

PACIFIC PETROLEUM GEOLOGIST

1956

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- December "History of the Trinity River Project" Dr. William Gardner
"Wind Abrasion by Particles in Suspension" By Dr. Charles Higgins
"The 1955 Eruption of Kilauea Volcano, Hawaii" Dr. Gordon H. MacDonald

PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Vol. 10

January 1956

No. 1

ASSOCIATION ACTIVITIES

SAN JOAQUIN GEOLOGICAL SOCIETY

On Tuesday, December 6, the San Joaquin Geological Society held its monthly Dinner Meeting at the Hotel El Tejon. Robert L. Johnston, Western Gulf Oil Company, gave a very interesting talk on a "Geologic Reconnaissance of a Portion of the Eastern California Area". That portion of eastern California bounded on the west by Owens Valley and the San Andreas fault and reaching from the Inyo Mountains on the north to a point in the vicinity of Barstow on the south was included in Mr. Johnston's paper.

Physiographically the area falls into two natural provinces separated by the east-west trending Garlock fault. North of the Garlock fault the ranges exhibit a strong north-northeasterly lineament that is well developed further north in Nevada. South of the Garlock fault the surface relief is cut up into a random pattern of irregular smaller ranges.

The stratigraphic section consists of rocks only rarely encountered by the petroleum geologists working the Coast Range series. Four lithologically related rock divisions are found in the area. From the oldest to the youngest they are:

1. Archean of early pre-Cambrian age.
2. Pahrump of late pre-Cambrian age.
3. Paleozoic (including the Triassic of lower Mesozoic).
4. Tertiary.

Only small segments of this stratigraphic section are exposed in any one part of eastern California.

The basement rock, the Archean, is composed of highly metamorphosed marbles, schists, quartzites and gneissic material of an unknown thickness. Cores of several of the larger ranges are composed of this early pre-Cambrian material.

A strong unconformity separates the Archean from the overlying late pre-Cambrian or Pahrump series. Three formational members are generally assigned to the Pahrump; the Crystal Springs, Beck Springs and Kingston Peak. Composed predominantly of shallow water sediments showing cross-bedding, ripple marks and mud cracks, the Pahrump series is surprisingly little metamorphosed and resembles quite closely the general features of the overlying Paleozoic system.

A considerable thickness of clastics and carbonates assigned to the overlying Paleozoic system is separated from the Pahrump by another major unconformity. The base of the Paleozoic or Cambrian has not been established as yet, although most field workers are inclined to consider the light buff, limy, dolomite, the Noonday dolomite, as the basal member of this system. It forms perhaps the best lithologic marker in the eastern California area and appears to be readily correlative with the Reed Springs dolomite found farther north in the Inyo Mountain section. The overlying Johnny, Sterling quartzite and Wood Canyon formations of the Death Valley area comprise the remainder of the generally accepted lower Cam-

brian series. In the Inyo Mountains the correlative members are composed of the Deep Springs, Campito sandstone and the Silver Peak. Diagnostic fossils appear for the first time in the upper portion of the Wood Canyon and Silver Peak formations with the presence of the widely spread *Olenellus*. Middle Cambrian has been identified in the Nopah range as consisting of the Cadiz, Bonanza King and Corn Field Springs formations where the red-brown coloration of the Cadiz is in striking contrast to the light and dark banding in the dolomites of the Bonanza King and Corn Field Springs formations. The widespread Nopah formation marks the occurrence of the upper Cambrian section and is easily distinguished by the alternating smoky and creamy grey dolomites.

Ordovician rocks comprise one of the most easily recognized units in the area, being composed of the buff to pinkish Pogonip lime at the base and the overlying light grey Eureka quartzite which is in turn overlain by the dark grey Ely Springs dolomite. The overlying Devonian consists of the massive Hidden Valley dolomite and the strikingly banded limestone and dolomites of the Lost Burro formation. A considerable thickness of Mississippian lime is exposed throughout parts of the Death Valley area and the Inyo Mountain Range, forming bold cliff faces and canyon walls. The overlying Pennsylvanian resembles the Mississippian lithology being composed of massive to thin bedded, grey to buff limestone with local occurrences of coarse conglomerates. A rather surprisingly thick sequence of Permian is found locally developed in certain sections of the southern Panamint Range and Red Rock Canyon area.

The transition from the Paleozoic to the Mesozoic does not indicate a pronounced unconformity since the contact between beds of Permian and Triassic age along the east face of the Inyo Range gives evidence of no appreciable break.

A profound unconformity exists everywhere between the Tertiary section and the underlying older rock. The Tertiary itself seems to be divisible into two general units, the older being composed of more highly altered, more decomposed, more folded and faulted sediments and volcanics. Since definite dating of the Tertiary section is only possible in a few spot localities, the older Tertiary class is generally considered to range from Eocene through lower Miocene.

