

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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PACIFIC PETROLEUM GEOLOGIST

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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). |

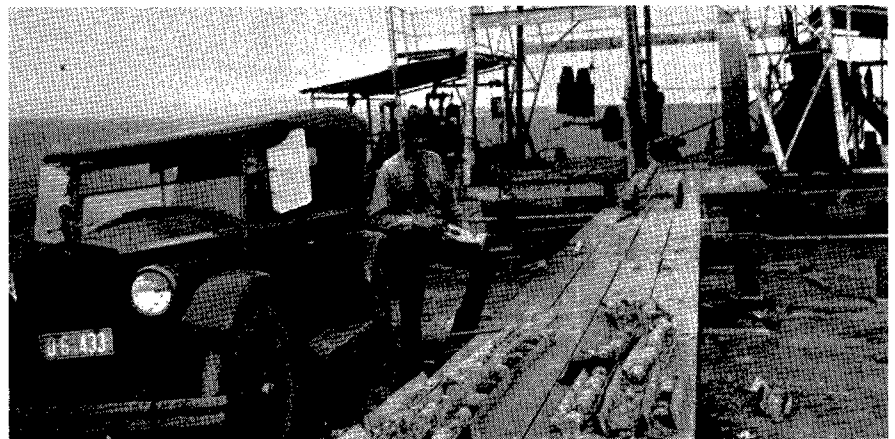
The seminars will be conducted by members of the contract geophysical organizations, computer manufacturers and instrumentation manufacturers.



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

| |
|-----------------------------------------|
| Borst and Giddens Logging Service |
| Cal Pan Am Well Logging Company |
| C & R Blueprint |
| Cook Testing Company |
| Core Lab |
| Geological Engineering Service |
| 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 |
| H. E. Harrington P. O. Box 2, Tajrish Tehran Iran | John Koch Standard Oil Company of California Box 3317 Ventura, California | James H. McDonald 1413 Manchester Chico, California 95926 |
| T. C. Herman Shell Oil Company P. O. Box 999 Bakersfield, California | Boris Laiming 354 South Orange Drive Los Angeles 36, California | Lee C. McFarland Gulf Oil Corporation P. O. Box 1392 Bakersfield, California |
| James W. Higgins 1245 Vernon Terrace San Mateo, California 94400 | Mark Latker 4356 Grand Avenue Ojai, California 93023 | Earl C. McKnight 5885 Paramount Blvd. Long Beach, California 90805 |
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| 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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Volume 20

Number 1

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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 Auditori-
um, "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

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.

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

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. |
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| R. R. Knapp | - Standard Oil Company |
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| 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

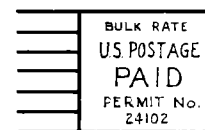
Volume 20

Number 2

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DA



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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| Edward A. Hall | Coast Representative |
| William F. Edmondson | San Joaquin Representative |

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| Dana B. Braislin | Northwest |
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PACIFIC PETROLEUM GEOLOGIST

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| San Joaquin | Chester H. Rudel |
| Membership Secretary | Pat Metcalf |

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
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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.

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

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

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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

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

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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

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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

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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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Bear & Kistler
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Los Angeles 17, California

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Yes Maybe No

| | | | |
|----------------------------------------------------------|-------------------|--|--|
| I would like to attend courses held in Los Angeles | | | |
| I would like to attend courses held in Bakersfield | | | |
| 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-

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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 | | | |

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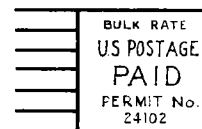
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| Origin and migration of hydrocarbons | * by W. C. Gussow | | | |
| | by J. M. Hunt | | | |

(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.

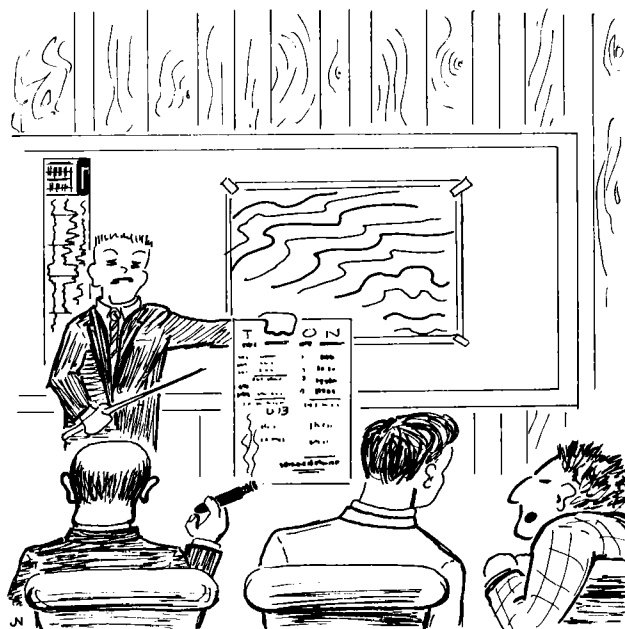
JACK CLARE and JIM O'NEIL have had greater success finding water than they have been having in finding oil. At any rate, their latest water well in the Olcese Ranch received front page coverage in the Bakersfield Californian.

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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State (2 sheets, scale 1:2,000,000) \$5.00/set

I-438: Preliminary geologic map of McCarthy B-5
quadrangle, Alaska, by E. M. MacKevett, Jr. \$0.50

I-437: Regional geology of the Kateel River
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CALIFORNIA DIVISION OF MINES AND GEOLOGY

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Interpretations of gravity data from the Central Coast Ranges and San Joaquin Valley, California, by P. Edward Byerly

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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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Quantitative comparison of contour maps, by Daniel F. Merriam and Peter H. A. Sneath

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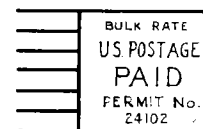
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San Ardo: Showcase for thermal recovery, by Bill Rintoul



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

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."

BIBLIOGRAPHY OF RECENT PUBLICATIONS

U. S. GEOLOGICAL SURVEY

OPEN FILED REPORTS: (Inspection Only)

Principal facts for gravity stations in the Death Valley Region, California by Don R. Mabey. 5 p. 23 p. tabular material.

Principal facts for gravity stations in the western Mojave Desert, California by Don R. Mabey. 3 p. 22p. tabular material.

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

TEI 864: Geologic map of the Lathrop Wells quadrangle, Nye County, Nevada by Edward J. McKay and B. C. Burchfiel.

Principal facts for gravity stations in Sulphur Springs Valley, Arizona, by Donald L. Peterson. 2 p., plus 10 p. data sheets.

U. S. COAST AND GEODETIC SURVEY

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.

Railroad Gap Oil Field, by John L. Hardoin

Kern Front Oil Field, by W. H. Park

West area of Edison Oil Field, by D. N. Shea

Timber Canyon Oil Field, by Harold W. Bertholf

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OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

The ORE BIN, Vol. 28, No. 3, March 1966

Notes on Late Tertiary foraminifera from off the Central Coast of Oregon, by Gerald A. Fowler

Ocean current observations from offshore drilling platforms, by W. V. Burt and S. Borden

Late Jurassic ichthyosaur from Sisters Rocks, Coastal Southwestern Oregon, by John G. Koch and Charles L. Camp.

WASHINGTON DEPARTMENT OF CONSERVATION, DIVISION OF MINES AND GEOLOGY (335 General Administration Building, Olympia, Washington)

Reprint No. 9: Mineral and water resources of Washington. \$2.00

ARIZONA BUREAU OF MINES (University of Arizona, Tucson)

Bulletin 175: Field tests for the common mineral elements, by George H. Roseveare. \$.50

- GEOLOGICAL SOCIETY OF AMERICA BULLETIN, Vol. 76, No. 12, December 1965.
- Strike-slip control of Basin-Range structure indicated by historical faults in western Nevada, by Daniel R. Shawe.
- Osmotic equilibrium and overthrust faulting, by Bruce B. Hanshaw and E-an Zen.
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- Treatise on Invertebrate Paleontology, Raymond C. Moore, Editor.
- Part H: Brachiopoda, by Alwyn Williams, A. J. Rowell, H. M. Muir-Wood, Charles W. Pitrat, Herta Schmidt, F. G. Stehli, D. V. Ager, A. D. Wright, G. F. Elliott, T. W. Amsden, M. J. S. Rudwick, Kotora Hatai, Gertruda Biernat, D. J. McLaren, A. J. Boucot, J. G. Johnson, R. D. Staton, R. E. Grant, and H. M. Jope. 927 pages, 5,198 figures, in 2 volumes.
- GEOLOGICAL SOCIETY OF AMERICA BULLETIN, Vol. 77, No. 1, January 1966
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- Tin Mountain landslide, southeastern California, and the origin of megabreccia, by B. C. Burchfiel.
- Interpretations of gravity data from the Central Coast Ranges & San Joaquin Valley, California, by P. Edward Byerly.
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- Alluvial fan formation near Aklavik, Northwest Territories, Canada, by R. F. Legget, R. J. E. Brown, and G. H. Johnston.
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- Growth of dolomite crystals, by M. N. A. Peterson, C. C. von der Borch, and G. S. Bien.
- Origin of chemical variations within ignimbrite cooling units, by Robert Scott.
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- X-ray-emission microanalysis of rock-forming minerals. II: Olivines, by J. V. Smith.
- Statistical low of stream numbers, by Ronald L. Shreve.
- Australian Tertiary paleotemperatures, by F. H. Dorman.
- The influence of salinity on mollusk shell mineralogy: A discussion, by J. Robert Dodd.
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- The geomorphic and paleoclimatic significance of alluvial deposits in southern Arizona: A discussion, by Lawrence K. Lustig.
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- Geologic time, by David B. Kitts.
- Grain-size distribution for certain metamorphic minerals in relation to nucleation and growth, by Ralph Kretz.
- X-ray-emission microanalysis of rock-forming minerals. III. Alkali feldspars, by J. V. Smith and P. H. Ribbe.
- X-ray-emission microanalysis of rock-forming minerals. IV. Plagioclase feldspars, by R. H. Ribbe and J. V. Smith.
- ECONOMIC GEOLOGY, Vol. 61, No. 2, March-April 1966
- The Estuarine formation of United States Atlantic Coastal Plain phosphorite, by D. R. Pevear.
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- NATURAL HISTORY, March 1966
- Volcanoes tell secrets of Hawaii, by Hugh H. Waesche and Dallas L. Peck.
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Middle Devonian lunar moth, by A. F. Aveni.

Kyanite-Sillimanite equilibrium at 750°C, by R. C. Newton.

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Mechanism of lunar polarization, by J. J. Hopfield.

Soil-water potential: Direct measurement by a new technique, by A. J. Peck and R. M. Rabbidge.

SCIENCE, Vol. 152, No. 3718, 1 April, 1966

Polymorphism in Pleistocene land snails, by D. F. Owen.

Organic matter in carbonaceous chondrites, by H. C. Urey, and J. S. Lewis, Jr; A. L. Burlingame and H. K. Schones; M. H. Studier, R. Hayatsu, and E. Anders.

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Weakening of dunite by serpentine dehydration, by R. E. Riecker and T. P. Rooney.

Oxygen isotope fractionation in the system dolomite-calcite-carbon dioxide, by J. R. O'Neil and S. Epstein.

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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 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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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.

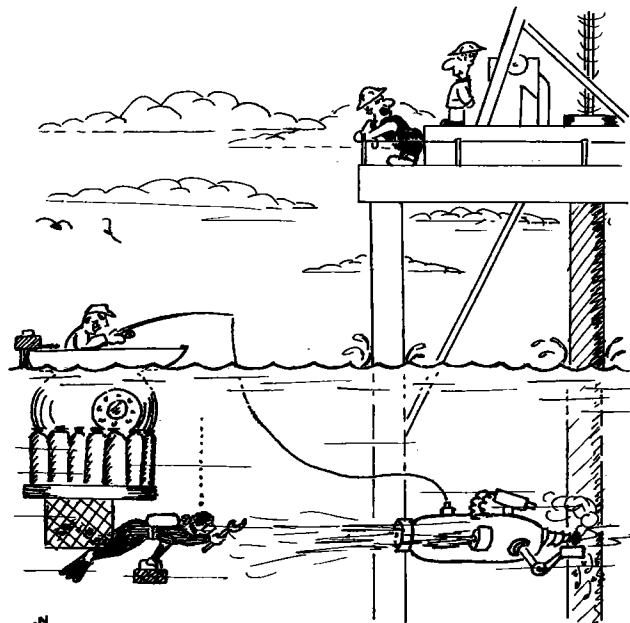
"The American Association of Petroleum Geologists will present dramatic "ask-the computer" demonstrations of the completeness, high accuracy and great versatility of its new well-completion statistics program during the International Petroleum Exposition at Tulsa, Oklahoma, May 12-21.

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.



BIBLIOGRAPHY OF RECENT PUBLICATIONS

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in envelope with explanatory data sheet \$1.50

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Syncline, San Benito Co., Calif., by P. Enos.
\$1.50

Special Report 86: Short contributions to California
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and R. H. Chapman \$1.50

Special Report 87: Expansible shale resources of the
San Jose-Gilroy area, California, by J. L.
Burnett \$1.50

Special Report 88: Geology of the Queen of Sheba
Lead Mine, Death Valley, California, by
P. K. Morton \$1.50

Special Report 89: Deep-water sedimentary structures,
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Ventura Basin, California, by J. C. Crowell,
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THE ORE BIN, vol. 28, no. 4, April 1966 (State of
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Gravity measurement program in Oregon, by
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Origin of chemical variations within ignimbrite
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Islands, by D. M. Hopkins and T. Einarsson

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U. S. GEOLOGICAL SURVEY

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porosity, by G. E. Manger \$0.15

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I-459: Regional geologic map of the Hughes quad.,
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\$0.75

I-461: Geologic map of the Newberry quadrangle,
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I-463 (IAC-41): Geologic map of the Montes
Apenninus Region of the Moon, by R. J. Hackman.
\$1.00

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PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

August, 1966

Numbers 7, 8

ASSOCIATION ACTIVITIES

CONTINUING EDUCATION COURSE DRAWS 117

One hundred and seventeen geologists attended the four-day series of lectures on Sandstones presented by Dr. Daniel A. Busch at the Mobil Auditorium in Los Angeles on June 13th through the 16th, according to Chairman Ted L. Bear. Fee for the course was reduced to \$10.00 because of the large registration. The lectures were one of a series of courses developed under the continuing Education Program of the National AAPG and sponsored by the Pacific Section, AAPG. The next of these courses to be given in Los Angeles is scheduled for October, when Dr. L-L. Sloss will lecture on Stratigraphic principles and practice.

Dr. Busch stressed the methodology of subsurface stratigraphic studies, from the selection of time-markers as datum horizons and the construction of correlation sections "hung" on the appropriate datums to the preparation of isopach or isolith maps of the significant "Genetic Increment for Sequence of Strata". After a brief introductory review of transgressive and regressive relationships, Busch described the various environments of sand deposition, first presenting examples of the modern depositional environment and then showing similar features in the stratigraphic record. Included were many case histories of stratigraphic studies which resulted in the discovery of oil. Drawing upon his many years of experience in oil exploration, Dr. Busch was able to present the theory and practice of applied detailed subsurface stratigraphy with an understanding and viewpoint rarely found in academic courses.

Those registered for lectures represented a broad cross-section of the Southern California oil industry, including 26 geologists from Standard, 16 from Humble, 12 from Atlantic-Richfield, 8 from Mobil, 5 each from Union and Pauley, 4 from Phillips, 3 each from Amerada and Tidewater, 2 each from Texaco and United Geophysical, and one each from Signal, Shell, Marathon, Union Pacific Santa Fe, Doheny and THUMS, plus a number of consultants. The nine or more college or university departments of geology in the Los Angeles area were represented by one registrant.

EXECUTIVE COMMITTEE MEETING

At an Executive Committee meeting in Tulsa on May 27 and 28, several amendments were proposed for submittal to the membership:

- A. Change the fiscal year to July 1 - June 30, and change the administrative year to July 1 - June 30.

The purpose of this proposal is to 1) enable executive committees to assume fiscal responsibility for financial policy during their terms, and 2) permit more effective implementation of Association activities.

