Yaquina River sediments are poorly to well sorted, angular to subangular, and range in grain-size from silt to coarse sand. Sediments within the bay range in size from silt to medium-grained sand, are angular to subangular, and are poorly to well sorted. Beaches and dunes consist of well-sorted fine sand. Well-sorted, fine detrital sand covers the inner continental shelf (0-50 fms.), and grades laterally into poorly-sorted, glauconite-rich, clayey silt on the outer shelf (50–100 fms.). Clayey silt with small amounts of Foraminifera, radiolarians, diatoms, and sponge spicules covers the continental slope. Silty clay is predominant at the base of the slope of the abyssal plain (1,500 fms.).

From an areal standpoint, the beach, dune, and inner-shelf sediments are more uniform than those of the river, bay, outer shelf, and upper slope. Beach and dune sediments are best sorted. Within the bay, sorting is better toward the coast line. Most river and bay sediments are positively skewed; beach and dune sands mainly are negatively skewed. Offshore, the median diameter generally decreases with depth, and sorting becomes poorer. Skewness is negative for the inner-shelf sediments, positive for the deposits of the outer shelf and continental slope, and negative for abyssal-plain sediments.

Similarities of texture and fauna of Recent sediments with those of middle and late Tertiary rocks in the area indicate that comparable textural trends existed.

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SOUTHERN CALIFORNIA AND OFFSHORE TERTIARY BASINS

The pattern of southern California Tertiary basins has been formed, changed, and controlled by the trends of many major lateral faults. Their dominant northwest-southeast trends are interrupted by an ancient belt of east-west lateral faults which also caused basins to form across the region.

The structural pattern and, therefore, the erosional and depositional patterns were changing almost continuously during the Tertiary. Broad Eocene land and sea features were broken up by regional emergence and block faulting during the Oligocene. However, the general structural pattern lasted into early Miocene, when regional submergence began. Regional transgression continued through Miocene time, with few interruptions, over an increasingly irregular terrane formed by a developing complex fault-block pattern of basins and ranges. Great reversals of vertical relations between blocks and great lateral offsets occurred through Miocene and Pliocene times. Many islands or high land masses, deep embayments, and basins were formed at different times only to founder or be broken up. The depositional areas and types varied greatly and constantly with most of the coarser clastic sediments being deposited as submarine slides and turbidites.

New general block deformation ended the Miocene, and the Pliocene began with a different pattern of emergences, although many existing basins were deepened. Marine sediments of the entire region, because of this rapidly changing geography, were mostly coarse clastics derived from land; lithofacies became increasingly divergent and restricted. However, thick organic deposits were formed over large areas during times of greatest submergence in middle and late Miocene times. Considerable non-marine deposition occurred in coastal as well as interior valleys through Tertiary time except during early Pliocene. Most of the Tertiary basins were similar to those of the present. Even the ecology of some Tertiary basins is similar to that of modern basins, including the Gulf of California and the Imperial Valley.

The comparatively meager subsurface data from the 15,000-square-mile area offshore indicate that the same structural, erosional, and depositional histories took place there in the Tertiary as in the Tertiary basin region now emerged onshore. Offshore structural features are much less eroded or obscured, and sediments there are generally finer, thinner, and more organic.

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MIOCLINES IN SPACE AND TIME

Many continental margins are capped by wedge-shaped prisms of Cretaceous to Recent shallow-water marine strata. These prisms were deposited on downflexing continental margins, presumably subsiding because of regional isostatic compensation caused by the growth of adjacent continental-rise prisms. The writers equate these continental-terrace wedges with miogeosynclines of the past, which are wedge-shaped as now preserved and which probably were never synclinal in form—hence the shortened term "miocline." Modern mioclines thicken toward the ocean and terminate by "thickening-out" against water at the continental slope; it is presumed that ancient ones did also. Ancient mioclines thicken toward, and abut, a deformed eugeosynclinal lithofacies. These are interpreted to be collapsed continental rises deposited synchronously with the adjacent miocline and later accreted to the continent.

Mioclines probably have been formed by marginal sedimentation throughout geologic history, the outer limits being former continental boundaries before the accretion of new fold belts. The Appalachian miocline may be one Paleozoic example and the Millard miocline of the western United States may be another. More speculatively, Precambrian examples of mioclines may be the Huronian metasedimentary sequence abutting the Grenville fold belt in Canada and the Witwatersrand Series in South Africa.

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GRAVITY SURVEY AND ANALYSIS OF SAN DIEGO EMBAYMENT, SOUTHWEST SAN DIEGO COUNTY, CALIFORNIA[1]

A reconnaissance study of the San Diego, La Jolla, and western one-thirds of the El Cajon and Jamul 15-minute quadrangles was conducted to determine the depth to basement, using gravity meter, available well data, and surface geology. A Worden gravimeter was used to occupy 368 stations with ½-mile spacing; drift, latitude, and elevation corrections were made; basement-sediment density contrasts range from 0.3 to 0.5 mgals.

Geologic units and gravity contours trend north-northwest as do the Peninsular ranges. Anomalies over areas underlain by batholithic rocks range from −6 to −26 mgals. Irregularities and small closures occur along the belt of dense ($\pm$2.85 gm./cc.) Santiago Peak

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