Late Tertiary sediments are characterized by being less altered and generally composed of more fine-grained lake bed material. The associated volcanic material is commonly seen as black, resistant basaltic interbeds or as soft, light grey tuffaceous deposits.

Two schools of thought are encountered in explaining the structural pattern of the area. One proposes the linear and blocky form of the ranges to be a result of normal faulting from tensional forces, while the other school believes the present land forms are superimposed on strong broad folds resulting from intense compressional forces.

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PACIFIC PETROLEUM GEOLOGIST

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NEXT DEADLINE JANUARY 26

COASTAL GEOLOGIC SOCIETY

On December 13th, Mr. D.B. Flynn of General Petroleum Corporation, addressed the monthly dinner meeting of the Coast Geologic Society held at the Montecito Country Club. His subject was "A Resume of Oil Exploration in Nevada". Mr. Flynn recently returned from Nevada after approximately two years as resident geologist for General Petroleum in Elko.

Mr. Flynn first gave a brief generalized picture of the geology and stratigraphy in Nevada with a chart showing the various formation nomenclatures in use for the Paleozoic rocks.

Earliest known exploration for hydrocarbons was probably undertaken in the Fallon area with some small gas production being found at very shallow depths from Tertiary rocks. No commercial quantities were ever produced, however. The exploration work from this beginning to the present day was traced and illustrated with charts showing the amount and types of exploration used by the major companies in Nevada.

In discussing Shell's recent discovery and development work in Railroad Valley, Mr. Flynn pointed out that though Shell has three producing wells about 2000' apart, they are producing from three different reservoirs. The "discovery well" is producing from Tertiary volcanics. The second well drilled is producing from Tertiary limestones and shales and the third successful well is producing from Paleozoic limestone. Despite the difference in the reservoirs, the great similarity of the oil in these three wells was noted. Several other wells drilled by Shell in this general area found no production at all.

Colored slides showing some of the geologic and geographic features of Nevada were presented at the end of the talk.

BAKERSFIELD PETROLEUM CLUB

Plans are being completed to form a Petroleum Club in Bakersfield. Temporary and permanent sites for the club are being selected and membership plans and club policies will be announced in the near future.

LOS ANGELES LUNCHEON MEETING

The monthly Luncheon Meeting was held at the Rodger Young Auditorium on December 1st, 1955. The speaker for the meeting was Dr. John McGill, Engineering Geology Branch, U.S.G.S.

Dr. McGill gave an illustrated talk on "Geology and the Residential Building Site". Two of the most serious problems encountered by the average citizen who chooses, develops and maintains a home site in southern California are erosion by surface runoff and slope instability. Both problems are fundamentally geological with weak and deformed rocks, high tectonic activity and semi-arid climate. The problems have been greatly aggravated since World War II because man-made changes in the natural setting, particularly by the unprecedented development of residential subdivisions in hilly and mountainous terrain. Unfortunately the real and potential dangers are not generally appreciated. The near-drought conditions of the past ten years have fostered a false sense of security among many contractors, realtors and buyers. The flood of 1952, though severely damaging, was minor by comparison with the floods of 1938, 1934, 1916, 1914 and 1891. Major floods are certain to occur in the future; their effects could well be disastrous for thousands of home owners.

The degree of erosion by surface runoff is related to the steepness and origin of the slope and to the nature of the underlying earth materials. Slopes of artificial fill embankments are by far the most vulnerable. Cuts in surficial materials are more easily eroded than cuts in bedrock, and natural slopes generally are the most durable. Uncontrolled drainage is not only a serious problem in its own right, but almost always is a major cause of slope instability. Unstable natural slopes are widespread in the high palisades and deep narrow canyons adjacent to the northern shores of Santa Monica Bay. Stability of cut slopes varies with the lithology and structure of the rocks. The most common and troublesome failures are bedding-plane slides involving cuts in clay shales.

In the examination of a residential building site the advice of a specialist is helpful but usually not essential. Probably ninety percent of the geological troubles encountered on home sites could be anticipated by a geologist who possesses a general background, some experience in applied geology and a generous helping of common sense.

NORTHWEST GEOLOGICAL SOCIETY

The Northwest Geological Society held its monthly meeting in Olympia, Washington on December 19th. Mr. Frank Elrod, the northwestern representative of Jack Ammann Photogrammetric Engineers, Inc., presented a color movie entitled "A New Look for Oil". This film gave an interesting demonstration of the application of aerial photography to structural geological mapping through the services of Geophoto, Inc.. Slides showing the various types of equipment and instruments used by the company, from the actual photography itself to the construction of controlled mosaics, base maps, and topographic maps, were also shown.