- B. Eliminate the current requirement that applicants for reinstatement who dropped their membership prior to 1964 pay two year's arrears in dues. Instead, it is proposed that all reinstatements pay only one year's back dues in the amount in effect the year of the dropout.
- C. Eliminate the present requirement of three sponsors and three references for applicants for junior membership. Instead, it is proposed that junior applicants require sponsorship only by their department head (company or university).
- D. Change the Field Trip and Research Coordination Committee to a standing committee. This is deemed advisable to insure the permanency of the committee program.

The results of the recently circulated questionnaire will be made known as soon as possible after tabulation on August 15.

A limited number of hard-bound copies of a special Semi-Centennial volume of the History of AAPG -- member price, \$5.50; non-member price, \$7.00.

Assistance is requested in recruiting new members and encouraging former members to apply for reinstatement.

Members wishing further information on the amendments contact your District Representative.

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AMERICAN ASSOCIATION OF PETROLEUM GEOLOGIST

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Deadline for next issue - - August 15

EVENING FORUM - JUNE 20, 1966
THE WHITE PINE RANGE, NORTH EASTERN NEVADA
A CASE STUDY IN LOW ANGLE FAULTS

By
Dr. W.W. Lumsden
California State College at Long Beach

The White Pine Range and northern Horse Range, in the eastern Great Basin, are composed chiefly of Paleozoic rocks and are separated in part by the Tertiary Horse Camp basin. Approximately 36,000 feet of strata are described, divided into eighteen Paleozoic and six Tertiary formations. No Mesozoic rocks are recognized. At least 23,000 feet of early Cambrian to middle Permian miogeosynclinal rocks are exposed, and are unconformably over-

lain by 2000-5000 feet of Tertiary andesite and dacite flows, quartz-latic ignimbrites, and intercalated sediments. The volcanic rocks are dated by K-Ar method at 36 million years for the basal dacite flows to 29 million years for the youngest ignimbrite. Two adamellite stocks and associated dike swarms are intruded within the Cambrian strata, which show minor contact alteration. The stocks are dated at 31-36 million years. The Horse Camp basin contains about 10,000 feet of Mio-Pliocene (?) clastics, lacustrine limestone, and massive monolithologic breccias.

Three structural elements are recognized:

1. The White Pine block, an intrusion-cored domal range tilted to the east and elevated to its present position along west-bounding subparallel basin-range faults of Tertiary and Quaternary age. The block is cut by a network of high-angle faults, with the dominant set trending northward breaching the domal axis as "keystone-graben." The basement folding and the steep range flanks, raised by intrusion and block-faulting, prompted gravitational shedding along avenues of slippage offered by stratigraphic yield units intercalated with brittle carbonates. The low-angle slide sheets can be traced from bedding-plane to shear to erosion "thrusts".
2. The Horse Range, a highly faulted southward continuation of the east limb of the White Pine dome, is offset in a left-lateral sense from the main range along the Current Summit fault, which forms the boundary between the Horse and White Pine Ranges. The structural pattern is similar to that in the adjacent White Pine Range; in addition the rocks in the Horse Range are much altered by brecciation and silicification.
3. The Horse Camp basin, a fault-bounded postvolcanic sedimentary basin situated in the angle between the southern White Pine range front and the western Horse Range. The emergence of the front, with the contemporaneous subsidence of the basin, eliminated the buttressing effect and hastened the rafting of the poised slide sheets out into the basin, where they became incorporated as massive monolithologic breccias.

The principal episodes in the structural evolution are (1) Eocene: development of an undulating erosion surface in terrain composed dominantly of upper Paleozoic strata. (2) upper Eocene-lower Miocene: vulcanism and initial intrusion; (3) Oligocene-Miocene: intrusive arching, delineation of White Pine dome, and inception of Horse Camp basin; (4) upper Miocene-pliocene: period of quiescence and deep erosion; and (5) Pliocene-Recent: accelerated uplift, with gravitational movement along detachment faults, outlining of basin-range by movement along range front faults.

BARBEQUE

The 1966 Pacific Section AAPG Spring Barbeque could be judged a success on the basis of the large amount of food and drink consumed by the 270 in attendance. It was held at Standard's Pico Canyon Picnic Grounds and was again ably prepared by Jack Wood.

The Professional Corner

CORRAL CANYON - HOW SCIENTIFIC IS THE CONTROVERSY?

The latest chapter in the drawn-out controversy over the Corral Canyon atomic reactor site in Malibu was written recently when the Atomic Energy Commission granted tentative approval for the Los Angeles Department of Water and Power to proceed with their plans for construction. Opponents of the site indicate that they will continue to fight the project, in the courts if necessary.

A great deal has been said about the geological suitability of the reactor site, which lies in the vicinity of the Santa Monica fault zone. Much more needs to be said, however, about the damage that the dispute has done to our profession. Renowned geologists on both sides of the fence appear to have contradicted one another in their testimony. The co-authors of the standard reference paper on the geology of the Transverse Ranges, Thomas L. Bailey and Richard H. Jahns, are at opposite poles on the suitability of the Corral Canyon site.

Differences of opinion are part of the fabric of the geology profession, extending from the Neptunism theories of Werner to modern discussions over turbidites, granitization, and large-scale lateral movement on the San Andreas fault. But these differences are aired in technical meetings and published papers. The antagonists recognize the professional competence of the adversary, and attention is immediately drawn to fact and hypothesis.

Not so the Malibu reactor site argument. The reports of 115 geologists were not admitted as evidence in the hearings because of alleged bias on the part of petroleum geologists against atomic power. Each side seems suspicious that the other side has ulterior motives in its presentations. A debate conducted in such a climate can only result in a loss of public confidence in geological testimony.

Perhaps the best way to put our professional house in order would be a symposium of invited papers at a forthcoming geological convention, making sure that both sides are heard. Time should be given for a liberal question and answer period after the papers, and abstracts should be published. The symposium could be augmented by a field trip (with both sides represented in its leadership) to look at field evidence critical to the controversy.

In this way, hopefully, the facts of the matter can be established - by presentation of evidence and its impartial evaluation by members of the geological profession.

---- Robert S. Yeats

PROFESSIONAL SCOPE

A course will be given late this summer at U.C.L.A., on the subject of "Earthquake Engineering Fundamentals." We do not propose here to comment on the course. It is probable, however, that it will be quite worthwhile for those involved in this esoteric and important aspect of engineering.

The item that should attract the attention of the geologist relates to David J. Leeds, who will serve as one of the instructors. Mr. Leeds is presently an Engineering Seismologist for the consulting firm of Dames and Moore, engineering geologists. Mr. Leeds formerly served as Associate Research Engineer at U.C.L.A. and as Geophysicist, Seismological Field Survey, U.S.C. & G.S.

David Leeds is also Certified Professional Geologist Number 674.

We have here an outstanding example of our pluralistic society---academician and economic consultant, geophysicist, engineer, and geologist. But a paradox exists here. Many petroleum and engineering geologists would consider Mr. Leeds' professional activities to be remarkable broad. But the layman would consider that, take it all in all, the combined scope of seismology and engineering and geology is relatively narrow.

Is it possible that the layman is right? Perhaps we should not take the chance that he is wrong. In problems involving professionalism, do we dare take the chance of divorcing the interests of the petroleum geologist from those of the engineering geologist, the seismologist, and the engineer? The State Legislature may pose us with this decision in 1967.

---- Robert H. Paschall

AMERICAN INSTITUTE OF PETROLEUM GEOLOGY

The AIPG, California Section will hold its annual meeting in Bakersfield on the afternoon and evening of September 30, 1966. All AIPG members are urged to attend. The afternoon session will feature a business meeting and several speakers. A no-host cocktail party will be held before the dinner meeting. Wives are invited to attend. An outstanding speaker is promised for the dinner meeting. A detailed program will be announced at a later date.

DR. PETTIJOHN HONORED

One of the highest honors to be bestowed on American scientists or engineers has been awarded Professor of Geology Francis John Pettijohn of Johns Hopkins University, Baltimore, Maryland.

Dr. Pettijohn was elected to membership in the National Academy of Sciences. The academy is a private organization of scientists and engineers dedicated to the furtherance of science and its use for the general welfare. It was established by Congressional Act of Incorporation, signed by Abraham Lincoln, in 1863. Dr. Pettijohn has been a member of the American Association of Petroleum Geologists since 1944.

Dear Editor:

R.H. Paschall's comments in the May issue of Pacific Petroleum Geologist concerning a help wanted ad that appeared in the March issue of Geotimes point out a trend within the geological sciences for some subdisciplines to seek a broader area of responsibility than they have had traditionally. To the extent that such maneuvers restrict other qualified geologists from performing certain jobs they are a detriment to the profession, and Mr. Paschall is quite right in condemning them.

His conclusion is that the publication of this particular advertisement in Geotimes must have some special significance. I hope he is not suggesting that it thus carries an endorsement by AGI, for this is not the case.

Its real significance is as an illustration of a broader definition of one field of geology. The prospective employer apparently thinks that an engineering geologist can best fill this particular vacancy, but no legal or professional restrictions yet exist that prevent other qualified geologists from applying for the job.

Linn Hoover
Executive Director, AGI

SAN JOAQUIN GEOLOGICAL SOCIETY

Many thanks to Ernie Espenschied for his efforts on behalf of the San Joaquin Geological Society in arranging for Mr. F.W. Cole to discuss Reservoir Engineering. The attendance (86) of the lectures was well in excess of expectations, and the course was extremely well received. We understand that Ernie is continuing in his efforts and expects to have another course in the fall.

The last meeting of the season was held on June 14, 1966. The meeting was well attended, as has been usual since we have been meeting at the American Legion Hall. Local Consultants hosted the barbeque. They had the unfortunate duty of preparing the steaks on the first really warm day of the year. Lesh Forest and crew lost a total of fifty pounds in weight. Vincent's Markets has been furnishing Gourmet meats for the barbeque and Vincent Hashim and his Chief butcher, Doyle Feranscum, were guests of the Society.

Don Edmondston, Chairman of the Water Committee, reported on his committee's activities and recommended that the Societies stand on water should not be political; that further study is needed of the Southern San Joaquin ground water basin and that members study all problems of ground water as participating citizens are members of water districts, etc.

Mr. Jim Payne, Standard, presented a paper by J.L. Payne and A.B. Dickas entitled "Upper Paleocene Buried Channel in the Sacramento Valley." A lively discussion followed Jim's presentation.

UPPER PALEOCENE BURIED CHANNEL IN THE SACRAMENTO VALLEY OF CALIFORNIA

A. B. Dickas and J. L. Payne

The Meganos Channel, a fossil submarine channel, is located in the central portion of the Sacramento Valley of California. This feature was cut and filled under a marine environment in a relatively short period of time in the Upper Paleocene. It has been traced in the subsurface over a distance of more than 50 miles and has a maximum width of six miles. The greatest known thickness of sediments filling the channel is 2015 ft. Formations truncated by the channel range in age from uppermost Paleocene down through Upper Cretaceous.

The rocks eroded by the channel are principally arenaceous; however, sediments filling the channel are composed of more than 95 per cent shale. Paleontologic studies indicate the channel deposits accumulated in water depths ranging from neritic to upper bathyal.

A major contributing factor to the formation of the Meganos Channel is thought to be regional faulting. Immediately prior to inception of this channel, the Midland fault, a major north-south striking feature, started to form. It is the authors' belief that the declivity created by this down-to-the-west normal fault set up extensive slumping and turbidity currents which caused erosion of the sea floor and development of the channel. Subsequently, fine grained clastics filled this erosional feature and at the same time, were deposited in a thin layer in the area outside of the channel.

The channel shales contained an original high volume of interstitial water. Due to burial and overburden pressures these shales underwent relative compaction ranging from 35 to 60 percent.

Comparison among ancient subsurface and present day submarine canyons shows that features quite comparable to the Meganos Channel have been formed in the past and are being eroded today, all under quite differing geologic settings.

Truncation of underlying formations by the channel shales combined with the local structure has formed economic accumulations of hydrocarbons at the Brentwood oil and gas field and the Dutch Slough, River Break and West Thornton gas fields.

NOTICE

Members and subscribers delinquent for 1966 will be dropped from mailing list following this issue. Please send your \$3.50 (4.50 - Alaska and overseas) to the membership sec.

FIELD TRIP

The field trip for the 1966 Pacific Section AAPG Spring Picnic was conducted along the Santa Susana thrust in the vicinity of Aliso Canyon by Drs. James E. Slosson and John T. Barnhart of L.A. Valley College. The trip was on the Cagney and Porter ranches, both of which are currently being decapitated and subdivided. Also along the route a new freeway is being built to link the Simi Valley with the Golden State Freeway. Large cuts made in conjunction with this construction particularly the freeway, provided excellent exposures, to the fault trace. Dr. Slosson, through James E. Slosson and Associates, has worked as a geologic consultant on these projects, and thus could speak with authority on not only the basic geology of the area but the engineering geology aspects as well.

In the area of the field trip the Santa Susana thrust has two plates which dip gently north and place Miocene Modelo sand and shale over Pliocene Saugus sand and silt. The Aliso anticline is the main structural feature in the upper plate. The lower plate is mostly a north dipping block. The stationary block is comprised of north-west trending folds broken by numerous small faults. Beds along the fault traces, particularly those in the middle block, are highly contorted. Calcareous tufa marks portions of the upper trace.

At one stop the lower trace was perfectly displayed in a recent freeway cut. The bordering Saugus and Modelo beds were highly contorted, but, surprisingly enough, the trace itself was marked only by a breccia zone of less than an inch. Both traces are marked by topographic breaks, but the lower one is by far the most pronounced. Structural terraces, saddles, and a high valley, the Horse Flats area, disrupt the south slope of the Santa Susana Mountains along the lower trace. The field trip leaders interpreted termination of Recent terraces at the fault trace as evidence of movement which they felt, could have been as recent as 10,000 years ago. This stirred some discussion which was dominated by references to the ubiquitous construction adjacent to the fault. Dr. Slosson referred to Cal Tech studies relating earthquake intensity to fault trace length which suggest a possible maximum of four on the Richter scale for the Santa Susana thrust. In this conjunction it would be pointed out that all current construction has been isolated to the stationary block.

The field trip concluded with lunch and refreshments at an advantageous hilltop view point in the Aliso Canyon field. Jim Saunders is to be congratulated for the excellence of the lunches he got together.

NEW MEMBERS

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Roston & Herbaly
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2760 Sycamore Road
Santa Barbara, Calif. 93103

Russell Hoopes
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Bakersfield, Calif.

Gilbert C. Horning
P. O. Box 5278
Oildale, Calif.

NORTHWEST GEOLOGICAL SOCIETY

New officers were elected for the ensuing year at the May meeting of the Northwest Geological Society. Those elected were:

President - Doug Hastings (Standard Oil Co. of California)
Secretary - A.S. Van Denburgh (Water Resources Branch of USGS)

Subsequently Marshall T. Huntting of the Washington State Department of Geology has accepted an appointment as the new program chairman.

PACIFIC SECTION AAPG GOLF TOURNAMENT

Ninety Golfers participated in the June 3 tournament held at Elkins Ranch Golf Course, Fillmore.

Low gross was won by Bob Lindblom of Standard with a 77. This is the third time in the past five years that Bob has won the beautiful Frank Yule Memorial Trophy. Low net was won by Pat Merceir with a 68. Calloway Flights were won by: Hal Case, John Silcox, Hank Repp, Harold Sullwold, W. Smith. The sportsman's Trophy was won by Bob Best with 158 blows! Following the game, George Webb of Standard was found in the parking lot feverishly working out the economics of purchasing an aqua lung or just forgetting the even half dozen balls he consecutively plunked into the lake on hole number 9.

CONTRIBUTIONS to 1966 Pacific Section Picnic

General Oceanographics, Inc.
 Reese Sales Co.
 Newton Drilling Co.
 Exploration Logging, Inc.
 Core Lab.
 Geological Exploration, Inc.
 Prior Blueprint & Supply Co.
 HOMCO
 Rick Helicopter, Inc.
 Grover Collins
 Welox
 McCullough Tool Co.
 Byron Jackson, Inc.
 C & R Blueprint
 BAROID
 Mercury Christensen Co.
 Cook Testers
 Rotor Aids Offshore, Inc.
 Geologic Engineering Service
 Borst & Giddens Logging Service
 Schlumberger
 Lane Wells
 Petrolog
 Offshore Navigation, Inc.
 Cal Pan Am Logging Co.

