining to Knik River floods may be obtained in the U.S. Geological Survey's annual publications, "Surface Water Records of Alaska".

SAN JOAQUIN GEOLOGICAL SOCIETY

The last meeting of the season of the San Joaquin Geological Society will be held on June 14.

NEXT DEADLINE - JUNE 15

For all future issues correspondents are requested to include announcements of calendar items for the first two weeks of the following month to insure sufficient advance notice (i.e., for the July issue the first two weeks of August). Sometimes late recipients of the PPG Newsletter don't receive their copies until the second week of the month.

DR. JOHN MANNING, Hydrodevelopment, Inc., gave a resume of Ground Water Hydrology in the Southern San Joaquin Valley, California on May 10. It was a very informative talk, reviewed the ground water geology, history and the anticipated effects of the California water project for the future. (Watch for publication of this information soon)

The executive staff of the Pacific Section AAPG received a vote of appreciation from the San Joaquin Geological Society for their forward approach in attending a meeting of an affiliate outside of the Los Angeles area. They came up to Bakersfield to learn ways and means for better participation and attendance of the membership.

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

Following is an abstract of the talk given before the Northern California Geological Society's meeting in May, by M. A. Lekas, Project Engineer, Atomic Energy commission, Berkeley.

ECONOMICS OF PRODUCING SHALE OIL BY THE NUCLEAR IN-SITU RETORTING METHOD

ABSTRACT

Accumulation of experimental data on the nuclear in-situ retorting technique, both from the standpoint of fragmentation of the shale with nuclear explosives, and the subsequent retorting, has progressed to the point where preliminary assessments are warranted on the concept and design of a commercial scale plant, and those factors which influence in a major way the cost of producing shale oil by this method.

Because of slow retorting rates and high initial rock temperatures, recovery of at least 75 percent of the in-place oil is considered likely in such a plant.

In designing a plant with a fixed production rate and total recovery, the principal factors in determining the capital investment and per barrel cost of production are the thickness and grade of the shale. Production costs for crude shale oil are estimated to range from 29 cents per barrel in a 1,000 foot thick bed of 25 gallon per ton shale, to \$1.23 per barrel for a 200 foot thick bed.

It appears that the technique can be applied successfully to lower grade shale, having an oil content as low as 15 gallons per ton. Producing costs for this shale are estimated to range from 48 cents per barrel for a 1,000 foot thick bed to \$1.16 per barrel for a 400 foot thick bed. Estimates have been made that crude shale oil produced at a cost of \$1.25 per barrel in western Colorado could be marketed profitably in California.

The economic utilization of this technique in the lower grade shales would greatly increase the potential scope of its application. Essentially the entire Piceance Creek basin of western Colorado, containing one trillion barrels of shale oil, appears to be economically amenable to its use, and the possibilities of commercial application to oil shale deposits in Utah and Wyoming are enhanced.

ANALYSIS OF PETROLEUM POTENTIAL OF SANTA BARBARA EMBAYMENT

On Tuesday, May 10, at their monthly dinner meeting in the Jet Room, Ventura, the Coast Geological Society was addressed by MANUEL J. CASTRO, Independent Geologist, whose presentation was entitled, "An Analysis of Stratigraphic and Hydrocarbon Reservoirs of the Santa Barbara Embayment, with Emphasis on Offshore Potential."

Mr. Castro pointed out that the Santa Barbara offshore oilfields rank in importance with Cook Inlet, though the latter is several times larger in areal extent. The region includes, among others, Conception field, producing some 5,000 BD, Summerland field, 10,000 BD, Molino gas field, third largest in California, and the new field on Parcel 26, where 120 production wells are planned.

From published sources, Mr. Castro anticipates that potentially productive sections and their likely thicknesses are the Paleocene-Eocene (10,000 - 50,000') and Oligocene-Lower Miocene (5,000 - 10,000'). The Middle and Upper Miocene, so rich in the east end of the Ventura basin, are mainly silts at Ventura and can be expected to be argillaceous offshore. The prolific onshore Pliocene section is apparently very thin offshore.

Major reservoirs are the Sacate, Alegria, Sespe, and Vaqueros formations. The deepwater Sacate clastics are tight in onshore outcrops, mainly due to Santa Ynez tectonism, and should improve in reservoir quality offshore to the south. The Alegria is a producer at Capitan field and probably is at Gaviota, Molino, Conception, and Cuarta. On the mainland and in the Channel Islands, it is represented by shallow water sands with abundant oyster reefs and associated pore-filling cement. One would expect it to become finer grained and less tight offshore under the Santa Barbara Channel. The Sespe formation, owing to lenticularity of its sands, is liable to be more erratic in reservoir character and producing capability than the marine sands. No offshore Sespe production is known from published data; from onshore fields, 150 bbls per acre-foot is a likely potential. Therefore, the formation constitutes a secondary objective. The Vaqueros sands, hydrocarbon bearing in 9 of 10 offshore fields, will probably produce at least half of all oil and gas recovered from the offshore Ventura basin. Onshore, its thickness and reservoir quality vary with its position relative to the topography developed on the underlying Sespe formation, thick, clean, porous sands being found in channels between the highs, where the Vaqueros is thin, coarser, and well cemented. In general, it becomes thicker and finer grained from Point Conception eastward. At Capitan and Elwood, the Vaqueros yields 500-600 bbls per acre-foot, and Mr. Castro expects that 100 million-barrel fields, when discovered, will have the Vaqueros as their principal reservoirs.