PACIFIC SECTION MEMBERS

All members of the Pacific Section who have not paid dues for 1956 are requested to do so at once. Payment of the yearly dues of \$2.50 entitles each member to purchase one copy of the Directory for \$1.00 instead of the regular price of \$3.00. Make checks payable to AAPG, Pacific Section, and send to Everett Pease, c/o Sunray Mid-Continent Oil Co., 714 W. Olympic Blvd., Los Angeles 15.

OFFICIAL PUBLICATIONS

The chairman of sales of official publications of the Pacific Section AAPG would like to announce that the 1951 publication of the South Sacramento Valley cross-section is no longer available.

Cross-sections still available are:

Los Angeles Basin
West Ventura Basin (including Channel Is.)
East Ventura Basin
Salinas Valley
North Sacramento Valley (1954)

CALIFORNIA GEOLOGIC MAP

Eight sheets of the new geologic map of California are now available in preliminary form. The eight sheets include: Death Valley, Long Beach, San Luis Obispo, Bakersfield, Los Angeles, Trona, Santa Maria, and Santa Ana. The scale is 1:250,000, on a topographic base prepared by the U.S. Corps of Engineers and the Geological Survey. Each sheet covers 1° Latitude and 2° Longitude and measures approximately 24" by 48". Each sheet is priced at \$1.00 plus tax and is currently on sale at any California Division of Mines office.

PERSONAL ITEMS

A mass exodus to the San Francisco Bay region by many Ventura geologists was noted over the Christmas holidays: Mike Jager of Richfield in Ojai spent Christmas in Berkeley; Bob Nesbit of MJM&M and Eric Phillips of Western Gulf, both of Ventura, managed to get to Walnut Grove and back over the holidays. Don Hendrickson, Richfield in Ojai, was not so successful, however - - his planned Christmas in Stockton was literally washed-out when the bilge pump and propeller on his car failed in high seas.

Bill (web-footed) Hughes of Texas Company in Santa Maria, managed to swim back to Santa Maria after a tour of duty in the Bay area. He claims an aqua-lung was part of his field equipment.

Hal Fothergill, Union in Santa Maria, has taken to wearing even more brilliant ties than usual since Union made their recent discovery near Boulder Creek. Santa Maria geologists are holding their breath for fear of another discovery, as Hal's ties can be classed as loud enough to silence an air raid siren. Maybe it's a case of the "tie that blinds".

General Petroleum's gift to the musical world, Rod Colvin of Santa Maria has been the featured vocalist at various church and social functions in and around Santa Maria lately. If you can promise him a good meal, we are sure Rod can be persuaded to perform for any worthwhile occasion.

Ken Myron, Texas Company in Santa Maria, recently spent a pleasant vacation golfing in Phoenix, Arizona.

Otto Hackel, Intex, Ventura, is currently vacationing in the Carmel-Monterey area.

Frank Wang, Western Gulf, Ventura, spent a busy two weeks vacationing in the East, including a stop in Cleveland for the Nuclear Congress, plus stops in Chicago, Pittsburgh, Cincinnati, with Christmas spent in New York. We are indebted to some kind soul from Miami who is reported to have helped finance Frank's return to Ventura.

Christmas parties for various geologic staffs in the Ventura area have been reported to have been howling successes. Richfield's Ojai staff and Standard's Ojai staff shared the Oaks Hotel facilities last week with no reported ill affects. Tidewater's geologic staff held their Christmas "Donnybrook" at the Officer's Club in Port Hueneme.

The petroleum group in Sacramento were well partied before Christmas with the Carl Helms' having an open house on Sunday, December 18th, and the A. H. Masarin's giving a cocktail party at the Del Paso Country Club on December 23, 1955.

Joy and Manuel Castro, Shell of Ventura, were recent guests of Las Vegas for a few days. We understand that it was so profitable for Manny that he isn't even going to try putting it on his expense account.

Ed Borglin, exploitation geologist for Union's Santa Fe Springs office has moved to Bakersfield.

Jack Barr, Standard Oil, has left Bakersfield for Seattle. He started north the Friday before Christmas, and his friends hope he rigged up the schnorkle tube on his MG sportcar before entering the flood areas.

Ed Marks, recently with International Petroleum in Peru has joined the Bakersfield Paleo department for Union.

Roy Miley, Texas Company in Santa Paula, apparently was offended by a recent note in the Pacific Section Newsletter which alleged that Roy took no part in any athletic endeavor. We stand corrected. Roy played a set of tennis recently.

Dick Stewart, Union Oil, Santa Paula, got caught in the floods in the Santa Cruz area during his vacation, but the weather was so miserable he decided it wasn't worth using as an excuse for not returning to work, so he is now back in Santa Paula.