PERSONAL ITEMS

Jerry Williams, Oasis Oil Co., and formerly Marathon of Ventura, has also gone to work for Occidental in Libya. Jerry was back in California recently, and attended the Spring Field trip. He recently set up a Libyan Geological Society field trip to Lake Chad.
Jim Blom, Occidental, Bakersfield, has been transferred to Libya.

Jay Endicott, Norcal Petroleum Corporation, has opened an office at 400 Truiston Avenue, Bakersfield. Jay comes from Corpus Christi, Texas.

Add Sawyer, Los Angeles independent, plans to sail his 30 foot ketch to the Bay of Ten Thousand Virgins, in Baja California. This shouldn't start a stampede, though, because Add assures us that the "virgins" in the name of the bay refers to pelicans. That's right, Pelicans.

John Beall, Grant Valentine and Bill Freitag, Shell, Los Angeles, have just returned from a visit to Brunei Shell in Borneo. They report that the office staff comes to work in Bermuda shorts and sport shirts, which they feel should be followed by us gray flannel suit types in downtown Los Angeles. The company provides, in addition to housing, an amah to take care of the kiddies, leaving the wife free for bridge or whatever. Best of all, you can ride to work on your bicycle! John stayed an extra week in the Far East visiting Bangkok, while Grant and Bill, dazed by the bright lights of Jesselton, Hong Kong, Tokyo, and Honolulu, came back home.

Jim Huber, Texaco Geologist, has transferred to Bakersfield from Casper, Wyoming.

Craig A. Lyon, Standard, has been transferred from Bakersfield to Anchorage, Alaska.

Jerald Weber, Union, Bakersfield has been transferred to Santa Fe Springs: Jim Scott is transferred from Santa Maria to Bakersfield.

Jim Groom, will be District Geophysicist for Union at Santa Fe Springs, transferred from Bakersfield.

Bob Votaw, Standard, had a brand new experience for a city boy. He drew last straw for a 6 mile ride out of Pyle's Boys Camp and was awarded the privilege of going by mule back. It is reported he did very well considering the fact that he'd never ridden a horse before.

Dick Pierce, resigned from Atlantic - Richfield to accept a position as Paleontologist for the U.S.G.S. at Menlo Park.

Bill Bedford, Texaco, has been recently transferred to Bakersfield as the new district geologist. He takes the place of Walt Harris, who is now working for Occidental.

Howard Kinsey, Shell, Los Angeles, is field tripping on Vancouver Island.

Gravity tectonics has come to California. See Bob Yerkes and Russ Campbell, USGS, for further details in the central Santa Monica Mountains.

Would you believe it? Jere Lipps has made geological history by being the first man to receive the PhD degree with his principal thesis adviser his mother-in-law. The thesis, done at UCLA, is on Cenozoic planktonic foraminifera and the mother-in-law in question is Helen Tappan Loeblich.

Cord Durrell, U.C. Davis, who suffered a heart attack at the end of May, is presenting convalescing at home: and we all wish him a speedy recovery.

U.S. GEOLOGICAL SURVEY

J.A. Payne, Standard Geologist, has been assigned to the Geophysical Department at Houston from Bakersfield.

Bill D'Olier, Occidental, has just returned after a two months bout with Valley Fever.

Mr. M. Gordon Gulley died June 4, 1966 at his retirement home in Carmel after an illness of approximately two months duration.

Bob Levorson, Standard, Anchorage, is spark-plugging Cook Inlet's yachting season as race committee chairman, while a championship sled-dog waits in his backyard for the next snowfall.

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.

BIBLIOGRAPHY OF RECENT PUBLICATIONS

AMERICAN JOURNAL OF SCIENCE, vol. 264, no. 5, 1966
A review of late Eocene mammalian faunas from North America, by Craig C. Black and Mary R. Dawson.

Mechanism of deposition from pyroclastic flows, by Richard V. Fisher

THE JOURNAL OF GEOLOGY, vol. 74, no. 3, May 1966.
Barchan dunes of Imperial Valley, California, by Robert M. Norris

Pluvial lake basins of West Texas, by C.C. Reeves, Jr.

THE AMERICAN MINERALOGIST, vol. 51, no. 3 and 4, March-April 1966.

A cerian vesuvianite from California, by Joseph Murdoch and Blanche L. Ingram.

Analcite in the Newcastle coal measure sediments of the Sydney Basin, Australia, by F.C. Loughnan

JOURNAL OF GEOPHYSICAL RESEARCH, vol. 71, no. 8, April 15, 1966

Distribution of radioactive marine sediment derived from the Columbia River, by M. Grant Gross

Potassium-Argon ages of coexisting minerals from pyroxene-bearing granitic rocks in the Sierra Nevada, California, by R.W. Kistler and F.C.W. Dodge.

Atmospheric carbon dioxide variations on Mount Olympus, Washington by J.J. Kelley, Jr. and E. LaChapelle.

Professional Paper 494-B: Hydrologic basin, Death Valley, California, by C.B. Hunt, T.W. Tobinsson, W.A. Bowles, and A.L. Washburn. \$2.25

Professional Paper 509: Plant ecology of Death Valley, Calif., by C.B. Hunt, with a section on Distribution of fungi and algae, by C.B. Hunt, and L.W. Durrell. \$1.50

Bulletin 1200: Lexicon of geologic names of the United States for 1936-1960, by G.C. Kercher and others. (per set) \$13.00

Bulletin 1203-B, C (Both in one volume.)

B: Properties of thermistors used in geothermal investigations, by E.C. Robertson, Rudolph Raspet, J.H. Swartz, and M.E. Lillard.

C: Preparation of thermistor cables used in geothermal investigations, by Rudolph Raspet, J.H. Swartz, M.E. Lillard, and E.C. Robertson. \$.25.

Bulletin 1214-C: Beryllium content of volcanic rocks, by D.R. Shawe and Stanley Bernold \$1.25

Bulletin 1222-F: Direction of movement of Jasper-oxidizing solution, by T.S. Lovering \$.15

Water Supply Paper 1648: Arizona water, by J.W. Harshbarger, D.D. Lewis, H.E. Skibitzke, W.L. Heckler and L.R. Kister \$.60

Water Supply Paper 1684: Magnitude and frequency of floods in the United States - - - Part 10: The Great Basin, by E.B. Butler, J.K. Reid, and V.K. Berwick \$1.74

Water Supply Paper 1816: Water in the Humboldt River Valley near Winnemucca, Nevada, by Phillip Cohen.

Geophysical Abstracts 232, May 1966, by J.W. Clarke D.B. Vitaliano, V.S. Neuschel, and others \$.35

Abstracts of North American Geology, April 1966 \$.45

Circular 531: The promise of precise borehole gravimetry in petroleum exploration and exploitation, by T.H. McCulloh, 12 pages Free

MAPS

GQ 473: Geologic map of the Glacier Peak quadrangle, Snohomish and Chelan Counties, Wash. by D.F. Crowler, R.W. Tabor, and A.B. Ford. \$1.00

GQ 489: Geologic map of the Thirsty Canyon SE quadrangle, Nye County, Nev., by P.W. Lipman, W.D. Quinlivan, W.J. Carr and R.E. Anderson \$1.00

GQ 496: Geologic map of the Quartet Dome quadrangle, Nye County, Nevada, by K.A. Sargent, S.J. Luft, A.B. Gibbons, and D.L. Hoover. \$1.00

GQ 538: Geologic map of the Willmont Creek quadrangle, Ferry and Stevens Counties, Washington, by G.E. Becraft. \$1.00

I-447: Geologic map of the Canyon City quadrangle, Northeastern Oregon, by C.E. Brown and T.P. Thayer. \$1.00

CALIFORNIA DIVISION OF MINES AND GEOLOGY

Special Report 90: Gravity Base Stations, by
Rodger H. Chapman \$1.50

Sacramento Sheet of Geologic Map of California
(In envelope with explanatory data sheet) \$1.50
(Unfolded - with data sheet unfolded) \$1.50
(Geology not colored, unfolded, no data
sheet or envelope) \$.50

Mineral Information Service, vol. 19 no. 5,
May 1966
Silver mining in Old Calico, by F. Harold Weber,
Jr.

Mineral Information Service, vol. 19, No. 6, June
1966
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Geothermal resources in California. A status
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New studies re-emphasize hazard potential of
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Scale of 800 feet to the inch.

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Report 11: Stratigraphy of Tertiary volcanic rocks
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U.S. Bureau of Mines
(Distribution Section,

4800 Forbes Avenue, Pittsburgh, Penn. 15213)

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Sanford L. Werner. Copyright, 1965. M.S.
Thesis. On file at University of Southern
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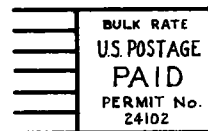
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PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

September, + 1966

Number 9

ASSOCIATION ACTIVITIES

PACIFIC SECTION EVENING FORUM MEETING

Program: September 26, 1966, Seven P.M.
Mobil Auditorium
612 South Flower Street
Los Angeles, California

Dion L. Gardner, Professor of Geology, Chapman College, will talk on "Oceanography and Science Aboard the M.S. SEVEN SEAS, the Floating Campus of Chapman College."

In addition to outlining portions of the geology and oceanography of the world, highlights of field trips and voyages through three oceans will be covered in this illustrated lecture.

Bring your wives and/or girlfriends, and treat them to a pre-meeting dinner at Colombos.

ANNUAL CONVENTION - AAPG

The American Association of Petroleum Geologists will hold its 52nd annual meeting at the Biltmore Hotel in Los Angeles, April 10-13, 1967.

"Rocks and Dollars", a quantification of geology, has been selected as the theme for the convention expected to draw several thousand of the AAPG'S 15,000 members throughout the 50 states and 80 foreign countries.

The Society of Economic Paleontologists and Mineralogists will hold their 41st annual meeting in conjunction with the AAPG convention.

Irving T. Schwade, Atlantic Richfield Co., Los Angeles, serves as general chairman of the convention, with Robert R. Knapp, Standard Oil of California, La Habra, Calif., as general vice-chairman.

Edwin H. Stinemeyer, Shell Oil Co., Bakersfield California., is vice-chairman for SEPM, and James C. Taylor, Shell Oil Co., Los Angeles, is assistant vice-chairman for SEPM.

COAST GEOLOGICAL SOCIETY

On Tuesday, June 7, the Coast Geological Society held their annual "Ladies Night" meeting and dinner in Santa Barbara at the El Cielito Restaurant. The Society and guests were addressed by Dr. Sigmund Snelson, geologist for Shell Oil Company.

A short business meeting was held after the exceptional steak dinner and stress was put on the need for better monetary support in the form of prompt payment of dues to the Coast Geological Society by the local geologists who attend our monthly meetings.

Dr. Snelson's intriguing talk was entitled "Exploration for Oil in The Brooks Range and North Slope of Alaska". Because of the nature of the "Ladies Night" meeting he presented his talk as a non-technical, and highly interesting and amusing discourse on the typical events of an Alaskan field season. The program was highlighted by Dr. Snelson's own 16 mm technicolor films of this fantastically beautiful country. Breathtaking close-ups of wildlife in the Brooks range and the vast wilderness of the north slope have been captured in rare moments of beauty and solitude.

Of particular interest to all present were views of the geologist's way of life in the field, and his means of communication, transportation and recreation. Many of those present at the dinner were unintentional movie stars, whose wives at last could see how "rough" it really was. More than one red face was observed when the pictures of a wild "bare" swimming party were shown.

Dr. Snelson has the unique ability of capturing not only the most spectacular geologic photos, but also the most spectacular scenery in the same sequence. The talk was extremely well received and thoroughly enjoyed by all.

REMINDER FOR CORRESPONDENTS

With summer vacations over, and fall activities getting underway, it is requested that newsletter material be sent in early.

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Deadline for the next issue --- September 15

ROBERT O. PATTERSON

To all of Robert O's many friends we wish to
express our sincere appreciation for your many
beautiful cards and letters.

The gifts we have received, in lieu of flowers,
will be used toward a marker as another tribute
to the respect and admiration he earned from
all who knew him. If there should be a surplus,
this will be deposited in an educational fund
for our children.

Your expressions of sympathy and words of en-
couragement have helped us so very much during
these most trying days.

Peggy, Gary, & Linda Patterson

The Professional Corner

MORE ON CORRAL CANYON

The statement of Robert Yeats that appeared in
the August issue of the PPG contains some very
good points. I agree that the controversy be-
tween geologists on the suitability of Corral
Canyon for a nuclear powered generator has not
been beneficial to the public image of the geo-
logic profession. I am convinced, however, that
those geologists who concurred that the site
could be utilized for the proposed usage did so
in good faith after considerable investigation
of the site and vicinity and evaluation of the
field data. Those geologists who testified
against the proposed use of the site, likewise,
did so in good faith and submitted supporting
data upon which their recommendation was made.
It's worth pointing out, though, that one who
recommended against use of the site and was
wrong could probably sleep better at night than
one who recommended in favor of the use of the
site and was wrong.

I don't agree with Yeat's statement that "The
reports of 115 geologists were not admitted as
evidence in the hearings because of alleged
bias on the part of petroleum geologists against
atomic power". First of all, several of the
115 were not petroleum geologists. Secondly,
the "reports" were brief statements of opinion
and concern and I don't believe that some of
the 115 intended the statements be used as
evidence but instead wanted certain things
called to the attention of the hearing board.
Thirdly, certain procedures needed to be fol-
lowed in order to submit evidence and be cross
examined. Any citizen could, and many did,
make a limited appearance to express his con-
cern regarding the site. Frank Morgan was one
of the few geologists who took the time to do
this.

I frankly doubt that a symposium of invited
papers at a professional meeting would put
our professional house in order but it certain-
ly would permit the audience to learn what were
some of the geologic factors at issue.

Bennie W. Troxel

CHARLIE CORBATO has left U.C.L.A. to join the
Department of Geology staff at Ohio State
(Columbus, Ohio) as Associate Professor.

AIPG

AIPG California Section, 2nd Annual Meeting will be held in Bakersfield on Friday, September 30, 1966 at the Royale Palms Motor Hotel.

All geologists and their wives are invited. California AIPG members will receive reservation forms. Non-members may obtain forms from:

Gordon Bell
Gulf Oil Corporation
Box 1392
Bakersfield, California

Phone: 324-6031

Registration will start at 11:00 a.m.: Luncheon at noon. The meeting and afternoon papers will begin at 1:30 p.m. There will be a cocktail party in the evening and dinner with a speaker.

D.C. Callaway
Publicity Chairman

PERSONAL ITEMS

BRUCE BLACK, Coast Geological Society, reports numerous recent transfers, especially Shell people. We regret to say JOHN SISLER of Shell Production has been transferred to Midland, Texas. BOB SMITH of Shell Exploration has recently been transferred from Farmington, New Mexico, to Ventura for a two year assignment with the Shell Exploration and Production Research Division. Also transferred into the Ventura office with the Exploration and Production Research group is LARRY MECKEL from Houston, Texas. BRUCE BLACK of Shell Exploration has been transferred to the Ventura Production Department for a one year training assignment. JOE DIXON, has been transferred to the Marine Division in Los Angeles effective August 15, and STEVE BORN is leaving Shell to further his education at the end of August.

Texaco has had two recent transfers into Ventura. BILL HEAD, formerly of Farmington, and JOHN WEST of Bakersfield have recently arrived.

Standard Oil announced the recent transfer of Ventura geologist ROBERT BARNS to Los Angeles effective July 15.

Tidewater Oil's JIM SANDERS, on a recent visit to the United Nations building in New York, was pleasantly surprised to encounter KARL HELMS of Standard Oil as he stepped from the third floor elevator. Looks like Standard and Tidewater are doing some powerful lobbying.

NURSERY NEWS

JOHN and DORSHEN FORMAN have a new son - George Henry, 10 lb 2 oz, born on June 7th.