NORTHWEST GEOLOGICAL SOCIETY

The May meeting for the Northwest Geological Society will be held on Tuesday, May 24th, at the Poodle Dog Restaurant in Fife, Washington. Happy hour at 6:00 P.M., dinner at 7:00 P.M. Dr. Don J. Easterbrook, Chairman of the Department of Geology at Western Washington State College, will speak on "Pleistocene Glaciation and Deformation in Northwest Washington".

Officers for the year beginning June 1 will be elected. Those nominated are:

For President

DOUG HASTINGS (Standard Oil Co. of Calif.)
ALLEN S. CAREY (U.S. Army Corps of Engineers)

For Secretary

DAN PATERSON (Neil Twelker & Associates)
A. S. VAN DENBURGH (Water Resources
Branch of U.S.G.S.)

This will be the last meeting of the Northwest Geological Society until next fall.

GEOLOGICAL FORUM - MAY 16, 1966

SALT DIAPIRISM: IMPORTANCE OF TEMPERATURE, AND
ENERGY SOURCE OF EMPLACEMENT

By William Carruthers Gussow
Senior Research Associate
Union Oil Co., Brea, Calif.

ABSTRACT

Heat is extremely critical for salt intrusion to result. Elevated temperature greatly reduces the ultimate strength and eliminates work hardening. When salt has been heated above 400°F. (=205 C.), it becomes soft and plastic and flows indefinitely with a pressure gradient of only about 33-100 kg/cm² (460-1400 psi). This plasticity exists during the entire process of intrusion and even during extrusion at the surface. Thus, at the time of extrusion, salt can flow by simple gravity, like a glacier - as long as it remains hot.

When buried in excess of 25,000 feet, the bedded salt becomes mobile on account of temperature and behaves hydrodynamically, moving laterally to places of less overburden pressure, where piercement or doming occurs. Once initiated, flow will continue until the supply is exhausted or cut off by meeting of the overlying and underlying strata or because additional supplies of salt have not been heated above the temperature necessary to maintain plasticity. The energy source of the lateral or radial flow to the point of piercement can only be attributed to an imbalance in geostatic load of the overburden, but once piercement occurs, this geostatic load differential, plus the ever increasing effect of buoyancy cause the salt to rise rapidly through the overlying strata. Buoyancy only becomes a powerful force as the height of the intrusion increases to large proportions. Buoyancy is not a requirement for intrusion, but is a modifying effect.

The emplacement of igneous masses such as volcanic plugs, granite batholiths, diamond pipes, carbonatites, and serpentine bodies (Gussow, 1962); and of such intrusive masses as mud volcanoes or shale diapirs, ice piercements or pingos (Gussow, 1954), and frost boils (Gussow, 1962); is similar to that of salt piercements. In all cases the prime motivating force for intrusion is the weight of the overburden, and a geostatic load differential (Gussow, 1962).

It is postulated that salt dome intrusion is a thermally activated process and that the rate of intrusion is rather rapid - probably explosive on a geological time scale. What has been interpreted as salt dome growth is actually a measure of the rate of compaction of the adjacent sediments.

Note: As the paper has not been published yet, I would appreciate constructive criticism. The paper will be published later this year in an AAPG Memoir on salt diapirism.

AAPG Demonstrated Computer Well Data System
at I.P.E.

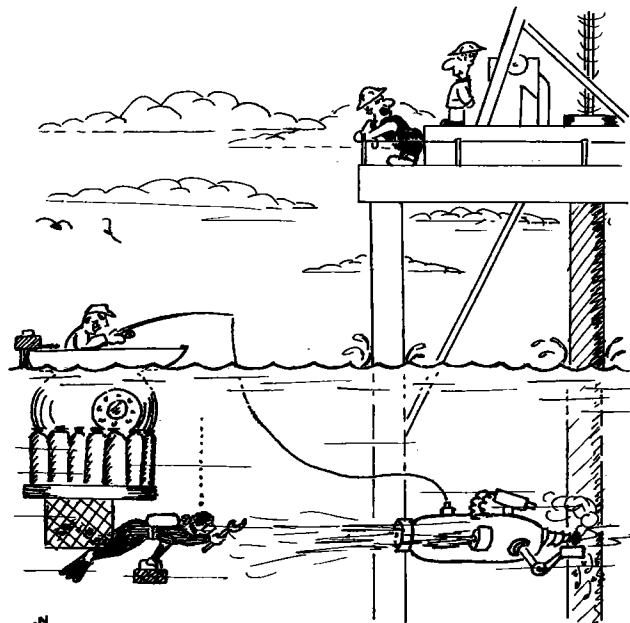
"The American Association of Petroleum Geologists will present dramatic "ask-the computer" demonstrations of the completeness, high accuracy and great versatility of its new well-completion statistics program during the International Petroleum Exposition at Tulsa, Oklahoma, May 12-21.