Continental Oil Co. has a new geological trainee in their Bakersfield office. He is Richard A. Rodgers from Houston, Texas. He says he likes California just fine. Now isn't that nice of a Texan to say that?

Bob McConville, Signal Oil & Gas Co., Bakersfield, completed a triumphant football season by picking the most winning teams for the big games and won a new Ainsworth-Brunton compass from Earl Price & Co.

Union's E. Wilkinson has transferred from the Santa Maria office to the Bakersfield scouting department.

Merle Vance has joined the Land Department of the Western Gulf Oil Company in Sacramento. Merle formerly worked for the Union Oil Company in the Bakersfield area.

Doug Thamer has joined Bill Bauer in the Sacramento Office of The Texas Company. This will only be a winter assignment for Doug as come Spring it will be back to the hills of Nevada.

Ed Miller, Ohio, Ventura, is spending his vacation by his fireside, hoping the stork hurries with the usual. Seems all he can think of is that \$600 tax deduction for 1955 slipping away from him.

The Northern California Petroleum Round Table staged a stag cocktail party for the petroleum industry on December 20th at Scheidel's Restaurant in Sacramento. Bill McEachin and Swiss Holmes were co-chairmen for the affair. Approximately 60 men attended the get-together.

The Sacramento Valley was well represented at the recent meeting of the California Oil Scouts and Landmen's Association meeting in Bakersfield. Tom Wilson of Brazos and Swiss Holmes were appointed to act as representatives for Northern California for the coming year.

The oil companies were very lucky in the small amount of damage done to producing fields and drilling wells by the recent floods in the Sacramento Valley area. Brazos moved their rig off of the Brent No. 5 because of the danger of flooding. As a safety precaution, the Brazos gas wells on the south side of the Sacramento River were all shut in. Three of the wells in the greatest flood threatened area were disconnected so if surface installations were lost, the wells would not be damaged. The levees were soaked but held in the area of the gas fields.

Standard's geologist Al B. Scouler was recently awarded a large purple heart award for shrapnel wounds received in "operation woodsearch". It seems he was splitting wood and a piece of steel from the wedge or sledge pierced his shin bone.

Humble Oil and Refining Company found it necessary to shut down operations on the Parrott Investment Co. B-5 well because of high water as the area around the well was flooded.

Charley Guion, Humble scout, was returning from Chico Friday and was one of the last cars to cross over the Feather River on the Nicolaus Bridge before the bridge was washed out.

Superior's Bakersfield office has oil exploration whipped this year. At a recent Christmas party, Horace Harrington was presented with a genuine willow stick divining rod complete with a compass and horn which sounds automatically when over oil.

Jean D. Sentaur de Boue, Bakersfield consultant, has just completed a monograph of Miocene Invertebrate Paleontology of the Mt. Goddard quadrangle area. This paper is to be published by the Université de Lyon, France, and will be available about next Bastille day.

Bill Bauer traveled to Lodi on Friday the 23rd of December. It took Bill over 2 hours to travel the 36 miles. The water was over the highway for at least 10 miles of this distance.

Wally Taylor has been added to the Standard force in the Sacramento Valley. Wally will be taking over from Alan Johnston. Wally formerly worked in the development section in the Los Angeles Basin area.

The Petroleum Wives Christmas Dance at Danisio's in Sacramento was a great success with approximately 30 couples in attendance. The committee is to be congratulated for such a successful dance.

Jim Eke of the Union's Bakersfield Paleo department has been transferred to Santa Maria.

Ralph Arnold has just published a unique history of Pasadena, California. It consists of a compilation of over one hundred autobiographies of pioneers who lived in Pasadena prior to 1900. An article on the geology of Pasadena by Arnold is also included. The book, which is issued by A. H. Cawston, publisher, consists of 471 printed pages and 30 plates of pictures of early Pasadena people and scenes.

Bright-eyed Bob Paschall, or shall we say "Sleepy" Bob Paschall is the new hero of the Coast Geologic Society. Bob is the only man in the organization that has the ability to stand up and take a bow, while he and the rest of this year's officers are being introduced, then sit down and one minute later, jump up and demand of the new president, Otto Hackel, that he introduce the incoming officers. We like to think that Bob has his mind on geology, but those in the know claim that Bob has become very publicity conscious these days.

John H. Beach, Manager of Exploration, and H.V. Church, Jr., Chief Geologist for Oceanic Oil Co. are leaving to form a partnership with Ainsley Bell, formerly overseas Manager of Drilling for Drilling and Exploration Co.

The Beach, Church and Bell organization will continue in the petroleum exploration business with offices at their present location, 3120 18th St., Bakersfield, Phone FAirview 7-3021.

They will be retained by Oceanic Oil Co. to continue, for the present, to handle the projects initiated by them for Oceanic.