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U.S. GEOLOGICAL SURVEY

- Professional Paper 341-E: Geology and mineral resources of the Monlevade and Rio Piracicaba quadrangles, Minas Gerais, Brazil, by R.G. Reeves. \$4.00
- Professional Paper 398-A: Tertiary stratigraphy and paleobotany of the Cook Inlet region, Alaska, by J.A. Wolfe, D.M. Hopkins, and E.B. Leopold. \$.70
- Professional Paper 422-I: An approach to the sediment transport problem from general physics, by R.A. Bagnold. \$.35
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- Professional Paper 523-B: Hattheva, a proposed new class of mollusks, by E.L. Yocheison. \$.25

Professional Paper 524-B: Stratigraphy and structure of the Dinkey Creek roof pendant in the central Sierra Nevada, California, by R.W. Kistler and P.C. Bateman. \$.65

Professional Paper 537-B: Petrology of the Kilauea Iki Lava Lake, Hawaii, by D.H. Richter and J.G. Moore. \$.30

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

Professional Paper 543-C: Gravity survey and regional geology of the Prince William Sound epicentral region, Alaska, by J.E. Case, D.F. Barnes, George Plafker, and S.L. Robbins. \$.20

Professional Paper 550-B: Geological Survey Research 1966, Chapter B. \$2.00

Bulletin 1214-D: The determination of sulfate and sulfide sulfur in rocks or minerals, by A.C. Vlisidis \$.15

Bulletin 1214-E: Element distribution in some shelf and eugeosynclinal black shales, by J.D. Vine. \$.20

Water Supply Paper 1822: Selected techniques in water resources investigations, 1965, compiled by G.N. Mesnier and E.B. Chase. \$.45

Water Supply Paper 1830-A: Floods of January February 1963 in California and Nevada, by L.E. Young and E.E. Harris \$2.00

Geophysical Abstracts 234, July 1966, by J.W. Clarke, D.B. Vitaliano, V.S. Neuschel, and others. \$.35

Abstracts of North American Geology, June 1966 \$.45

Circular 527: Ground-water research in the United States, by O.M. Hackett, 8 pages Free

Circular 534: Gold geochemical anomaly in the Cortez district, Nevada, by R.L. Erickson, G.H. Van Sickle, H.M. Nakagawa, J.H. McCarthy, Jr. and K.W. Leong. 10 pages. Free

Circular 534: Gold geochemical anomaly in the Cortez District, Nevada, by R.L. Erickson, G.H. Van Sickle, H.M. Nakagawa, J.H. McCarthy, Jr. and K.W. Leong. 9 pages.

MAPS:

GQ 528: Geologic map of the Waucoba Mountain quadrangle, Inyo County, California, by C.A. Nelson \$1.00

Map I-464: Reconnaissance geologic map of the west half of the Spokane quadrangle, Washington and Idaho, by A.B. Griggs. \$.50

Map I-471: Distribution of selected accessory minerals in the Osgood Mountains stock, Humboldt County, Nevada, by G.J. Neuerburg. \$.50

GP 574: Aeromagnetic map of Sacramento and vicinity, California, by J.L. Meuschke, J.A. Pitkin, and C.W. Smith. \$.50

GP 575: Aeromagnetic map of Hopi Buttes and vicinity, Navajo County, Arizona by C.M. Mitchell and J.L. Vargo. \$.50

I-467: Geologic map of the Cady Mountains quadrangle, San Bernardino County, Calif., by T.W. Dibblee, Jr., and A.M. Bassett. \$.75

I-472: Geologic map of the Lavic quadrangle, San Bernardino County, Calif., by T.W. Dibblee, Jr. \$.75

I-474: Reconnaissance geologic map of the Lathrop Wells 15-minute quadrangle, Nye County, Nevada, by B.C. Burchfiel. \$.50

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

Volume 20

Number 9

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

October, + 1966

Number 10

ASSOCIATION ACTIVITIES

The following letter, drafted by Tom Baldwin, is being sent by the Pacific Section Executive Committee to AAPG President Halbouty to be forwarded to the Industrial Relations Committee.

THE RELATIONSHIP BETWEEN GEOLOGISTS, THE AAPG, AND INDUSTRY

(1) Geology is a profession. This implies not only professional dignity, and a right to proper respect but also professional obligations and restraints.

(2) Industry is managed by business people trained in many different disciplines, commonly non-professional, all of them with a proper interest in profits, quality control and personnel control.

(3) AAPG is an established Society with 50 years of service, dedicated to advancing geologic quality and to maintaining high standards of professional conduct by example, by a written code of ethics, and by insuring that members of the profession have an avenue for constant association with their fellows who mutually are pledged to the professional code.

Therefore:

(1) The interests of individual geologists, of the AAPG and of Industry tend to be identical and are best served by a mutual understanding that AAPG shall continue, and increase, its role as a means of assuring geologic competence and professional rectitude.

(2) The past and continuing efforts by most companies to assist AAPG and to encourage the professional associations of their geologists are beneficial to industry. These efforts should be continued and amplified.

(3) The professional inspiration and restraints of AAPG membership are the best insurance for proper conduct of individual geologists. Employment contracts, penalty clauses and legal restraints (although important to corporate management) are less effective regulators of professional integrity than the Code of Ethics.

Duties:

1. (a) Each individual member of AAPG has a professional duty to support AAPG and to advertise his adherence to the professional standards.

(b) All geologists have a professional duty to accept employment only if they can perform, and constantly do perform, proper geologic duties in a sincere effort to advance the interest of the employers.

2. AAPG has an obligation to maintain its historically high standards, to publicize these standards, to encourage industry's continued acceptance of the society as a useful training agent for geological ability and as the principal arbiter of professional conduct.

3. Industry also has responsibilities:

(a) To continue to offer geologists professional respect.

(b) To plan long range exploration programs with proper consideration for geologic manpower requirements in a studious effort to avoid cyclic hiring and firing.

(c) To assist universities in planning curricula that will yield dedicated and well trained geologic graduates.

(d) To employ as geologists those professionals who willingly accept the standards and Code of Ethics of AAPG as a way of life.

(e) To encourage active participation of geologic employees in AAPG affairs.

(f) To offer geologists (commensurate with individual performance) compensation and privileges comparable to those offered the other professions.

(g) To continue the emphasis on the concept that geology is a self-regulating profession.

(h) To spread throughout industry the increasing effort to publicize AAPG as the proper mechanism of geologic self-regulation.

Examples of mis-handling professional employees:

(1) "Early retirements" practice.

(2) Mass transfers, hirings and firings

(3) Recent and possibly misinformed or ill-advised publicity suggesting future energy will largely be supplied by atomic power, shale oil, tar sands and coal while well informed exploration managements are encouraging increased student enrollment in geology and predicting an enlarged field for our profession.

(4) Occasional (fortunagely rare) publicity given to improper conduct by Exploration Personnel. (In a recent instance, covered in local newspapers, the situation did not involve geologists but readers were left to assume that geologists had violated trust.)

(5) Rare but potentially harmful instances of extending the contractual contacts unwisely. (A recent example of a company requiring personnel to submit to investigation of personal finances.)

(6) Occasional but recurrent cases of a few companies refusing to permit geologic employees freedom to participate in AAPG affairs.

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AMERICAN ASSOCIATION OF PETROLEUM GEOLOGIST

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PACIFIC PETROLEUM GEOLOGIST

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Deadline for the next issue ---- October 15

ANNOUNCEMENT

The Pacific Coast Section of the Society of
Exploration Geophysicists announces a series
of eight weekly meetings comprising a Fault
Symposium to be held in Los Angeles on Friday
afternoons at 1:00 p.m. beginning October 7,
and in Bakersfield on Thursdays beginning
October 6. All geologists are invited to attend.

This series of papers will emphasize the
application of a broad spectrum of geophysical
methods and techniques to the identification
and interpretation of faulting.

The first speaker for the Los Angeles meeting
on October 7 will be Dr. Clarence R. Allen,
interim director, Seismological Laboratory,

California Institute of Technology. The title
of his paper is "Geological and Geophysical
Significance of Faults."

Los Angeles meetings will be held at the Mobil
Auditorium on October 7 and December 9 and at
the Union Oil Auditorium on October 14, 21, 28;
November 4, 18, and December 2. The Bakers-
field meetings will be held one day proceeding
the Los Angeles meetings at the Bakersfield
College.

OUTLINE
FAULT SYMPOSIUM

October 7 through December 9, 1966

1. "Geological and Geophysical Significance
of Faults" (October 7)

What is a fault? Classification and
definition of faulting. Discussion of
the broad aspects of fault systems and
patterns with regard to western North
America.

2. "Geophysical Studies of Fault Structure
and Tectonics" (October 14)

Role of geophysical techniques and methods
in the identification and interpretation
of subsurface discontinuities and faulting.

3. ~~Airborne~~ Techniques (October 21)

Application of airphoto and airborne
sensing systems to the identification and
interpretation of faulting.

4. Gravity Methods (October 28)

Identification and interpretation of
faulting as derived from gravimeter data.

5. Magnetic Methods (November 4)

Recent developments in the application of
magnetic methods and techniques to the
identification of faulting.

6. Seismic Models (November 18)

Seismic model techniques and experiments
applied to the study of faulting and sub-
surface discontinuities.

7. Seismic Refraction Techniques (December 2)

Analysis of refraction seismic data in
the interpretation of faulted structures.

8. Seismic Reflection Techniques (December 9)

Use of seismic cross-sections and seis-
mograms in the study and analysis of
anomalous events and situations related
to faulting.

Meetings 1 and 8 - Mobil Auditorium, Mobil
Oil Building, 612 S. Flower
Street, Los Angeles, 1p.m.

Meetings 2 thru 7 - Union Oil Auditorium, Union
Oil Building, 461 S. Boy-
lston St. Los Angeles, 1p.m.

The St. Louis Convention program booklets, containing abstracts of 129 papers presented at the National A.A.P.G. Meeting are available in quantity on request at Tulsa Headquarters.

A small Semi-Centennial decal is now available to remind all members that we are in the middle of our Semi-Centennial Year, a fact which needs to be brought to the attention of the public. To achieve this, members should be encouraged to place the decals on car windshields, rear windows or on brief cases. Decals can be ordered from Tulsa Headquarters --3 for \$1.00.

A pamphlet which deals with the contributions of the petroleum geologist has been prepared for distribution - a part of A.A.P.G.'s public relations in the community during this Centennial Year. These can be obtained in quantity from Tulsa Headquarters for distribution by geological speakers before civic groups.

An appropriation was approved to finance A.A.P.G. awards at the 1967 International Science Fair at San Francisco. The experience at the 1966 Fair in Dallas was excellent. Much was accomplished in bringing petroleum geology before the scientific oriented students and in highlighting such activities of the Association before the general public.

The impact of the Association's professionally directed public relations program, begun last September, has made inroads for A.A.P.G. and the profession of petroleum geology into many public opinion areas heretofore untouched by our organization.

Since September, National Headquarters has received newspaper and magazine clippings from 485 publications with a combined circulation of more than 41 million copies. And, at best, the clipping service guarantees that only about 600/0 of what appears in print is sent in. This in itself is a rather staggering amount of publicity which the Association has not heretofore enjoyed. In addition, NBC's Frank Blair taped interviews at the St. Louis Convention which were broadcast on radio MONITOR.

CALENDAR

October 11, 1966 Tuesday Evening, 6:30 p.m.
Social Hour 5:30 p.m. American Legion Hall, 17th & L Sts., Bakersfield. San Joaquin Geological Society, "Geology of Persian Gulf", by Dick Hester, Pauley Petroleum Co.

November 7, 1966 Monday Evening, 7:30 p.m.
Bakersfield College, Science and Engineering Building, Room 56, Biostratigraphic Seminar, "Bio-Stratigraphy of the Salton Sea Basin and/or Baja California", by Dr. E. C. Allison, San Diego State College

Possibly changed to Nov. 14 because of conflict with continuing Education Program.

The first meeting of the San Joaquin Geological Society for the 1966-67 year was held at the American Legion Hall in Bakersfield on September 13. Over 140 geologists and guests were present. President Ortalda developed a new technique to gain the attention of the group by kicking over the podium. However, in the process of getting their attention, he also ruined the public address system. This caused the following speakers to have to rely on their own unamplified voices to sustain the high attention Mr. Ortalda had earlier provided.

Ernie Espenschied, Chairman of the Continuing Education Program, reports the next session will be held from November 7 through 10 at Bakersfield college. Dr. Weimer, Colorado School of Mines, will conduct a seminar on "Stratigraphic Principles and Practice". The fee will be \$25 with a possible refund dependent upon the number of people attending.

AAPG-SEPM NATIONAL CONVENTION
FIELD TRIPS ANNOUNCED

John Forman, Field Trip Chairman, has scheduled twelve field trips in connection with the National Convention next April. Eight trips will be offered prior to the Convention. Those that receive subscriptions of 30 or more will be run. The participants will be carried on buses, and box lunches will be provided. All trips are planned to return the participants to the hotel headquarters by 4p.m. Sunday so they may attend the pre-convention cocktail party.

(1) Los Angeles Urban Drill Sites-Cost \$4.00
Leader: Art Spaulding

This trip will visit the various urban drill sites in the northwesterly part of the Los Angeles Basin (e.g. Las Cienegas, Beverly Hills, Venice).

(2) Pliocene Seaknoll, South Mountain, Ventura Basin-Cost \$6.00

Leaders: Robert S. Yeats and Robert F. Meade

This trip will examine the criteria for submarine unconformity, including uneroded fault scarps, deep water faunas, and the facies change from shallow water to turbidite sands in the immediately overlying beds. Critical fossil localities will be visited, as well as a radiometrically dated Pliocene ash bed.

(3) THUMS Island, Long Beach-Cost \$4.50

Leader: Jack Russel

This will be a conducted tour of the THUMS operation at Long Beach.

(4) Steam Injection Project - Cost: \$3.00

Leader: Frazer Burback

This will be a visit to a steam injection well in the Los Angeles Basin with a discussion of a resultant recovery and economics.

(5) Structural and Stratigraphic Features of the Whittier Oil Field - Cost: \$4.50

Leader: Tom Wright

This trip will illustrate the complex structural features along the Whittier fault. It will show the turbidite details of the coarse Upper Miocene and Lower Pliocene clastics which have been derived by submarine slumping from a nearby source area.

(6) Palos Verdes Hills -Cost: \$5.50

Leader: Orville Bandy

This trip will illustrate the Miocene stratigraphy and micropaleontology of the southwest margin of the Los Angeles Basin.

(7) Central Santa Monica Mountains Stratigraphy and Structure - Cost: \$5.00

Leader: Harold Sullwold

This trip will show turbidite clastic deposits of Upper Cretaceous, Paleocene, Middle and Upper Miocene age. Upper Miocene turbidite details and directional features will be illustrated.

(8) Structural Field Trip in the Ventura Basin - Cost: \$6.50

Leader: Bill Corey

The trip will illustrate the highly compressed complexly folded, faulted and overthrust structures in the Ventura Basin, particularly in the oil fields.

There will be four major post-convention trips which, because of timing, will be mutually exclusive.

(1) Three-Day Trip to Death Valley (April 13, Thursday Afternoon, through Sunday April 16, 1967 - Cost: \$60.00)

Leader: Bernie Troxel

This trip will leave on the last day of the Convention, April 13, travelling up the Owens Valley and staying overnight at Lone Pine. The next day, the group will cross the White Mountains and go down into Death Valley where the night will be spent at the Furnace Creek Ranch. The next day will be spent in Death Valley with another night in Furnace Creek.

The last day will be spent in Death Valley and returning to Los Angeles. It is possible that with sufficient interest, this trip could be doubled in size with one bus load terminating in Las Vegas rather than Los Angeles.

(2) Two-Day Trip to Catalina Island (Friday and Saturday April 14-15, 1967) -Cost:\$27.00

Leaders: Edgar Bailey

Donn Gorsline

This trip will travel to Catalina Island by steamer, and one-half of the estimated 100 participants will be taken on a field trip which will show the bedrock geology of the Island.

The other one-half of the group will be taken on an oceanographic tour on the Hancock Foundations' "Velero IV". This trip will illustrate various oceanographic techniques such as arcer profiling, bottom coring, and dredging. We will also visit USC's new Oceanographic Installation at the Isthmus. Participants will be encouraged to have their wives accompany them to Avalon for this trip, but there will not be room for them to take part in the Field Trips.