In Booth 700 at the billion-dollar "World's Fair of the Petroleum Industry," the Association will use a Univac 1004 computer programmer-printer to talk to the huge Univac 1107 in Huntsville, Alabama.

Any of the tens of thousands of visitors to the IPE may ask questions about drilling statistics in four categories in the AAPG files of well-completions for the first quarter of 1966. As programmed expressly for the oil show, the 1004 can print out the more than 11,000 answers stored in the 1107.

The four categories of statistical data programmed for retrieval at this AAPG display cover well completions by (1) state, (2) depths of wells, (3) success or failure, and (4) type of well--development, exploratory or non-hydrocarbon.

Also available in Booth 700 are copies, at \$1 each, of the new AAPG Geological Highway Map for the Mid-Continent Region of the U.S. This is the first in a planned series of 11 multi-colored geological maps which will enable motorists to identify the geological structure and formations of the areas they tour."



NURSERY NEWS

JAN & GLEN SPECHT, Humble, Los Angeles, a daughter, Sharon Ann, on April 10, 1966, Weight 8 lbs.

MIRABEL & JOHN SWEET, Atlantic, Anchorage, a son, Timothy Frank, on April 23, 1966, Weight 8 lbs., 8 oz.

PERSONAL ITEMS

DICK ATCHISON, Marathon geologist recently transferred to Anchorage, maintains May 8th was \$42,500 day in Anchorage. Most of the homes he looked at that day carried that price tag.

Tragedy hit the Anchorage Alaska Methodist University geological department on May 8th. Two students, members of a field trip to the Eklutna Glacier, froze to death when the party was hit by a sudden blizzard.

HARD LIFE OF THE ACADEMIC WORLD DEPT: DON RAGAN, University of Alaska, is spending the year in London. MARTY STOUT, Cal State LA, will go to Norway next year by way of Iceland for a little downhill research. JOE VANCE, U. of Washington, just got back from Italy. ORVILLE BANDY, USC, is on his way to Peru, but has to hurry back in time to get to Tokyo for the Pan Pacific Science Congress. And DICK FISHER, UCSB, is doing something or other in Hawaii. Teaching, anyone????

How to succeed in golf without really trying. BRUCE BLACK, Shell, Ventura, says the way to do it is to con the guys into giving you a huge handicap, then come in with a tiger of a score. Worked for him at Shell's golf tournament last month.

CARROLL HOYT, stock broker and former Mobil geologist, is in New York taking a course in the stock market. Since he's been away from his desk at Walston's, the market has been taking quite a beating. Come back soon, Carroll, while we're still all together.

At last it is true, ROD COLVIN has been transferred to Mobil's Santa Fe Springs exploration office. Although sorry to leave Bakersfield and production geology, he is happy to return to exploration work and the right to dream (and drill dry holes).

Joining ROD at Santa Fe Springs is R. E. PLUMB (Plumbob), a former Bakersfield geophysicist and, more recently, of Durango, Colorado. BOB will be the California Area Exploration Superintendent.

Returning to California after a four year period in Roswell, New Mexico, is E. W. (ED) MORRIS. In the past, ED has worked in Sacramento, Bakersfield and Santa Fe Springs.

BOB ORWIG will be joined by two former Californians - JOHN SPRAGUE From Roswell, who will be located in Seattle, Washington, and M. D. (MIKE) DUGGAN, coming from Durango, Colorado, to be in Los Angeles. DAN ORN will be with JOHN SPRAGUE in Seattle.

BOB REEDY, Signal, Sacramento, has added Beowulf to his family -- a behemoth of a beagle.

CORNELIUS K. HAM, formerly with Cabeen Exploration and Wm. Ross Cabeen and Assoc., has recently assumed duties as petroleum geologist with the Oil & Gas Division of Cerro Corporation and as manager of operations for Cerro de Pasco Petroleum Corporation at Lima, Peru.

Another house hunter was added to the Anchorage market with the arrival of GRAYDON LAUGHBAUM, geologist for Union Oil Co. GRAYDON and his family are recent transfers from Santa Fe Springs.