Ruth and Dan Sullivan, Conoco's Bakersfield District Geologist just recently toured Mexico - by train, of all things from Laredo, Texas to Mexico City and back. Anyone interested in an inexpensive vacation contact him, and he says the train ride was terrific.

Dick Palmer, geologist for the Texas Co., Bakersfield, has been transferred to the Division Office in Los Angeles.

D. M. "Mack" Robinson, geologist with the Alaska district of Shell Oil Company in Seattle, is in critical condition in the Sun Valley Hospital, San Fernando, California. He was found unconscious, apparently from carbon monoxide poisoning, in a motel on December 20th while on vacation. After being unconscious for about three days he is slowly starting to improve; however, he is still on the critical list.

Layton Stanton has taken over duties as coordinator of the Rocky Mountains and Canada for the Union Oil Company. By mid-summer, Layton should be a good one to consult on airline schedules between Los Angeles and Calgary, Denver, Billings and Casper.

W. G. Castle, chief spy for Richfield in the Coastal area, is being assigned to Richfield's office in the upper Ojai effective February 1st. Anyone wanting to buy a nice large house in San Fernando contact Mr. Castle.

George Lutz, Shell in Ventura, who was recently on temporary duty in Elma, Washington, is being transferred to Salt Lake City. If you're lucky, George, you may get to live in the next house you buy.....

Tex Leverett is being transferred from Santa Paula to Los Angeles to replace Harvey Lee as Chief Scout. Harvey will be Executive Assistant to the Vice-President. Jumping Joe Dockweiler, Union, Bakersfield, will replace Tex at Santa Paula.

Bob Spaulding, formerly District Geologist for Shell in Durango, Colorado, has been transferred to the Los Angeles office as Senior Geologist. Bob will replace H.J. Buddenhagen who has retired to his ranch on the Rogue River near Grants Pass, Oregon. Good fishing, Bud.

Russ Simonson, Ohio Oil Co., has been appointed Division Geologist replacing Bob Kurtz who will be on special assignment.

A.S. Holston has been transferred to the San Francisco office as Divisional Geologist for Tide Water Associated Oil Co. He has been replaced as District Geologist, Ventura, by H.M. Whaley.

Pat N. Glover, Shell, Long Beach, has been transferred to The Hague for a six month tour of duty. Bring back lots of pictures, Pat!

Rex Grivetti, Texas Company, Santa Paula, is spending a scintillating vacation moving into his new home in Ventura.

Tom Benson, Texas Company in Santa Maria, is vacationing in the mountains somewhere near Portland, Oregon. Seems Tom has designed some very brilliant light which permits him to ski night and day now.

NURSERY NEWS

To Cathay and Tom O'Neill of Shell Oil in Ventura, a son, Thomas Steven, born December 27th. Weight 5 lbs., 2 ozs.

The official name for the youngest Cate, born November 30th, is Randall Stuart Cate. Tom reports that he is growing like a weed. Do you mean Randall is growing like a weed, or that you are??

The Richard W. Vivions, Richfield, Bakersfield, are proud to announce the arrival of their 4th boy, Scott Douglas, born December 12th and weighing in at 8 lbs., 4 oz.

Conoco's Howard and Genevieve Semler, Bakersfield, welcomed No. 2 daughter Noreen Carol, 7 lbs., 13 oz. into their home on December 17th.

Kenneth S. Bishop, geologist with Continental Oil Co. in Olympia, Washington, and his wife, Patricia, have a new daughter, Karen Lee, born December 9th and weighing in at 9 lbs. 13 ozs.

The Texas Co. in Bakersfield has recently announced two new members of the diaper set: Andrew William, 7 lbs., 6-1/2 oz. arrived December 6th at the home of Jim and Margaret Learmont; and Ivan and Gloria Scherb were pleased to greet their first little girl, a redhead, Marie Lillian, 6 lbs., 12 oz. on November 30th.

BIBLIOGRAPHY OF RECENT PUBLICATIONS

SCIENTIFIC PUBLICATIONS- JOURNALS AND BULLETINS

United States Geological Survey

"Characteristic Jurassic Mollusks of Northern Alaska" R.W. Imlay, Professional Paper 274-D

"Geologic Investigations of Proposed Power Sites at Cooper, Grant, Ptarmigan, Crescent Lakes, Alaska" Bulletin 1031-A

"Pacific Slope Basin in California in 1953

"Surface Water Supply of Pacific Slope Basin in California in 1953," Part 11 Water Supply Paper 1285

Many new Quadrangle Sheets are now available for San Bernardino and Los Angeles Counties. U.S.G.S. new office address: Rm. 803, Post Office and Court House Bldg., Los Angeles.

