boundaries are transgressed by Tertiary basins and structures. Scanty, localized data from diving and bottom sampling have been published. The area is largely a plain of Recent deposition concealing significant rocks by "overburden." Oil companies map in overburden areas by core drilling and seismograph as effectively as in alluviated areas onshore. Limits are placed on penetration of exploratory coring by the agency in control, except on lessees on their leases. Companies' activities and expenditures permit some "geology by inference."

Early development was by extension of onshore production. Laws hampered exploratory drilling in the absence of "drainage." By stretching the drainage concept, there was exploration, albeit unrewarding, of offshore folds traced up-plunge seaward, particularly in the Santa Barbara region. Belmont and West Newport Offshore were the only really new features of commercial value discovered before liberalization of State law in 1955. Subsequently, drilling has disproved two attractive structures in the Los Angeles basin but has discovered four oil and five gas fields in the band of folds and fault slices along the Santa Barbara coast. Are there other prospects in this band, in the Ventura basin Pliocene west of Rincon, or in the Miocene and Sespe west of Montalvo? Will Santa Monica Bay produce where not crossed by shallow basement and will features in the Los Angeles basin on south to San Diego be attractive prospects? The answers to many of these questions are already locked in company files, and surely many are favorable.

North of Point Conception, geology by bottom samples and "inference" points up the following areas:

1) Santa Maria and Pismo basin extensions;
2) Tertiary basin between the Farallon granite ridge and the San Andreas;
3) San Andreas rift zone and land west-northwest of Point Arena;
4) Adjoining the basement rock area near the Klamath River;
5) Between Cape Blanco and the Olympic uplift where Pliocene and Miocene is established by samples and cores and structures by seismic surveys.

Test wells have been already drilled off northern California and others will be drilled off Oregon next summer.

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INTER- AND INTRA-SEQUENCE FAUNAL DISTRIBUTION PATTERNS IN THE SACRAMENTO VALLEY CRETACEOUS

The Cretaceous stratal succession of the Sacramento Valley, California, includes 5 unconformity-bounded sequences designated, in ascending order, Sequences A through E (Peterson, 1964). All are present on the western side of Sacramento Valley. Northward, in the Ono area, Sequences A through D crop out, but at nearby Horsetown only B and D are present. The Redding succession includes Sequences D and E, but at all other exposures on the eastern side of Sacramento Valley, only E is present. Each sequence is almost entirely clastic and wedge-shaped, with the thickest portion toward the west and the thinnest toward the east. Each sequence oversteps the underlying stratal units toward the east where, except for C, each rests on rocks of the Nevadan complex.

Each sequence contains an essentially discrete assemblage of larger marine invertebrates (dominantly Mollusca), having in common only a few species with those either subjacent or suprajacent. Within each sequence, faunas are further distributed so that almost all megafossils occur in the eastern and basal portions; the western portions thus contain few megafossils except near the bases of A and D. The *Buchia crassicollis* fauna and the *Hertleinites aguila* and *Shasticrioceras poninte* zones occur in Sequence A of Neocomian age. Sequence B, of late Aptian and Albian age, contains the *Gabbioceras wintunium*, *Acanthohopiites gardneri*, *A. reesidei*, *Leconteites lecontei*, *Beudanticeras hulenense*, *Oxytropidoceras packardi*, and *Mortoniceras hulenanum* zones. Sequence C, of Cenomanian age, contains an unnamed fauna. Sequence D, of Turonian age, contains the *Glycymeris pacificus* fauna, and Sequence E, of Senonian age, contains the *Glycymeris veatchii* fauna. The bases of A, B, and D (and possibly all) are temporally variant and transgressive from west to east.

Apparently these 5 sequences, together with their distribution and thickness relations, discrete faunas, intrasequence faunal distribution patterns, and age relations, are the physical and biostratigraphic manifestations of 5 successive transgressive-regressive episodes and probably are related to diastrophism generated toward the east.

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RELATIONSHIP OF BIG PINE, SAN GUILLERMO, AND OZENA FAULTS, NORTHWESTERN VENTURA COUNTY, CALIFORNIA

The Big Pine, San Guillermo, and Ozena faults are interpreted to have experienced significant strike-slip movement. The San Guillermo and Ozena faults are northwest-trending, southwest-dipping, high-angle reverse faults that once formed a continuous trace. This trace has been offset left-laterally about 8½ mi. by post-middle Pliocene movement on the ENE-trending, essentially vertical Big Pine fault (a possibility suggested by Hill and Dibblee, 1953). Prior to being offset, the continuous San Guillermo-Ozena fault experienced at least 3½ miles of right (?)-lateral movement in late Tertiary time.

The case for the San Guillermo-Ozena fault correlation is based on the following criteria.

(a) Both the San Guillermo and Ozena faults have the same general trend, are high-angle reverse faults, and juxtapose the same general stratigraphic sequences near their junctions with the Big Pine fault: SSW-dipping lower Eocene marine strata on the hanging wall against Miocene-Pliocene continental strata on the footwall.

(b) Two additional correlative geologic features, a unique fault and a facies contact, intersect the Big Pine fault, and their offsets are compatible with the San Guillermo-Ozena fault correlation. Southwest of each fault in its respective locale are (1) a paralleling auxiliary fault containing a rhyolite intrusive found only in and around the auxiliary fault and (2) a facies contact within the Eocene section where the Juncal Formation is overlain by the Matilija (?) Formation.

(c) Projected upward, the facies contact and the San Guillermo and Ozena faults intersect, forming a line which pierces the upward projection of the Big Pine fault in each locale. A calculated net slip of 8.5 miles in a direction that pitches 6° southwest along the Big Pine fault has raised relatively the south block, yielding a 4,700-foot dip-slip component. This explains minor stratigraphic differences around each fault.

(d) Subsurface data show at least 3½ miles of lateral displacement along the Ozena fault and require the existence of an offset portion. The San Guillermo fault is the only logical correlative.