DON BRUCA, Skelly geologist, leaves for California on May 25th and is believed to be the first of a large number of Anchorage geologists who will vacation this summer in the lower 48.

Summer field geologists for a number of oil companies are arriving daily in Anchorage. It looks like a rough summer for both the rocks and the fish.

After spending nearly enough time in Ventura to be classified a Senior Citizen, DON HAGEN of Texaco has been uprooted and moved to Los Angeles. Since the surf will still be close at hand and the Sierra Nevada no further away, the traumae usually associated with this kind of experience can be expected to be of short duration. Adios, Don.

BRUCE BLACK of Shell Oil has been appointed Publicity Chairman of the Coast Geological Society and will henceforth compile the monthly chronicle.

New bosun's mates in the Shell Marine ship are JOHN BEALL, who runs the north end of the ship, and ART WELLER, who runs the south end. On the bridge is JIM JACKSON, new division manager.

AL MARTINI, Standard's superintendent in Oildale, is spending two weeks at "Charm School" and then is taking two weeks vacation in order to get his old form back. JOHN SILCOX is filling in for Al.

HANS VAN DEN BERGE of Standard, Sacramento has just returned from a month's vacation in Europe.

Speakers at the Sacramento Petroleum Association lately have covered a wide range of subjects - The California Wine Industry, Gold Mining, ART HAWLEY'S Tahiti trip, the Alaska Good Friday Earthquake, and California Parole. Significantly, the next speaker on June 1st will have covered (by the time of this publication) the Anti-Poverty Program. Questions from the floor will probably cover its application to oil company personnel (excepting HANS VAN DEN BERGE).

FLASH: BOB BLOCHER finally sold his house in Ventura! Hardly took any time at all, did it, Bob? (He has a K-Ar date on his first newspaper ad to sell.) Will he buy in that red-hot Bakersfield market?

W. J. EDMUND has been elected vice-president and general manager of Texfel Petroleum Corp. For the past 14 years Edmund has been with E. L. Doheny, operator, the past 6 as general manager. Before that he had served with Standard Oil Co. of California and Arabian American Oil Co.

JIM BLOM, Vice-President and Exploration Manager of Occidental of Libya, Inc., is leaving Bakersfield for Tripoli at the end of May. (He is in the real estate business temporarily, to sell his house in Bakersfield.)

DICK VAUGHAN has been appointed Executive Vice-President and General Manager for Occidental of Libya, Inc. He and his family will spend the summer in Tripoli.

WALT HARRIS, formerly District Geologist of Texaco in Bakersfield is now with Occidental.

BILL BEDFORD, Texaco, is the new District Geologist in Bakersfield. He will transfer from Los Angeles.

JOHN WEST, Texaco, has transferred from Bakersfield to Ventura.

The Pacific Section Executive Committee has accepted the San Joaquin Geological Society's offer to host the Pacific Section AAPG-SEPM Convention for 1968. Tentative dates for the convention are March 27 - 30, 1968.

JERRY FLETCHER is the new District Geologist for Atlantic-Richfield Company at Bakersfield. Jerry transfers to the open valley from Los Angeles.

CLAUDE A. PHELAN, formerly Chief Geologist for Chevron (Richmond) Petroleum Co. of Colombia has been transferred to the Exploration Department of Standard at Oildale.

HAL READE, Atlantic-Richfield, has been transferred from Bakersfield Geological Department to Diversification in Anaheim.

T. J. (TIP) TOBIAS of Chicago has joined Standard's Oildale Exploration Department. Tip received his Master's Degree in Geology from Michigan Tech., Houghton, Michigan.

Friends of RALPH RUDEEN (formerly with Shell and now with the Parks Department of the State of Washington) will be interested to learn that Ralph has been instrumental in setting up geological displays and Geological Interpretive Centers at appropriate places throughout the state. Most recent opening is the Dry Falls Interpretive Center at Dry Falls State Park near Coulee City.

TOM SMITH, Standard, has been transferred back to Seattle from Anchorage.

WELDON RAU of the State of Washington Department of Geology was recently seen looking at an axe. Apparently the 20 acres of land he bought near Olympia is loaded with timber. Are you really going to build a log cabin, Weldon?

The BAKERSFIELD COLLEGE BIOSTRATIGRAPHIC SEMINAR has a firm program scheduled for the 1966-67 school year. K. D. BERRY, Standard, is Chairman of the Advisory Committee. JOHN VAN OSDEL has been the instructor and College Coordinator for the past several years and we all thank him for doing such an excellent job. The program will appear on the monthly calendar again this fall.

ERNIE RENNIE has opened a new consulting office. His office address is: 1716 Oak St., Bakersfield, Phone: 323-9149.

As soon as WES BRUER can train his dog Pansy to sing songs other than "When the Saints go Marching Home", to Wes' harmonica accompaniment, he plans on a guest appearance on the Ed Sullivan show.