Division of Mines, State of California

Eight sheets of new California Map are now available: Death Valley, Long Beach, San Luis Obispo, Bakersfield, Los Angeles, Trona, Santa Maria, and Santa Ana.

TRADE JOURNALS AND MISCELLANEOUS MAGAZINES

Oil and Gas Journal, November 14, 1955

"Why Was My Well Dry?" pp 143-159

Oil and Gas Journal, November 28, 1955

"Cambrian Pools Are Many Splendored Things", Frank J. Gardner, pp147

Journal of Petroleum Technology, December, 1955

"Oil Production-A Continuing Problem", John R. Suman, pp 10-12

"First Pacific Coast Permanent Drilling Island Modified to Allow Drilling of 70 Wells", E.E. Pyles, pp 13-16

CALENDAR

January 9, 1956: Mon., 7:30-9:30 p.m., Bakersfield Paleontologists Biostratigraphy Seminar, Harvey Auditorium Bldg., Visual Aids Section, Bakersfield College. "Use of Sedimentary Current Structures in Working Out a Paleographic Story" by John C. Crowell, U.C.L.A.

January 10, 1956: Tues., 7:30 p.m., The Coast Geological Society Dinner Meeting, Montecito Country Club, Santa Barbara, California. "The Oxnard Oil Field" by Mr. Robert Erickson, Standard Oil Company.

January 10, 1956: Tues., 7:30 p.m., Sacramento Geological Society, Board Room, Public Works Building, 1120 "N" Street, Sacramento, California. "Differential Thermal Analysis, The Correlative Tool Where Other Methods Fails" by Mr. George B. Mangold, Petroleum Engineers Assoc. Inc. of Pasadena and "Pictorial Tour of the Interior of Alaska" by Mr. E. R. Orwig, General Petroleum Corp.

January 12, 1956: Thurs., 6:30 p.m., Los Angeles Basin AIME Jr. Petroleum Group, Turf Club, Lakewood Blvd. and Anaheim-Telegraph Road, Los Angeles. "Oil Loans" by Mr. R. L. Hock, Vice-President, Citizens National Trust and Savings Bank and "Oil Securities" by Mr. L. Young, Investment Broker, Lester-Ryons and Co.

January 16, 1956: Mon., 7:00 p.m., AAPG Pacific Section Geological Forum, General Petroleum Auditorium, Los Angeles. "Structure and Stratigraphy of the San Joaquin Hills" by Mr. J. G. Vedder, U.S.G.S.

January 17, 1956: Tues., 8:00 p.m., Long Beach Chapter A.P.I., Shell Recreation Hall, Hill St. and Obispo Ave., Long Beach, Calif. "Prospecting for Oil on the Ocean Floor" by Mr. George Shumway, Geological Diving Consultants. Mr. Ronnie Cortes, Chemist, Experimental Laboratory of Shell Oil Co. Refinery, will give a demonstration of the items produced in the petrochemical field, entitled "Magic Barrel".

January 23, 1956: Mon., 6:00 p.m., Northwest Geological Society Meeting, Portland, Oregon. "Uranium in Oregon" by Mr. Hollis Dole, Director, Oregon Department of Geology and Mineral Industries. (Location of meeting to be announced)

January 23, 1956: Mon., 12:00 noon, AIME Petroleum Technology Group, Rodger Young Auditorium, 936 W. Washington Blvd., Los Angeles. "Displacement Logging" by Mr. R. K. (Tex) Hamilton, Division Manager, Halliburton Oil Well Cementing Co. \$2.25 including tax, tip and parking.

February 2, 1956: Thurs., 12:00 noon, Pacific Section AAPG, Luncheon Meeting, Rodger Young Auditorium, 936 W. Washington Blvd., Los Angeles. "Pegmatite Gems in Southern California" by Dr. Richard H. Jahns, Professor of Geology, Cal. Tech. \$2.00 including tax, tip and parking.

February 6, 1956: Mon., 7:30-9:30 p.m., Bakersfield Paleontologists Biostratigraphy Seminar, Harvey Auditorium Building, Visual Aids Section, Bakersfield College. "Stratigraphic Significance of Mixed Biofacies" by Mr. J. W. Valentine, University of California.

February 7, 1956: Tues., 6:30 p.m., San Joaquin Geological Society Dinner Meeting, Hotel El Tejon, Bakersfield, "Eocene Symposium" by Richard B. Palmer, The Texas Co. and Jim Bigelow, Western Gulf Corp. Mr. Robert B. Hutcheson, Superior Oil Co. will act as moderator.

February 7, 1956: Tues., 6:30 p.m., AIME San Joaquin Valley Chapter Dinner Meeting, Stockdale Country Club, Bakersfield. Speaker and subject to be announced.

