

PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Volume 20

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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

CALENDAR

- 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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AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

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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:

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|-----------|--------------------------|--|
| 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.

(Photos courtesy of Louis Simon)



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.

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 preempted 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.
 Welx
 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 south-western 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.

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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.