(3) One-Day Stratigraphic Trip in the Ventura Basin, Friday, April 14, 1967 - Cost: \$7.50

Leaders: Manley Natland

John C. Crowell

Detailed features of Plio-Pleistocene turbidite deposits will be accented. This trip will visit the Ventura Avenue, Hall Canyon, and Wheeler Canyon Plio-Pleistocene sections under the direction of Natland. The Santa Paula Creek section will be under Crowell's direction. Participants will have a chance

to sample Natland's Pliocene type localities for microfossils.

(4) Two-Day Scuba Diving Underwater Field Trip in the La Jolla Area, Friday April 14, and Saturday April 15, 1967 - Cost: \$25.00

Leader: Robert Dill

This trip will be open to members holding a valid Scuba Diving card from a recognized training school. A maximum of 30 participants can be accommodated. Diving lungs and air will be provided. Participants will visit the Coronado Islands where underwater Miocene outcrops, Pleistocene submarine terraces, and recent biogenetic calcareous sands will be examined. Also dives will be made into the heads of Scripps and La Jolla submarine canyons.

PERSONALS

Tidewater Oil Company has named DON F. CARLOS geological manager of its Western Exploration and Production Division in Los Angeles. Don was formerly District Manager in Houston. A.E. (ED) PALK and W.M. (BILL) HOAD have been transferred from Sotex, Midland, to the Exploration Department for Standard at Oildale. DICK DONOVANVILLE formerly with Earth Energies Division of Pure Oil Company which has been merged with Union Oil Company, is transferred from the cool climate of Santa Barbara to the beautiful agricultural area of the Southern San Joaquin Valley. He joins Union Oil Company's Exploration Staff at Bakersfield. WARD ABBOTT is back with Shell, Bakersfield as division Geologist after a years absence with the E & P Group at Ventura and Houston. TOM O'NEILL (Shell) is having a difficult time explaining the pebble? creases on his car hood to the insurance company. He and JERRY ELKINS were sighting in a deer rifle and it seems they were trying to ricochet the bullets off the hood to hit the target. R. T. (BOB) GOODFELLOW transferred from Oklahoma City, Chevron, Sotex, to Standard, Oildale with the Geophysical Group effective August 15.

JACK EDWARDS, former Pacific Coast area Exploration Manager for Shell, has just completed an assignment in The Hague and is now Chief Geologist in New York. SPENCE FINE, Atlantic Richfield, is on his way to Sydney, Australia. Spence notes that the commute to Sydney from Ojai is a little longer than the LA-Ojai drive so that he has to move. This will be tough on Ventura County Republicans, as VIRGINIA FINE has been a long time mainstay there.

BILL POYNOR, Atlantic Richfield, is working in Long Beach, but still commuting to Ojai. PETE HALL, geologist-rancher, is leaving Atlantic Richfield to devote full time to raising apricots and boys in the upper Ojai. BILL PLASCH, is in Los Angeles as Staff Well Logging Engineer for Signal.

CARROLL HOYT, Geologist-emeritus from Mobil, is back from stockbroker school in New York and is hanging out his shingle at Walston and Co. in downtown Los Angeles. SHIRLEY VALENCIA, a recent USC graduate, has joined Mobil as a geologist. She is reported to be well sitting.

ROD COLWIN, Mobil, has transferred to Mobil's Exploration Department in Santa Fe Springs from the Producing Department.

JUSDON B. HUGHES, JR. recently joined GeoSearch Corporation with headquarters in Pasadena, California. Mr. Hughes was formerly employed by United Geophysical.

IAN CAMPBELL has been appointed by Governor Brown to serve as Director of the California Department of Conservation, replacing DEWITT NELSON who has taken a faculty position at Iowa State University, effective September 1.

DR. CAMPBELL is accepting the appointment only on an interim basis (at his own request) until December 1, when he will return to his position of State Geologist and Chief, Division of Mines and Geology.

The summer's news topper from San Francisco is the promotion of STANLEY W. TOTTON Vice-President in charge of exploration for Standard Oil Company of Texas. The rough part of this new assignment for STAN and his wife is the move from their beautiful home at Belvedere on San Francisco Bay to somewhere in Houston in early October.

STAN is a past-president of the Northern California Geological Society and a faithful member of the society's Monday luncheon group. He is "noted" among AAPG people for the great job he did as Chairman of Finance for the national convention in San Francisco in 1962.

LINN F. ADAMS, formerly of S.F. and lately Division Exploration Superintendent for Standard of California, W.O.T. at La Habra, is being moved up to assist STAN at Standard of Texas as Vice-President and General Manager of Exploration.

L.W. (LARRY) FUNKHOUSER will take STAN TOTTON'S spot in S.F. after serving as Vice-President and General Manager of Exploration for Standard Oil Company of Texas.

A.R. (DICK) BROWN has joined Standard at Oildale as a geologist. DICK recently received his Master's Degree from the University of California at Riverside.

The San Joaquin area is considering doing a bit of Gerryandering to include the Pauley Petroleum offices on Santa Monica Blvd. At any rate, we have been loyally supported by a few of the employees from that office.

BILL KENYON, was among the assets acquired from British-American by Gulf Oil Company at Bakersfield.

JOHN WEIDMANN has returned to Atlantic Richfield after taking an educational leave of absence at Oregon State. He is currently on loan as well site man in Morocco.

The annual SCOUT'S Picnic was held at the Kern Golf Course on September 9, 1966. The scouts report they had no bad comments but one. Some fellow complained that his steak was too big. He was issued a bowserbag.

Results of the Golf Tournament were provided by ELMO SPECKLES, Tidewater,

Phil Rippey - Cities Service-Low gross
74

Ross Nelson - Nelson & Cox - A Flight
low net - 70

Jerry Sweet - B Flight
low net - 72

R.G. (HUSTLER) LINDBLOM, Standard's travelling well site geologist, has more and better Alaska stories each time he comes back from his temporary assignments in the northern State. The way we hear it, Bob was trying to cash a \$75 check to pay off a "Robber" while the bank was being held up by another robber doing business in the next teller's booth. BOB, being a fast, glib talker, was able to stay out of jail: he even outsmarted the "hustling" first robber and saved his \$75.

ED KARP has been appointed Assistant Professor of Geology at Bakersfield College. He formerly taught in the Bakersfield Area and was associated with Kern Oil Company.

Recent hires at Mobil's Santa Fe Springs office are JIM WILDHARBER from USC and MIKE ACOSTA from San Diego State. Other new additions to the Santa Fe Springs office are JOHN DE LAY (from the New York office) and JIM DAHLHAUSEN (from the Roswell, N. M. office)

BOB SNEIDER, Shell Development Co., Bakersfield has joined Shell Oil on the area production dept. staff in Los Angeles. JOE DIXON, Shell, Los Angeles, set a new tight money record by selling his Ventura house in 4 days! He was last reported lost in the smog looking for something comparable in the Big City.

TIM LAUER, a recent graduate of Oregon State has joined the Exploration Group for Union at Bakersfield.

New Hires for Standard at Oildale are:

ROBERT L. SLIKER from San Diego State, WM. J. ELLIOTT from San Diego State, DAVID A. WRACHER from Oregon State.

BRAD WILLIAMS has resigned from Standard and has joined the Kern County Planning Commission at Bakersfield.

HENRY RIVERS, Standard Geophysicist, is being transferred from Oildale to Houston after a short detour to Chevron Research at La Habra.

NURSERY NEWS

Born to CHARLOTTE and WALT HARRIS, Occidental, Bakersfield, their third daughter, Lynn Ellen on June 20, 1966., weight 8 lb. 6 oz.

BARBARA and PHIL SALSTROM, Standard, second child, first girl, Julia Marie, born September 2, 1966. Weight 8 lbs. 11 oz.

RECENT PUBLICATIONS

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Vol. 50, no. 7, July 1966

Late Cretaceous paleogeography near Wheeler Gorge, Ventura County, California, by B.R. Rust

Stratigraphic analysis of source - bed occurrences and reservoir oil gravities, by Harold J. Holmquest

CALIFORNIA OIL WORLD

Vol. 59, no. 13, First Issue, July 1966
Underwater city idea has great potential

GEOLOGICAL SOCIETY OF AMERICA BULLETIN, vol. 77
no. 5, May 1966

Table Mountain serpentinite extrusion in California Coast Ranges, by William R. Dickinson

Structural state of relict calcium-bearing plagioclases of volcanic origin from metamorphosed and propylitically altered rocks by Donald C. Noble

A sampler for coring sediments in rivers and estuaries, by Edmund A. Prych and D.W. Hubbell

Role of fluid pressure in mechanics of overthrust faulting: Discussion, by William C. Pierce

BOOKS

GEOLOGY ILLUSTRATED, by John S. Shelton. W.H. Freeman & Company.
660 Market Street, San Francisco, Calif.
94104. Approximately 400 pages. \$10.00

CALIFORNIA DIVISION OF MINES AND GEOLOGY

Special Report 86: Short contributions to California Geology \$1.50

Geology of the central part of the Ramona pegmatite district, San Diego County, California, by Dale R. Simpson

Tertiary stratigraphy of the Church Creek area, Monterey County, California, by William R. Dickinson

Magnetic study of the Island Mountain mine area, Trinity County, California, by Rodger H. Chapman.

Map Sheet 8: Geology of the Palo Alto quadrangle, Santa Clara, and San Mateo Counties, California, by T.W. Dibblee, Jr. \$1.50

San Ana Sheet of the Geologic map of California (Scale 1:250,000) \$1.50

County Report 4: Trinity County, by J.C. O'Brien \$3.50
125 pages, plus geologic map

Special Report 87: Expansible shale resources of the San Jose-Gilroy area, California, by John L. Burnett \$1.50

Special Report 90: Gravity base station network, by Rodger H. Chapman \$1.50

Mineral Information Service, vol. 19, no. 7, July 1966 The meteorites of California, by C.P. Butler

OPEN FILE RELEASES (Inspection only, in Library, Perry Building)

Geology of the southwest quarter of the Walnut Creek quadrangle, by Richard B. Saul

Geology of the Sunset Cliffs, City of San Diego, California, by Michael P. Kennedy

U. S. GEOLOGICAL SURVEY

Professional Paper 398-A: Tertiary stratigraphy and paleobotany of the Cook Inlet region, Alaska, by J. A. WOLFE, D.M. HOPKINS, and E. B. LEOPOLD \$.70

Professional Paper 422-I: An approach to the sediment transport problem from general physics, by R. A. BAGNOLD, \$.35

Professional Paper 499: Interpretation of resistivity data, by R. G. VAN NOSTRAND and K. L. COOK, \$2.75

Professional Paper 514: Measurement of hydraulic diffusivity of wedge-shaped aquifers drained by streams, By R. W. STALLMAN and I. S. PAPADOPOULOS \$4.50

Professional Paper 524-B: Stratigraphy and structure of the Dinkey Creek roof pendant in the central Sierra Nevada, Calif., by R. W. KISTLER and P. C. BATEMAN, \$.65

Professional Paper 542-A: Effects of the earthquake of March 27, 1964, at Anchorage, Alaska, by W. R. HANSEN, \$1.35

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GP 574: Aeromagnetic map of Sacramento and vicinity, California, by J.L. Meushcke, J.A. Pitkin, and C.W. Smith \$.50

GP 575: Aeromagnetic map of Hopi Buttes and vicinity, Navajo County, Arizona by C.M. Mitchell and J.L. Vargo \$.50

1-467: Geologic map of the Cady Mountains quadrangle, San Bernardino County, Calif., by T.W. Dibblee, Jr. and A.M. Bassett \$.75

I-472: Geologic map of the Lavic quadrangle, San Bernardino County, Calif., by T.W. Dibblee, Jr. \$.75

OREGON DEPT OF GEOLOGY AND MINERAL INDUSTRIES (1069 State Office Building, Portland, Oregon)

Oregon State Monograph, Studies in Geology No. 9: Fossil Lake, Oregon --- Its geology and fossil faunas, by Ira S. Allison. 48 pages (Oregon State University Press, Corvallis) \$2.00

Supplement to Miscellaneous Paper 7: Bibliography of theses and dissertations on Oregon geology, from January 1, 1959 to December 31, 1965, compiled by Miriam Roberts. \$.50

Aeromagnetic map of the San Francisco Bay area, California, by the U.S. Geological Survey. 2 Sheets, scale 1:50,000.
2 Sheets, scale 1:50,000.

Circular 534: Gold geochemical anomaly in the Cortez District, Nevada, by R.L. Erickson, G.H. Van Sickle, H.M. Nakagawa, J.H. McCarthy, Jr. and K.W. Leong.
9 pages

Professional Paper 474-D: The 1961 eruption of Kilauea Volcano, Hawaii, by D.H. Richter, W.U. Ault, J.P. Eaton, and J.G. Moore. (reprint) \$.35

Professional Paper 482: Physiographic division of Alaska, by Clyde Wahrhaftig \$.50

Professional Paper 491-B: Effects of juniper and pinyon eradication on streamflow from Corduroy Creek basin, Arizona, by M.R. Collings and R.N. Myrick \$.20

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Bulletin 1230-A: Mineral resources of the San Rafael primitive area, California, by H.D. Gower, J.G. Vedder, H.E. Clifton, and E.V. Post \$.60

Geophysical Abstracts 233, June 1966 \$.35

Bulletin 1230-D: Mineral resources of the Mount Jefferson primitive area, Oregon, by G.W. Walker and R.C. Greene (U.S.G.S.) and E.C. Pattee (U.S.B.M.)

Abstracts of North American Geology May 1966 \$.45

Circular 520: Tritium rainout over the United States in 1962 and 1963, by G.L. Stewart and C.M. Hoffman, 11 pages
Free

MAPS:

GQ 528: Geologic map of the Waucoba Mountain quadrangle, Inyo County, California, by C.A. Nelson \$1.00

Map I-464: Reconnaissance geologic map of the west half of the Spokane quadrangle Washington and Idaho, by A.B. Griggs \$.50

Map I-471: Distribution of selected accessory minerals in the Osgood Mountains stock, Humboldt County, Nevada, by G.J. Neuberger \$.50

Information Circular 8284: Water use in the petroleum and natural gas industries, by Paul M. Buttermore, 39 pp. 9 figs. \$.30

Information Circular 8286: Crude Oil: Qualitative and quantitative aspects. The Petroleum World, by Harold M. Smith, 41 pp. 14 figs. \$.50

Bulletin 635: Development of the Bureau of Mines Gas-combustion oil-shale retorting process, by Arthur Matzick, R.O. Dannenberg, J.R. Ruark, J.E. Phillips, J.D. Kankford and Boyd Guthrie. \$1.00

WORLD OIL, vol. 162, no. 5, April 1966

Exploration Special Report

WORLD OIL, vol. 132, no. 6, May 1966

Finding and producing viscous, low gravity crude in Canada, by M.F. Westfall.

Cretaceous is now a deep objective in Lake Maracaibo, by Michael E. Lynch and Clement B. Lepak

Abo reef buildup provides five stratigraphic trap zones, by Marsh W. Nottingham.

Steam-powered drilling rigs make comeback offshore, by John R. Graham.

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PACIFIC SECTION, A.A.P.G.

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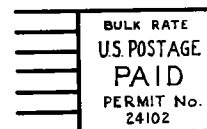
Volume 20

Number 10

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Los Angeles, Calif. 90067

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PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

November, + 1966

Number 11

ASSOCIATION ACTIVITIES

MINUTES OF EXECUTIVE COMMITTEE MEETING

PACIFIC SECTION - AAPG
October 11, 1966

President Knapp called the meeting to order at 1:15PM at the Skyway House, Bakersfield, California. Attending were J.F. Curran, T.L. Wright, E.R. Orwig, Jr., J.N. Terpening, R.R. Morrison, J.M. Saunders, F.R. Kelley (in the place of G.B. Oakeshott), and invited guests, R.A. Ortalda and D.C. Callaway.

Regarding the proposed contribution to the A.I. Levorsen Memorial Fund, Mr. Curran read details of the Levorsen Best Paper Award as published on the President's Page of the September AAPG Bulletin. Inasmuch as the cost of maintaining awards is minimal, and the present balance of the Levorsen Fund appears adequate for this purpose, Mr. Curran was requested to write National Headquarters to determine what their projected financial requirements for this award might be, and whether any additional uses for the fund were being considered.