February 10, 1956: Fri., 8:00 p.m., The Petroleum Wives Club of Sacramento is sponsoring an informal Valentine's Dance at the Capitol City Motorcycle Club House in Sacramento.

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PACIFIC PETROLEUM GEOLOGIST

NEWS LETTER OF THE PACIFIC SECTION AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

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February 1956

No. 2

ASSOCIATION ACTIVITIES

LOS ANGELES LUNCHEON MEETING

Carl H. Savit, Chief Mathematician of Western Geophysical Company, presented a very interesting talk at the A.A.P.G. monthly Luncheon Meeting held at the Rodger Young Auditorium, January 5, 1956. Mr. Savit spoke on "Italy-The Future Oil Reservoir of Europe".

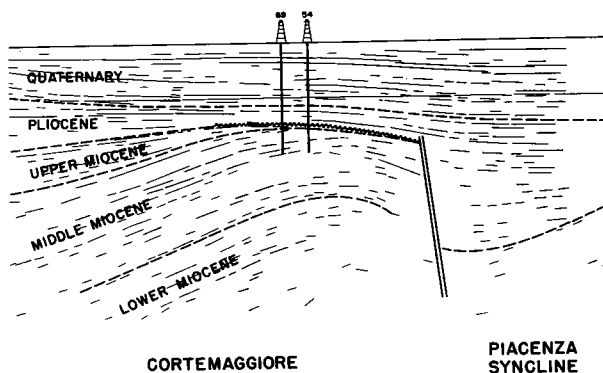
More than two thousand years after the first commercial oil production in Italy, that nation is on the threshold to becoming a major oil producer. Developments in the year 1955 portend the conversion of Italy into the chief oil producer of free Europe.

Commercial production from seeps and hand-dug pits in several sections of Italy started in Roman times, was intensified in Renaissance times and continued to the late 19th century. Modern oil production began about 1866 with the world's "second" drilled producing oil well near Tocco in Abruzzi. The first commercial production of any consequence was brought in in 1882 for 50 b/d at Salsomaggiore in the province of Parma.

Major exploration programs got under way after 1923 when the Italian Government entered the picture. The government oil company, AGIP, began gravimetric surveys in the Po Valley and drilled some 30 wildcats on locations determined from these closely controlled surveys (some 90,000 stations in an area of 16,000 sq. km. supplemented by magnetic, electrical, and seismic refraction data). The net result was one marginally commercial gas field. An additional small gas field was brought in by private interests in the 1930's.



INDEX MAP OF RECENT ITALIAN DISCOVERIES



NORTH-SOUTH SEISMIC CROSS SECTION OF CORTEMAGGIORE

Reflection seismic work in the Po Valley began in 1940, was interrupted by the war and resumed in 1946. By 1948, drilling had resumed in earnest and resulted in eight important gas fields being discovered from the first eight seismic structures tested. Major gas production has resulted from the development program in the Po Valley. Only one oil field of any importance, Cortemaggiore, has been found to date in that region. Production is approximately 3,000 b/d of 60° gravity oil.

The fields of the Po Valley produce from porous Pliocene-Upper Miocene sands in well defined anticlines, with axes generally trending northwest-southeast. Quaternary sediments unconformably overlie the Pliocene over much of the valley. In much of the area the Pliocene, in turn, unconformably overlies the Miocene sediments. Surface indication of producing structure is invariably absent.

The past year has seen an abrupt shift of interest to the areas of Abruzzi and Marche on the central Adriatic coast and to Sicily. The Gulf field at Ragusa in Sicily is currently producing 6,000 b/d of 19° gravity crude with reserves estimated at about 157,000,000 bbl. A gas discovery in the past few weeks in the same region promises further commercial development.

Petrosud's Cigno #1 in Abruzzi was brought in with production of 35°-40° crude from fractured Miocene limestone at 500 m. early in 1955. September brought a rash of discoveries in the same area. SOMICEM (a government company) brought in Valle Copa #1 within sight of the Cigno discovery from 500 m., also in Miocene lime. The two discoveries are separate fields. Within two days after the Valle Copa announcement Petrosud announced Cigno #2 producing from 2,300 m. from what is reported to be Jurassic lime and SOMICEM announced the Casal Bordino discovery some 60 km. to the southeast producing from the lower Cretaceous at 3,000 m.

All of these wells are shut down pending passage of a new petroleum law. Production test figures are not available at this time. All available information indicates, however, that the four discoveries represent major fields of light crudes.

The highly folded and faulted overthrusts of the Appennines are extremely complex. This complexity extends to the Young Tertiary fore deep

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along the Adriatic coast which contains at least two major overthrust sheets. Both surface geology and seismic interpretation are further complicated by gravitational sliding of shale formations and overlying limestones from the highlands. Sliding has involved masses of sediments ranging in size from the very small to blocks several miles in extent. Sliding continues to the present time. Problems of seismic exploration in Italy are many, ranging from the extremely dense culture to shot hole drilling problems in the coarse limestone gravels of the river valleys. While the Central Po Valley is almost identical in geology and operational conditions to the central valley of California, the rest of Italy offers many unique and intriguing conditions calling for the most modern equipment and for ingenuity and perseverance in interpretative technique.

The presence of major oil accumulations in many areas and in various parts of the geologic section of Italy together with an abundance of structural traps offers promise of a great future for an oil producing industry in the land of the Romans.

SAN JOAQUIN A.I.M.E.

The San Joaquin Chapter of the A.I.M.E. will hold a dance on Friday, March 2, 1956 at the Bakersfield Country Club. The affair will be semi-formal with admission at \$7.50 per couple. Cocktail hour at 8:30 p.m. and dancing to begin at 9:00 p.m. A breakfast will be served at 1:00 a.m. Tickets can be obtained from Lev. Sacre, Carl Leidecker, Herb White, Doug Taylor and Army Kane.

NORTHERN CALIFORNIA GUIDE BOOKS

The Northern California Geological Society has a few remaining copies of the Capay-Wilbur Springs Guide Book and the Mt. Diablo Syllabus which sell for \$2.50 and \$1.50 respectively. Anyone interested in the purchase of these guide books please contact Mr. Hershell Driver at the Standard Oil Company, 225 Bush Street, San Francisco 20.

LOS ANGELES FORUM MEETING

On Monday, January 16, the Los Angeles Geological Forum met in the General Petroleum Auditorium. The speaker for the evening was Mr. J. G. Vedder, U.S.G.S., Claremont, California, who gave an excellent talk on "Structure and Stratigraphy of the San Joaquin Hills, San Juan Capistrano Area".

The San Joaquin Hills-San Juan Capistrano area lies at the southeast margin of the Los Angeles Basin and includes a roughly triangular area extending from the mouth of the Santa Ana River down the coast to San Clemente and thence north to the Santa Ana Mountains foothills east of El Toro Marine Air Station.

The major structural features are the complexly faulted anticline of the San Joaquin Hills proper and the Capistrano syncline to the east. Three large faults occur within the area. A large zone paralleling the coast from Newport Lagoon to Laguna Beach has been named the Pelican Hill fault zone. A large middle Miocene fault in the San Joaquin Hills proper which also trends in a northwest direction has been called the Shady Canyon fault. The Cristianitos fault parallels the east margin of the area.

The stratigraphic sequence in the San Joaquin Hills area ranges in age from Paleocene to late Pleistocene and is composed of a series of marine and non-marine sedimentary rocks which are, in part, cut by igneous intrusive rocks.

Both the Silverado formation of Paleocene age and the Santiago formation of Eocene age crop out in an up-faulted block extending along Shady Canyon to Sand Canyon Reservoir at the north margin of the hills. Each of these formations contains both marine and non-marine strata.

The non-marine Sespe formation conformably overlies the Santiago formation. The contact is gradational. No fossils have been found in the Sespe, but it presumably ranges in age from late Eocene to early Miocene.

Conformably overlying the non-marine Sespe formation is the marine Vaqueros formation which in turn is overlain by the Topanga formation. The contact is gradational. In the northwest portion of the San Joaquin Hills the Topanga has been subdivided into three units. Southeast of Laguna Canyon the Topanga formation has not been subdivided. All rocks younger than the lower unit of the Topanga formation contain varying quantities of Catalina schist debris indicating a western source area for at least part of these sediments. The Topanga thins rapidly from west to east.

A series of middle Miocene dikes, sills and flows occur in the San Joaquin Hills proper. These igneous rocks may be separated into three types: diabase dikes and sills, andesite flow breccias, and shallow andesite sills and dikes.

The San Onofre breccia unconformably overlies the Topanga formation and is locally contemporaneous with the upper part of the Topanga. Two types of San Onofre occur in the San Joaquin Hills: the non-marine breccia with an earthy matrix and shallow marine breccias with a sandy matrix. The upper portion of the San Onofre is locally interbedded with Monterey shale indicating contemporaneous deposition.

Unconformably overlying the older rocks along the west margin of the Capistrano syncline is the Monterey shale. The Monterey also occurs along the coast between Newport Lagoon and Laguna Beach and along the east margin of the map. The Monterey shale grades laterally into Puente-type lithology in the subsurface west of Newport Lagoon and in outcrop at the northeast margin of the area. The Monterey shale ranges in age from middle to late Miocene.

The Capistrano formation unconformably overlies the San Onofre breccia and Monterey shale along the west flank of the Capistrano syncline and is also present in the central and eastern portions of the