President Knapp reported, for the Continuing Education Committee, that Dr. L.L. Sloss will lecture on Stratigraphic Principles in Los Angeles at the Mobil Auditorium, December 12-15, from 3-6:00 P.M. A fee of \$10.00 for both members and non-members is being considered. Mr. Ortalda reported that Mr. R.J. Weimer would present his course on Stratigraphic Principles and Practice in Bakersfield, November 7-10.

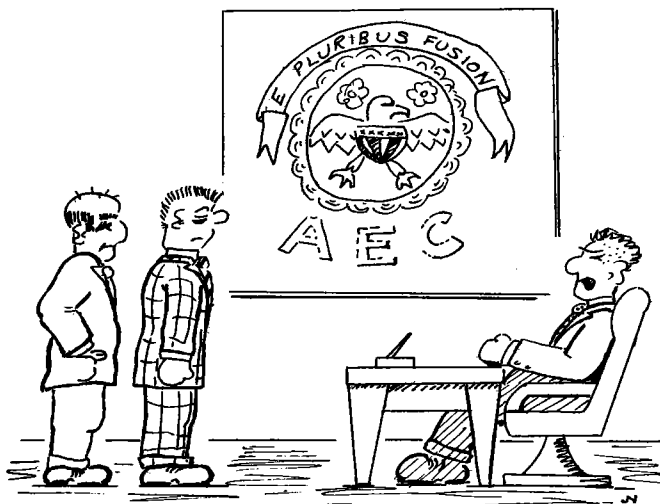
Mr. Ortalda reported that Mr. H.H. Neel is proposing the formation of a Los Angeles Geological Society as a means of pulling together petroleum and non-petroleum segments of the profession. The relationship of such a group to the Pacific Section was discussed; presumably, it would be comparable to other local societies, it would run the Los Angeles meetings, and would be affiliated with the Pacific Section. It was decided to invite Mr. Neel to the next Executive Committee meeting held in Los Angeles to discuss this matter.

President Knapp announced a luncheon meeting November 16th at Rodger Young Auditorium with Michel Halbouty and Merrill Haas. Invitations will be sent to section and society officers, district representatives, and section members. The conflict in dates with the GSA Convention in San Francisco was pointed out, but no change in dates appears possible. President Knapp reported that University Microfilms' proposal to reproduce the Los Angeles - Ventura Guidebook had been approved by legal counsel (Standard's), and that the contract would be signed and returned.

President Knapp reported that the balloting to convert the national AAPG to a fiscal year basis had passed overwhelmingly. Mr. Orwig moved to change the Pacific Section to a July 1 - June 30 fiscal year basis, with new officers to be introduced at the Annual Convention and to take office at the beginning of the fiscal year. Mr. Curran seconded the motion, and it was passed unanimously. President Knapp was requested to prepare a Presidential Letter for the P.P.G. announcing this change.

Mr. Ortalda reviewed developments concerning state registration, etc., of geologists as discussed at the recent California A.I.P.G. Convention in Bakersfield. A.I.P.G. considers that some form of legislative regulation of geologists is inevitable in the 1967 session. The A.E.G. (Association of Engineering Geologists) is assisting Los Angeles County in the drafting of a registration bill. The final recommendation of the Jahns Committee (L.A. City) on geological hazards suggested that the City of Los Angeles introduce a bill to "incorporate" geologists. Mr. Art Spaulding will provide informal liaison to the A.I.P.G. on Los Angeles City activities. Mr. Wes Bruer has prepared a model bill which A.I.P.G. is currently critiquing. A.B. 2680, still pending, would prohibit use of the title "engineer" in any form by individuals not registered under the Board of Civil and Professional Engineers: this would do great harm to petroleum engineers. A Chartered Engineers Act is to be introduced in the 1967 Legislative which would eliminate the Board of Civil and Professional Engineers and substitute a board appointed by the Governor.

(continued on page 3)



OK, we'll compromise. We'll give up the Corral Canyon site if you geologists will keep quiet about our Garlock, Crystal Springs, Hayward, Nacimientos, Elsinore and White Wolf plants.

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AMERICAN ASSOCIATION OF PETROLEUM GEOLOGIST

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PACIFIC PETROLEUM GEOLOGIST

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Deadline for next issue: November 15

NOVEMBER FORUM MEETING

The Evening Forum Meeting of the Pacific Section of the A.A.P.G. will be held in the Mobil Auditorium, 612 South Flower Street, Los Angeles, at 7:00 P.M., November 21, 1966.

Mr. H.T. Halverson, of the Earth Sciences Division of Teledyne, will present "Recent Developments In Seismological Instruments". This talk will be illustrated and some of the instruments will be on display.

The Professional Corner

CORRAL CANYON
PRESSURE VS. GEOLOGY

Most geologists will agree with the thoughtful comments of Bob Yeats in the August News Letter.

It's unfortunate that geological disagreements must be aired before the general public where the reasons for differences cannot be generally understood.

Oil exploration is recognized by industry as a risk business and there is room for pressure and competition and luck along with judgment and experience.

The location of a dam or an atomic plant cannot be so regarded and herein lies the need for appraisal by objective geologists, uninfluenced by buyer or seller and free from any possibility of business pressure or bias.

The Los Angeles Department of Water and Power has publicly accused many top geologists, who voluntarily came forth as a public service to appraise the safety of the Corral Canyon nuclear site. They were referred to as tools of the oil industry.

This, of course, is not true but the public probably believes it, with harm to the profession. This is business pressure and confusion, probably well calculated by DWP at the expense of geologists.

The USGS has always been a fine objective scientific organization. Geologists learned with surprise from testimony in the Corral Canyon hearings that the AEC staff had the opportunity to edit and critically change the USGS report before it was printed. This was done over the objections of the capable Survey geologists who did the work and the business pressure of the AEC as the promoter as well as the watch dog for the project became evident.

Apparently the problem posed by Bob Yeats will always be with us in dealing with public matters. The responsible circles of industry know the score but not the public.

There is no room for luck or business pressure or money in locating vast public works and geologists must look with caution at assignments where such pressures are known to exist.

A determined and affluent client, with the benefit of a public relations department, might be expected to geologically confuse a very simple issue.

--- Frank A. Morgan

MINUTES FROM EXECUTIVE MEETING (cont. from p.1)

Mr. Ortalda reported that the California A.I.P.G. has empowered its Executive Committee to take whatever steps are necessary to protect the professional geologists, and that it will push for chartering, using Mr. Bruer's model act and working through the City of Los Angeles insofar as possible. Mr. Curran then moved that the Pacific Section Executive Committee go on record as approving this action taken by the California Section A.I.P.G., and that the Pacific Section A.A.P.G. notify the California Section A.I.P.G. that in all matters pertaining to the registration, etc., of geologists in California, the California Section A.I.P.G. shall act as the representative of the Pacific Section A.A.P.G. The motion was seconded by Mr. Terpening and passed unanimously.

Mr. Frank Morgan's proposal to present a talk on the Corral Canyon controversy was discussed. Mr. Knapp will ask Mr. Bill Hughes to develop forum program involving speakers pro and con.

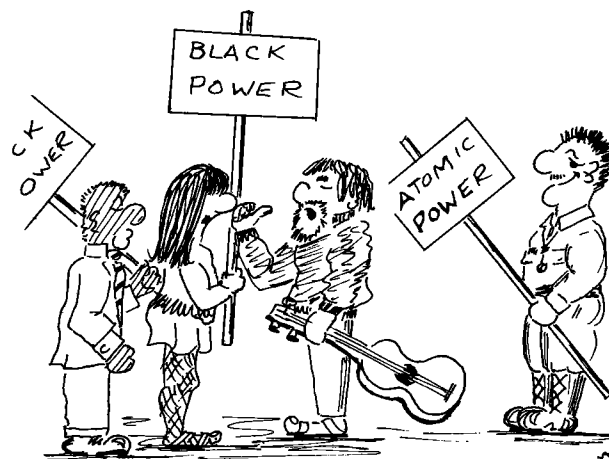
Knapp announced the formation of a nominating committee of Harold Sullwold, chairman, Aden Hughes, and Lou Simon, to obtain candidates for Los Angeles Basin district representatives. He also announced plans to call a meeting of all West Coast district representatives within the next several months, to discuss their duties and problems.

The timing and finances of publishing a Membership Directory revision for the 1967 convention were discussed. Curran moved that the Pacific Section not plan to put out a Directory revision in 1967. Wright seconded the motion and it was approved unanimously. Knapp was asked to so inform Directory Chairman Traxler and ask him to form a committee (including representatives from the local societies) to study directory problems, aiming towards an entirely new Directory in 1968. Wright distributed for comment a draft proposal regarding a method of Directory publication and distribution which would eliminate large deficits and protect the Section's tax-exempt status. Curran recommended that Directories be furnished to all members and the cost included in the dues.

Callaway reported on the progress of the Cross-section Committee. Two Sacramento Valley cross-sections have been put together and are 90 per cent correlated. The sub-committee for the San Joaquin Valley cross-section has begun work. Curran showed proposed coastal cross-sections. The Los Angeles Basin sub-committee is having difficulty obtaining release of some logs. Some problems have arisen in setting up a Pacific Northwest sub-committee. The Executive Committee emphasized the necessity of obtaining a release on all wells shown on cross-sections.

Next year's Spring Field Trip was discussed, and it was agreed that Mr. Wright would write R. J. Proctor, Metropolitan Water District, concerning a field trip in the Castaic Reservoir area.

Mr. Wright distributed a draft version of the proposed dues application and membership card for comments. Mr. Curran is organizing a membership drive which will involve the mailing of membership dues cards, invitational letters, etc., to potential members and subscribers not now on our mailing lists.



He says if we swap signs, he'll pay our bus fare to Malibu.

ACADEMIC ADVISORY COMMITTEE

Forty-two internationally prominent educators have accepted appointment to the Academic Advisory Committee of the American Association of Petroleum Geologists, according to Michel T. Halbouty, AAPG President.

The high echelon advisory committee has already begun its efforts on behalf of the 15,000 member AAPG.

"The major objective of this important committee," said Mr. Halbouty, "is to promote better understanding between AAPG and academic leaders in the earth sciences who exert such a substantial influence on the future of the oil and gas industry."

The Academic Advisory Committee, under the leadership of Chairman Carey Croneis, Chancellor of Rice University, Houston, Texas, and Vice Chairman Grover E. Murray, President of Texas Technological College, Lubbock, Texas, will coordinate efforts to provide a continuing source of hi-caliber geology graduates to staff university faculties, governmental agencies, and provide competent geologists to search for the vast quantities of oil which are required for the future. Special attention will be given to coordination of secondary school activities in the geosciences so as to create early interest in this field with students before they enter college.

The Academic group will also assist AAPG in the further implementation of its Continuing Education Program, designed to help geologists guard against technical obsolescence in their field.

Local members of the AAPG Academic Advisory Committee are: RICHARD H. JAHNS, Dean, School of Earth Sciences, Stanford University, Stanford; HEINZ A. LOWENSTAM, Professor, Division of Geological Sciences, California Institute of Technology, Pasadena.

SAN JOAQUIN SECTION
CALENDAR

UNIVERSITY OF SOUTHERN CALIFORNIA NOON LECTURE SERIES

- | | | |
|---------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Nov. 22 | International Indian Ocean Expedition NSF film which won the "Golden Prow" award this year at the Venice Film Festival | Introduction by Dr. Orville L. Bandy Professor Geology Dept. USC |
| Dec. 6 | Mineralogy of the fine-grained sediments of Willcox Playa, Cochise Co., Arizona | Dr. Bernard W. Pipkin, Sr. Lecturer, Geology Dept. USC |
| Jan. 3 | Sediments of Nha Trang Bay South Vietnam | S. Allen Bell Graduate Student Geology Dept. USC |
| Jan. 10 | Geology of the Paris Basin | Edith S. Vincent Graduate Student Geology Dept. USC |

November 21 7:30 P.M., Bakersfield College, Science & Engineering Building, Room 56. Biostratigraphic Seminar. "Biostratigraphy of the Salton Sea Basin and/or Baja California". by Dr. E.C. Ellison, San Diego State. (Note change of date due to conflicting programs, originally scheduled for November 7).

December 5 7:30 P.M., Bakersfield College, Science & Engineering Building, Room 56. Biostratigraphic Seminar. "Recent Reefs" by Dr. William Easton, University of Southern California.

December 6 6:30 P.M., Social Hour 5:30 P.M., American Legion Hall, 17th and L Streets, Bakersfield. San Joaquin Geological Society. "Modern Geology Requires Modern Technology", by E.L. Dillon, Shell Development Company, Houston, Distinguished Lecturer.

SAN JOAQUIN GEOLOGICAL SOCIETY
AAPG CONTINUING EDUCATION PROGRAM

STRATIGRAPHIC PRINCIPLES AND PRACTICE

By

Dr. Robert J. Weimer

Bakersfield College November 7-10, 1966
7:00-10:00 P.M.

Monday - - Math-Science Bldg., Room 3
Tues., Wed., Thurs. - - Math-Science Bldg., Room 22

THE COASTAL SECTION

The monthly dinner meeting was held in the Jet Room at Ventura on Tuesday, September 13, 1966. Mr. William E. Corey was our guest speaker of the month. His interesting talk was titled "Southern California Lateral Fault System."

Mr. Corey contends that Coastal California consists of active crustal blocks formed and dominated by pre-Tertiary northwest-southeast major primary right-lateral faults, and younger Oligocene and Miocene parallel and secondary cross faults.

He pointed out that many major California faults show evidence of far greater horizontal than vertical movements of the blocks they form. Most major faults are old enough for great cumulative offsetting, and were recurrently active during the Tertiary. Most fault blocks had different erosional and depositional histories, depending on their changing relative locations and stress or strain situations in the system, and whether they were mainly positive or negative. Many blocks underwent great reversals of relative vertical relationships through lateral movements.

Mr. Corey feels that these faults and elongate blocks form a "basin and range" type pattern extending across the entire continental shelf. The Cretaceous and Tertiary rift zone which crossed southern California had recurrent late Tertiary, left lateral offsets, which "locked" the fault block strain relief system and caused its compression and contortions in the Quaternary. Application of Moody and Hill's "Wrench Fault Tectonics" hypothesis appears to explain the system generally, but more knowledge of its deformation history is necessary to explain its past mechanics.

1. MEETINGS ARE HELD TUESDAY NOON, SCIENCE LECTURE HALL, ROOM 100, east of the corner of 37th Street (Adjacent to Geology "A").

PACIFIC SECTION AAPG
DISTINGUISHED LECTURER
LUNCHEON MEETING

On Thursday, December 8, Mr. E.L. Dillon, Coordinator of Computer Application, Shell Oil Company, Houston, Texas, will talk on "Modern Geology Requires Modern Technology." The meeting will be held at the Roger Young Auditorium, 936 West Washington Boulevard, Los Angeles. Reservations for lunch (\$3.00 including tax and tip) should be placed with Mrs. Dorothy Conley, Humble Oil and Refining Company, 1800 Avenue of the Stars, Gateway East, Los Angeles, California 90067.

PACIFIC SECTION AAPG
LUNCHEON MEETING

Michel Halbouty, President of AAPG, and Merrill Haas, Vice-President, will head a "Discussion of the Current Situation and Problems in Petroleum Geology and the AAPG" at a luncheon meeting on Wednesday, November 16, at the Roger Young Auditorium. (See Distinguished Lecturer announcement for address and luncheon cost.) The meeting will be attended by AAPG officers and district representatives, and AAPG members are cordially invited to attend.

AAPG CONTINUING EDUCATION PROGRAM

Dr. L.L. Sloss from Northwestern University will present his lecture series on "Stratigraphic Principles". It will be given December 12-15 from 3-6 PM at the Mobil Auditorium.

NORTHWEST GEOLOGICAL SOCIETY

The first meeting for the 1966-67 Northwest Geological Society year was held Tuesday, October 11, at the Poodle Dog Cafe in Fife, Washington. Kenneth E. Burg, Vice President of Geophysical Service Inc., was guest speaker and presented a very interesting account of "Recent Developments in Seismic Exploration".

The December meeting - Dec. 8 (tentative) at the Poodle Dog Cafe in Fife, Washington. Speaker - Distinguished Lecturer of the AAPG, E.L. Dillon, "Modern Geology Requires Modern Technology". Happy hour at 6:00 PM, dinner at 7:00 PM.

TEN CANDIDATES FOR LOS ANGELES DISTRICT REPRESENTATIVE ANNOUNCED

Ten candidates have been selected by a nominating committee for the office district representative from the Los Angeles District of A.A.P.G. Their names will appear on a ballot to be distributed from national headquarters late in November. The committee consisting of Aden Hughes, Louis Simon, and Harold H. Sullwold, Jr., chairman all former district representatives, are offering the following data on the candidates in order to aid members in voting intelligently. Five representatives will be chosen by ballot.

EUGENE BORAX: M.A. '42 UCLA: Senior Geologist, International Division, Union Oil Co.: 28 year veteran of AAPG.

ROBERT N. HACKER: M.A. '50, Cal: consulting geologist: former treasurer and forum chairman, Pacific Section.

RONALD G. HOOK: B.S. '56 BYU: staff geologist, Pauley Petroleum: Valley correspondent and various committee jobs.

ROBERT J. HINDLE: B.A. '48, UCLA: district geologist, Sunray Oil Co.: Pacific Section Executive Committee, two convention committees, and field trip leader.

JACK D. NAIR: B.A. '50, Occidental: District Geologist, Phillips Petroleum Co.: former treasurer, Pacific Section, and assistant convention chairman.

E. ROBERT ORWIG: A.B. '45 and Ph.D. '57, UCLA: research geologist, Mobil Oil Co.: past President, Pacific Section.

PHILLIP E. PERSONS: B.S. '53, Stanford: Manager, E.L. Doheny, Oper.: member of Executive Committee, 1965.

GEORGE H. ROTH: A.B. '42, USC: consulting geologist: 20-year veteran of Pacific Section.

OTTO SEAL: B.A. '50, USC: Division Geologist, Amerada, Guidebook Editor, Intermountain Association of Petroleum Geologists.

GLEN W. SPECHT: B.S. '55, Texas A & M: staff geologist, offshore, Humble: current luncheon program chairman.

PERSONAL ITEMS

JIM FOSTER, formerly in Oildale, has bought a house and settled down as Division Geophysicist in Standard's Seattle office. Jim replaces LEO HORN who was transferred to San Francisco on the staff of the Chief Geophysicist.

BILL OSTRANDER is a recent addition at Standard's Seattle office from Penn State University.

JOHN V. BYRNE, Professor of Marine Geology at Oregon State University, is on a one year leave of absence in Washington, D.C. to serve on the Oceanography Committee of the National Science Foundation. Dr. Byrne replaces Joe Creager of the University of Washington Department of Oceanography who served on this committee for the previous year.

A boatload of geologists from Standard's Seattle office recently sampled the salmon fishing off Westport, Washington. While REG HARRIS, ED DOBRICK, DALE WIGGINS, JIM SALVESON and others played and landed fish after fish, JACK RICHGELS and JOHN KOCH stood by watching and wondering what secret ingredient they had which kept the fish from their hooks.

Continental Oil has announced the arrival in Ventura of two paleontologists, ARTHUR C. BROOKLEY, JR. of Los Angeles and CARL AMES, JR. who has recently been transferred from Ponca City, Oklahoma, where he was engaged in research.

Tidewater has announced that DON CARLOS, formerly of Houston, has been appointed the new Manager of Exploration and Exploitation in California.

It is not very often that a geologist who has had a pet play turned down by a major company puts his own pocketbook on the line in an attempt to prove his theory. SIG HAMANN, formerly of Shell, drilled Blue Opal Co. Covarrubias 2-3 to 2033' as a new pool wildcat near Shell production in the Capitan field in early July. The hole was abandoned after twisting off in the Vaqueros Sand. All of his many well-wishers hope he has better luck with International Petroleum, Talara, Peru.

Shell Oil has announced their transfer of the Ventura District Exploration office to Los Angeles, where it will be known as the Los Angeles District. With this move we regret to see the transfer of Mr. SIG SNELSON, RALPH HAWKINS, and BRUCE MACOMBER, our vice president.

A familiar face has returned to the Standard Oil Development Geologist's scene with the arrival in La Habra of ED DRYDEN. Ed had been working in West Texas for Sotex the past 18 months. He was disappointed in selling his old homestead in the Ojai Valley so populated with homes and people.

Would you believe a tourist to France with all of its gourmet foods and wines could lose 12 pounds during a 3 week vacation? Ask our Pacific Section President BOB KNAPP for the secret, however, it is reported he would trot alongside the rented Peugeot auto while his wife and boys enjoyed the scenery.

The Standard Oil Explorers (La Habra) bowling team is tied for 1st place in the Men's Handicap Commercial bowling league at the Highland Bowl. Captain GREG CALKINS ("The old Magician") presented the team with new bowling shirts - team colors are red, white, and blue. Other members are ED PARKER, JOHN JACOBSON, BOB LINDBLOM, JIM BLOM and GARY GOSSAWAY.

In a losing cause, SLIM GAVETT and BOB LINDBLOM (Standard) shot 77's in the Los Angeles Petroleum Golf League monthly tourney held October 15th on the La Mirada County Course. The Standard team was defeated by the Atlantic Richfield "hustlers." BOB LINDBLOM eagled the 560 yard, par 5-12 hole by holing out a 40 yard wedge shot.

The following Standard Oil geologists have been appointed "Geologist - Producing" in the various department districts: TOM NEWBILL - Santa Fe Springs, BILL GOLD, Santa Barbara, BOB LINDBLOM - Inglewood, TOM GROSS - Buena Vista, GIL HORNUNG - Kerto Cymric, KENT JOHNSON - Greely Kern River and DICK MEDITZ - Coalinga. JACK CUNNINGHAM and BOB ERICKSON are the Division Geologists - Producing at Taft and La Habra respectively.

There have been a number of recent transfers affecting the Anchorage geological population. Thick blooded geologists are coming north: thin blooded geologists are moving south to escape the Alaskan winter.

BOB BARKER, Atlantic Richfield Geologist, transferred to Anchorage from Houston.

AL SISSON, Union Senior Geologist, transferred to Anchorage from Bogota, Columbia.

LEE ROGERS, Union District Geophysicist, transferred to Anchorage from New Orleans.

JERRY SAGER, Shell Scout, transferred to Anchorage from Farmington, New Mexico.

CRAIG LYON, Standard Geologist, transferred to Anchorage from Bakersfield.

JOHN CLARK, Union District Geophysicist - Anchorage, transferred to Los Angeles as Division Geophysicist. John lasted only three months in Anchorage.

BOB ROTHER, Shell Scout in Anchorage, transferred to Los Angeles. Bob lasted six months in Anchorage.

TOM PATRICK, Atlantic Richfield Senior Geologist in Anchorage, was transferred to Lafayette, Louisiana in the same capacity. Tom was tough: he survived three winters in Alaska.

KEITH CALDERWOOD, Phillips District Geologist in Anchorage, gave a very interesting paper before the Alaska Geological Society meeting in Anchorage on October 20th. An abstract of this paper will be available shortly. The highlight of the paper was a proposed stratigraphic nomenclature for the Kenai Group.

DON MAGEE, Standard Geologist in Anchorage, recently vacationed in the lower 48. He brought back a car, but due to the high cost of living, all he could afford was a 1953 model.

BIBLIOGRAPHY OF RECENT PUBLICATIONS

U.S. GEOLOGICAL SURVEY

Prof. Paper 486-C: Hydrologic regimen of Salton Sea, Calif., by A.G. Hely, G.H. Hughes, and Burdge Irelan
\$.30

Prof. Paper 523-C: Late Pleistocene marine paleoecology and zoogeography in central California, by W.O. Addicott
\$.35

Prof. Paper 550-C: Geological Survey Research 1966 Chapter #C
\$2.25

Bulletin 1198-F: Phytoecology of a greenstone habitat at Eagle, Alaska, by H.T. Shacklette.
\$.20

Bulletin 1223: Nickel deposits of North America, by H.R. Cornwall
\$.25

Bulletin 1224-C: The Yakima Basalt and Ellensburg Formation of south-central Washington, by J.W. Bingham and M.J. Grollier
\$.10

Bulletin 1230-F: Mineral resources of the Sycamore Canyon Primitive Area, Arizona, by L.C. Huff and Elmer Santos (U.S.G.S.) and R.G. Raabe, (U.S. Bureau Mines)
\$.50

Geophysical Abstracts 236, September 1966
\$.35

Abstracts of North American Geology, August 1966
\$.45

Circular 534: Gold geochemical anomaly in the Cortez district, Nevada by R.L. Erickson, G.H. Van Sicle, H.M. Nakagawa, J.H. McCarthy, Jr., and K.W. Leong

MAPS:
I-485 (IAC-94) Geologic map of the Pitatus region of the Moon, by N.J. Traks and S.R. Titley.
\$1.00

OPEN FILED REPORTS (Inspection Only)

Compaction of sediments underlying areas of land subsidence in Central California, by Robert H. Meade
155 pages 22 figs.

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

Report of Investigations 6752: Analyses of some crude oils from fields in West Texas, by C.M. McKinney and Ella Mae Shelton
Free

U.S. BUREAU OF MINES (obtain from Government Printing Office, Washington, D.C.)

Information Circular 8302: Analyses of natural gases of the U.S., 1964, by B.J. Moore, R.D. Miller and R.D. Shrewsbury
\$.70

CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fresno sheet, of Geologic map of California
\$1.50

List of available publications Free

Mineral Information Service, vol. 19, No. 10,
October 1966

Geologic Hazards: San Andreas Fault: Geologic
and earthquake history, by Gordon B. Oakeshott

ORE-BIN, vol. 28, no. 9, Sept. 1966

Fulgurites from Mount Thielsen, Oregon, by
William B. Purdom

Moning in an ash flow of the Danforth Formation,
Harney County, Oregon, By Ernest H. Lund

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS BULLETIN
Vol. 50, no. 8, August 1966

1965 Developments in Foreign Fields
(including Mexico, South America and Caribbean,
Far East and Southwest Pacific)

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Middle and Late Paleozoic stratigraphy, Alaska-
Yukon border area between Yukon and Procupine
Rivers, by L.R. Laudon, A.E. Hartwig, D.L.
Morgridge, and J.B. Omernik

Deep channels in turbidite-bearing formations,
by Roger G. Walker.

Authigenic silicates in marine Spencer Formation
at Corvallis, Oregon, by Harold E. Enlows and
Keith F. Oles

THE JOURNAL OF GEOLOGY, vol. 74, no. 4, July 1966

Eocene deltaic sedimentation at Coos Bay, Oregon
by R.H. Dott, Jr.

PETROLEUM MANAGEMENT, vol. 38, no. 8, July 15, 1966

World-wide new equipment guide issue

WORLD OIL, vol. 163, no. 2, August 1, 1966

Stratigraphic, trend studies by electronic
computer, by David R. Matuszak

How western Venezuela's oil is being produced,
by M.E. Lynch and E.B. Lepak

WORLD OIL, vol. 163, no. 3, August 15, 1966

International outlook, '66

WORLD OIL vol. 163, no. 4, September 1966

Hydrodynamics aid exploration and development,
by W.S. Frederick

Suggested modifications to the Gran Slam suite,
by Hilton B. Evans

Remote-controlled "jug" may help gas and oil
search

WORLD OIL, vol. 163, no. 5, October 1966

Interior Department sees bright future for off-
shore gas and oil, by Don E. Lambert

U.S. Labor Department looks at the future of
gas and oil

How McCollum's new "gas gun" seismic system works,
by Harrison T. Brundage.

Four new rigs designed to start THUMSCO isle
drilling, by W.E. Durkee

JOURNAL OF GEOPHYSICAL RESEARCH, vol. 71, no. 11
September 15, 1966

Near-bottom currents measured in 4 kilometers depth
off the Baja California Coast, by John D. Isaacs,
Joseph L. Reid, Jr., George B. Schick and Richard
A. Schwartzlose

Hypsometry of ocean basin provinces, by H.W.
Menard and Stuart M. Smith

THESES:

Mineral correlations of some Eocene sandstones
of central California, by Elliott C. Morris.
Stanford University, PhD dissertation, 1962

The origin, distribution, and engineering char-
acteristics of surficial material in the San
Gabriel Valley, California, Shirley Mae Valencia.
1966. 1 map, 24 plates, 49 figures, 19 tables.
M.S. Thesis, on file at University of California
at Los Angeles.

Megabreccias and sedimentary structures of the
Plush Ranch Formation, northern Ventura County
California, by James Edward Kahle. 1966. 125
pp. 6 pls., 7 figs., M.A. Thesis, University of
California at Los Angeles.

TOPOGRAPHIC MAP PRICES CHANGE

The U.S. Geological Survey has announced new prices
on all of its maps, effective October 1, 1966. The
new list price of topographic quadrangle maps at
scales 1:24,000: 1:31,680: 1:62,500 and 1:63,360:
and 1:125,000 is 50 cents each. The list price of
topographic maps at a scale of 1:250,000 is 75 cents
each.

National Park and other special topographic maps are
individually priced. The Survey can provide a price
list of these maps upon request. All maps for areas
lying west of the Mississippi River should be ordered
from the Survey's Map Distribution Office, Denver
Federal Center, Denver, Colorado.

Discounts on orders amounting to \$20.00 or more at
the list price are 20 percent: on orders of \$100.00
or more, 40 percent is allowed.

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Volume 20

Number 11

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PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

December, + 1966

Number 12

ASSOCIATION ACTIVITIES

ANNUAL HOLIDAY DINNER DANCE

"Ahoi Mates!!!! Keep the Evening of Dec. 16 open!!!

The Annual Holiday Dinner Dance for the Pacific Section of A.A.P.G., S.E.G., and S.E.P.M. will be held this year in the Harbor View Banquet Rooms aboard the Luxury Liner "S. S. Princess Louise", located at Berth 236, Terminal Island, San Pedro, on Friday, December 16.

The Social Hour will be officially opened at 7:30 p.m. It will be followed by dinner served from 8:30 to 9:30 p.m. Carroll Wax and his Orchestra will provide music for dancing from 9:30 until 1:00 a.m.

This is your one big chance in a year to go dinner dancing in such plush surroundings for only \$8.00 per person. Make your reservations now by sending your check to Mr. Tom Wright, Standard Oil Company, P. O. Box 606, La Habra, California 90623.

COAST GEOLOGICAL SOCIETY

The Coast Geological Society met on October 18 at the El Cielito Restaurant in Santa Barbara. This ladies night meeting was attended by 45 members and wives.

Revised by-laws for the Society were voted into effect unanimously.. The slate of nominees for next year's officers were introduced by Jim Saunders, Chairman of the Nominating Committee:

President: Harry Nigle, Standard
Vice President: Carl Stehle, Jr., Vaca Oil
Secretary: Andy Jurasin, Continental
Treasurer: Jack Durrie, Tidewater

Following dinner, members and guests enjoyed an informative talk by Dion L. Gardner on "Oceanography and Science Aboard the "M. S. Seven Seas", the Floating Campus of Chapman College

COMING ATTRACTION: DECEMBER 19.....

The Evening Forum Meeting of the Pacific Section will be held in the Mobil Auditorium, 612 South Flower Street, Los Angeles, at - 7:00 P.M., December 19 -

Dr. W. G. Ernst, of UCLA, will speak on "Metamorphism of Franciscan Rocks, Central Diablo Range, and some Geologic Implications."

Dr. Ernst suggests that relatively high pressure, low temperature recrystallization required rapid accumulation of vast amounts of clastic material on oceanic crust - then swift uplift and erosion.

GEOLOGY OF NORTHERN CALIFORNIA

Geology of Northern California, Bulletin 190 of the California Division of Mines and Geology, has been prepared in compliment to the Geological Society of America, which held it's National Meeting in San Francisco in November, 1966. The bulletin consists chiefly of specially written summaries describing the geology of northern California and the geologic events that led to the distribution of rocks, faults, and mineral deposits. A new geologic map of the entire state included in the bulletin shows by different colors and patterns the major rock units and principal active and inactive faults. Also included are road guides for seven field trips conducted from San Francisco for the visiting scientists.

The 35 authoritative articles in the bulletin were prepared by geologists invited to contribute because of their special competence. These authors represent eight universities, four private companies, two State and two Federal organizations. Edgar H. Bailey, geologist with the U.S. Geological Survey, initiated the bulletin and served as its editor.

This 300 page book, Geology of Northern California, is for sale at a cost of \$6.00 per copy (plus 4 percent sales tax for California residents) from:

California Division of Mines and Geology
Ferry Building
San Francisco, California 94111

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DEADLINE FOR NEXT ISSUE-----DECEMBER 21.

COMING ATTRACTION: NOON LUNCHEON - JAN 5.....

Mr. HENRY H. NEEL, consultant, will speak on "Geologic Investigation for the proposed Metropolitan Water District Nuclear Desalting Plant."

The Professional Corner

REGISTRATION DEVELOPMENTS SINCE LAST EDITION

The chairman of the AIPG California Section Professional Status Committee, submits the following report. As registration developments of importance to all geologists in California are coming down to the wire, everyone should be up to date. If any readers have suggestions, wish more details or want current reports from time to time, they can contact any of the members of the committee, namely Rod Colvin, Hank Neel and Art Spaulding in the Los Angeles area; Bob Ortalda and Wes Bruer in Bakersfield; Bob Paschall and Lowell Garrison in Sacramento; and Elmo Adams in the Bay area.

As reported in the November issue, the registration situation in early October was chaotic. Assembly Bill AB 2680 (1965) whereby engineering geologists might be compelled to register with the Board of Civil and Professional Engineers had a mostly favorable hearing in September. An ad hoc committee of engineers completed preparation of a model chartering (incorporation) bill which will allow the registered engineers some measure of self-regulation if the bill is passed in 1967. It does not include any non-registered groups, such as geologists. The Jahns Committee report, carrying the recommendation that the City of Los Angeles support statewide registration, preferably through incorporation, was submitted to the city. The County of Los Angeles was preparing an SB 871-type registration bill for introduction in the legislature in 1967. Communications with the Association of Engineering Geologists were very poor, but somewhat better with some of the registered engineer groups. By October it had become apparent that imminent registration of geologists is no longer a possibility: it has become a near certainty.

AIPG California Section, which has been formally delegated to also represent the Pacific Section AAPG and the San Joaquin Geological Society in registration matters and which is doing its utmost to fairly represent all California geologists, directed this committee to attempt to unify all impending geological registration legislative efforts into one incorporation (chartering) bill. Accordingly, in the past two months, the following has been accomplished:

1. A model California incorporation bill was prepared, drawing heavily from the State Bar Act, SB 371 (as first amended), Warren Beebe's AGI-AIPG Model incorporation Act, and other sources.

- continued on Page 3 -

continued from Page 2 -

2. Assurances have been given that any registration bill in preparation by either the City or County of Los Angeles will now be a cooperative venture and that the AIPG California model incorporation bill will receive first consideration in the preparation of same.
3. The legislative chairman of AEG has agreed to work with AIPG on professional legislation.
4. Discussions with some registered engineers' groups indicate that their cooperation can be expected.
5. Efforts are currently being made to amend AB 2680 to exclude geologists and other earth-scientists from its provisions. Individual geologists can help in this effort by letter writing. Please contact members of this committee for details.

Wesley G. Bruer

NOON LUNCHEON - NOVEMBER 3

GEOCHEMISTRY AS AN EXPLORATION TOOL

Geochemistry has not played a major role in exploration thinking because current methods do not provide information quickly enough for developing plays. Experiments initiated in 1958 show that natural radioactive elements can be determined by gamma spectral logging. Using compact, high energy neutron sources to promote nuclear reactions, gamma spectral logging can be extended to stable elements. Thus, disadvantages now associated with geochemical exploration may soon be eliminated. This emphasizes the urgent need to establish the exploration significance of changing element concentrations.

Primary porosity commonly develops in high current energy, shallow water environments. In late Mississippian cyclothems of northern England, potash in clay is a function of environmental energy. Since non-illitic clays extract potassium from sea water, slow deposition rates associated with high energy, shallow environments probably favor potassium fixation. The molar ratio (K/Fe+Mg+Al) is an index of potash in clay because iron, magnesium and aluminum compete for the same clay lattice sites. Glauconite, an iron rich illite associated with slow sedimentation, is an end member of a continuous series. Consequently, iron in illite, or the Fe/K ratio, might be an index of deposition rate. Enrichment of trace elements contained in heavy minerals (e.g. Zirconium, thorium, phosphorus, titanium, boron, fluorine) could also indicate proximity to high energy environments because these minerals are concentrated in sands by repeated winnowing.

Many high energy, shallow environments are barriers separating water of different chemical potential. For example, restricted circulation on one side of a barrier may produce a low Eh and pH environment favorable for pyrite precipitation. Molybdenum, which is associated with pyrite in trace amounts, might serve to discriminate between environments on either side of a barrier. A barrier may also separate water of different salinity. Boron in illite, or some function of the boron/potash ratio in rocks has been proposed as a paleosalinity index which could be used to detect minor salinity changes across a barrier.

Recent investigations of boron in illite and rocks emphasize the problems associated with empirical interpretation of geochemical data. Studies of clay size fractions suggest that boron in the growing lattice of authigenic illite maintains an equilibrium with boron in sea water. Since boron in sea water is directly related to salinity, boron in illite is similarly related to salinity. Another view, based on whole rock analyses, holds that illite is detrital and inherits some of its boron. Additional boron, absorbed during deposition, is directly related to salinity and indirectly to grain size and the organic content of the sediment. If authigenic illite is enriched in extremely fine grained size fractions both interpretations could be correct. The complexity of the boron-illite relation could not have been demonstrated by an empirical investigation restricted to whole rocks. The need to apply theoretical geochemistry to exploration problems may be further illustrated by considering the inverse relation between %K₂O and the boron-potash ratio in illite revealed by constant environmental sampling. This relation could indicate contamination by other potash minerals. Previous work shows that boron substitutes for silicon and aluminum in the tetrahedral sites of the illite lattice. The small ionic radius of boron relative to silicon and aluminum, and its electronegativity relative to oxygen, suggests that bonding is largely covalent. Presumably four equal sp³ hybrid bonds are formed. In high potassium illites, ionic bonds link oxygens surrounding the boron to inter-layer ions: resultant repulsive forces between the charged oxygen ions must decrease bond stability. Lattice stabilization would be achieved if boron were replaced by a positive aluminum ion. Thus, a precise relation between boron and potassium is predicted due to decreasing boron stability with increasing potassium concentration. It follows that boron variation measures changing salinity because that part of the variation related to potassium can be calculated.

C.T. Walker
Department of Geology
California State College
at Long Beach

continued -

NORTHWEST GEOLOGICAL SOCIETY

The November meeting of the Northwest Geological Society was held at the Poodle Dog Cafe in Fife, Washington on November 9. Guest speaker was Dr. Norman Anderson, Chairman of the Department of Geology at the University of Puget Sound. Dr. Anderson spoke on the "New Look in Geological Education", giving a very interesting account of the development of a course in Geology which is coming into wide use at the High School level. The course was developed by a group of leading High School teachers and University Professors at the University of Colorado during the summers of 1964, 1965 and 1966 under a grant from the National Science Foundation.

The next meeting will be held December 6 at the Country Broiler Restaurant, S. 252nd Street and old Highway 99, 1 1/2 miles south to the intersection of 99 and State Highway 516 (the turn-off to the current north end of the Seattle-Tacoma freeway). The guest speaker is Distinguished Lecturer for the A.A.P.G., E.L. Dillon, and his subject is "Modern Geology Requires Modern Technology"

AAPG NATIONAL CONVENTION - - NOTES

Although a few months away, the big event of 1967 will be the National Convention, April 10-13. A few items to note on your calendar:

Program of Ladies Entertainment:

SUNDAY - April 9

Registration 10:00 A.M.

Ice Breaker Party
Biltmore Ballroom 5:30-7:30 P.M.

MONDAY - April 10

Reception 3:00-5:00 P.M.

California Wine Tasting Party
Renaissance Room
Biltmore Hotel

TUESDAY - April 11

Tour 9:00-2:00 P.M.

Universal City
Movie Studio

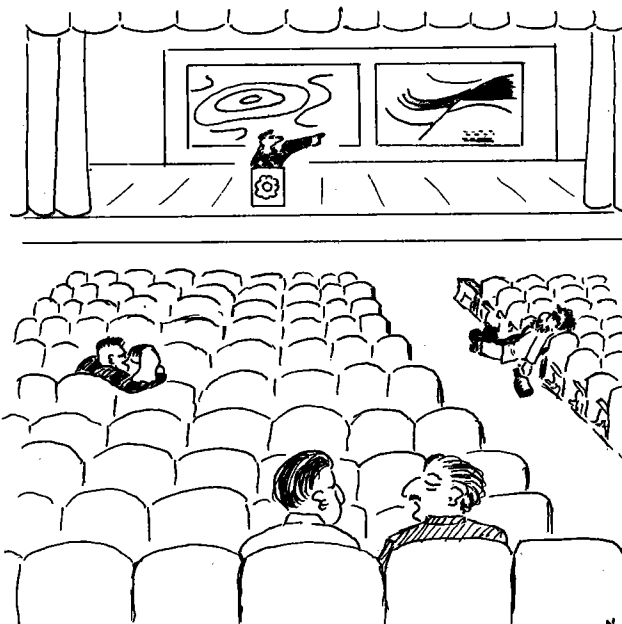
WEDNESDAY - April 12

Tour 9:00-3:00 P.M.

Mission San Gabriel
"The Queen of Missions"
Luncheon - Huntington-Sheraton Hotel
Visit Huntington Library - Art Gallery
- Botanical Gardens

Fiesta 7:00-12:00 P.M.

Dinner - Dancing and
Strolling on Olivera Street-
"A Bit of Early California"



WE COULD DOUBLE THE ATTENDANCE BY PUTTING FIVE MORE MEMBERS ON THE FORUM PROGRAM COMMITTEE, BUT I DON'T THINK THAT'S THE WHOLE ANSWER.

PERSONAL ITEMS

DR. DEAN KLEINKOPF has joined the U.S.G.S., as a Research Geophysicist with the Branch of Regional Geophysics, headquarters in Denver. He recently resigned from Standard of Cal in La Habra, Calif.

CORTEZ HOSKINS and LOWELL REDWINE, former geologists in the Atlantic Richfield Geologic Science Group at Anaheim, are now Research Associates in the Union Oil Company Research Department, Exploration and Production Research Division, at the Union Research Center in Brea, California.

MARV MANGUS, senior geologist with Atlantic-Richfield, is back in Anchorage after attending the recent GSA Convention in San Francisco.

VERN VIGOREN, Phillips geologist in Anchorage, got a moose on a recent hunting trip. He is currently looking for a book titled "100 ways to make moose-burger."

DON HARTMAN, Texaco geologist in Anchorage, came back from his summer field work on the Arctic Slope sporting an off-red gottee and mustache. DON also plays a flute in the Anchorage Symphony and says that "the flute playing goes better than ever."

BILL FACKLER, Phillips Senior geologist returned to Anchorage after a session of convention and vacationing in the lower 48. He attended both the AAPG & AAPG conventions in Denver, where he also co-authored a paper on Alaska before the AAPG group. Vacation time was spent in Minnesota and Michigan. Bill is a confirmed cold weather man and probably thought Denver was a little too far south.

GAR PESSELL, Atlantic-Richfield in Anchorage, was recently transferred from geology to geophysics. His philosophy must be "If you can't lick them - join them."

DON REYNOLDS, Union Oil Company, was transferred from Midland, Texas to Anchorage, Alaska. DON is Union's new District Exploration Geologist, replacing BOB SAUNDERS who was transferred to Bakersfield, California.

BIBLIOGRAPHY

U.S. GEOLOGICAL SURVEY

Bulletin 1198-E: Geochemical reconnaissance in the Pequop Mountains and Wood Hills, Elko County, Nev., by R.L. Erickson, A.P. Maranzino, Uteana Oda, and W.W. Jones \$1.00

Bulletin 1220: Terrestrial impact structures - A bibliography, by J.H. Freeberg. \$.70

Bulletin 1232: Bibliography of North American geology, 1962, by J.W. Clarke, G.D. Conant, Margaret Cooper, and others \$2.50

Bulletin 1234: Bibliography of North American geology, 1964, by J.W. Clarke, G.D. Conant, Margaret Cooper, and others \$2.75

Geophysical Abstracts 237, October 1966, by J.W. Clarke, D.B. Vitaliano, V.S. Neuschel, and others \$.35

Abstracts of North American Geology, September 1966 \$.45

Circular 525: Teconic creep in the Hayward fault zone, California, by D.H. Radbruch, M.G. Bonilla and others (reprinted) Free

Circular 533: Regional trends in water-well drilling in the United States

MAPS

HA - 235 Temperature of surface waters in the conterminous United States, By J.F. Blakely \$1.25

Map I-454: Geologic map and sections of the Zuni Mountains fluorspar district Valencia County, N. Mex, by E.N. Goddard \$1.00

Map I -469: Geologic map of the Kwiguk and Black quadrangles, western Alaska, by J.M. Hoare and W.H. Condon \$1.00

Map I -521: Geologic map of California, compiled by U.S. Geological Survey and California Division of Mines and Geology. Scale 1:2,500,000 (size 17 by 21 1/2 inches) \$.25

GEOLOGICAL SOCIETY OF AMERICA BULLETIN vol. 77, no. 9, September 1966

Geomagnetic polarity epochs: Pribilof Islands, Alaska, by Allan Cox, David M. Hopkins, and G. Brent Dalrymple

Petrography of the Faraway Ranch Formation, Chiricahua National Monument, Arizona, by Louis A. Fernandez, Jr., and Harold E. Enlows.

Evolution of the isotopic composition of Uranium and Thorium in soil profiles, by J.N. Rosholt, B.R. Doe, and M. Tatsumoto.

GEOLOGICAL SOCIETY OF AMERICA

Memoir 97: Handbook of physical constants - Revised edition, Sydney P. Clark, Jr., Editor. 588 pages, 218 tables, 91 figures, clothbound. (Member price \$6.00) \$8.75

Memoir 99: Geology of the Alaska Peninsula -- Island Arc and Continental Margin, by C.A. Burk. July 1966

Part 1: Text. 250 pages, 8 pages, 28 figures, 1 table. clothbound. (member price \$7.00) \$8.75

Part 2: Geologic map - 2 sheets, each 40 1/2 X 49 1/2 inches, scale 1:250,000 (member price \$5.50) \$8.00

Part 3: Tectonic map - 1 sheet 31 1/2 X 38 1/4 inches, scale 1:1,000,000 (member price \$2.50) \$3.25

Complete set: (member price \$15.00) \$20.00

Special Paper 85: Zeolites and zeolite reactions in sedimentary rocks, by Richard L. Hay, 1966. 130 pages, 10 figures, 8 tables, paperbound. (member price \$2.75) \$4.00

Treatise on Invertebrate Paleontology, Raymond C. Moore, Editor.

Part U: Echinodermata 3 (Asterozoans, Echinozoans) (member price \$14.00) \$18.50

CALIFORNIA DIVISION OF MINES AND GEOLOGY (Mail orders only from Ferry Building San Francisco)

Bulletin 190: Geology of northern California. Edgar H. Bailey, Editor \$6.00

(Note Plate 1 (\$.25) also sold as I-512 by U.S. Geological Survey)

GEOLOGICAL SOCIETY OF SACRAMENTO GUIDEBOOKS

1956 - Indian Valley region, Plumas County, Calif. \$1.00 (10 available)

1962 - U.S. Highway 40, Sacramento to Reno, Dixie Valley & Sand Springs Range, Nevada. \$3.50 (2 available)

1963 - Central portion of the Great Valley of California, San Juan Bautista to Yosemite Valley \$4.00 (45 available)

1965 - La Porte to the summit of the Grizzly Mountains, Plumas County, California \$2.75 (50 available)

1966 - Guidebook along the East-Central front of the Sierra Nevada. \$4.00 (75 available)

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