shows moderate amounts of different sedimentary rock fragments, no relation between size and roundness, and different degrees of roundness in the same size grade. All these features indicate the possibility of their derivation from preexisting rocks. To resolve the problem of origin of roundness, *i.e.*, "eolian" versus "inherited," size analyses of the rounded and well-rounded grains, assumed to represent the airborne fraction, yield a mean size of 0.466 ϕ. This value does not correspond to the size of the airborne load, as specified by Bagnold, nor does it correspond to the grain-size characteristics of the bimodal sands that are residuum in the eolian process. Thus the roundness of the Krol sandgrains is not from eolian action but is caused by the derivation of the sand grains from preexisting sandstone. In addition to the presence of glauconite, their close association with intraclastic, oolitic, and pelletiferous carbonate rocks indicates a shallow-marine origin for these sandstone beds.

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Geomorphology of Reef Complexes

Quaternary reef complexes are primarily Darwinian oceanic or shelf reefs on slowly subsiding foundations. "Glacial control" of reef morphology has been important, but not in the sense that Daly visualized. Corals dated by the uranium-series method prove that many, perhaps most, reefs were not truncated at the low sea levels of the last glacial age. Dates from such scattered and classic reef localities as Western Australia, the Tuamotu Archipelago, Eniwetok Atoll, the Florida Keys, the Bahamas, and Barbados demonstrate that reef limestones and eolianites can be emerged for 100,000 years or more, several hundred feet above the glacially lowered sea, without being dissolved away. The permeability of reef frameworks is the major reason for their durability under subaerial tropical weathering. Although Pleistocene and older reefs were not eroded to sea level during glacial ages, the extensive drowned karst topography on them, as identified from Florida, Bermuda, the Bahamas, and the Marshall Islands, probably has been a primary control in the postglacial evolution of modern reef complexes.

Reef growth probably was not suppressed, in the tropical Pacific at least, during glacial low sea levels. Recent calculations of the change in O^{18} isotopic composition of seawater by continental ice sheets minimize the effect attributable to cooling of the sea surface. The central Pacific was neither too cold nor too turbid for coral-reef development even during a full glacial age. Pelagic carbonate productivity in the equatorial Pacific actually increased during glacial ages, and it is likely that reefs flourished on the exposed flanks of emerged atolls. The steep flanks of reef-rimmed Pacific islands and atolls may provide evidence by which we can measure the true Pleistocene fluctuations of sea level, and thereby infer the amount of Quaternary warping of continental shelves.

The concept that postglacial sea level higher than the present is necessary to cause modern reef morphology needs to be rigorously reexamined. Rather than being relict from a "10-ft stand of the sea" a few thousand years ago, modern reefs show every indication of being in dynamic equilibrium with the forces that now act on them. Modern reef-building organisms have reoccupied the weathered surfaces of reef limestones that have been exposed for nearly 100,000 years and have veneered the tops of ancient atolls or eolianite dune fields. As the postglacial rise of sea level has approached its present level, upward growth has slowed and reefs have expanded laterally to resharpen the precipitous upper slopes of eroded ancient platforms. Primary productivity by reef builders is generally adequate to keep pace with rising sea level but, at several localities, atolls were "drowned" and have not reached present sea level and may be in the process of being preserved.

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Recent Braided-Stream Sedimentation, South-Central, Alaska

The Scott Glacier outwash fan, in the Copper River delta area, Alaska, shows a progressive decrease in grain-size and slope away from the glacier terminus. Bar and channel morphology change systematically from proximal to distal areas.

Detailed study along a 12-km tract shows that average clast size on bar surfaces decreases downfan from 30 to 3 cm, and slope decreases from a maximum of 15.5 m/km to 2.0 m/km. Upstream, bars are present between channels in sheetlike deposits; downstream, bars are present largely in mid-channel. Bars are composed of poorly sorted, well-imbricated coarse to fine gravel and plane-bedded, better sorted sand. Plane-bedded sand is more abundant in distal areas and may be capped by small-scale cross-bedding.

Cobble and pebble imbrications are the most persistent and reliable indicators of flow direction. Modal dip direction is upstream with long axes transverse to current flow. Other directional features measured included lineations, ripples, bar slipfaces, and logs. Linear stripes of large pebbles, which are oriented transverse to flow direction (determined from pebble imbrication) and occur in groups on bar surfaces, are interpreted as relict antidune bedforms.

Most deposition, which occurs during high-water stages, takes place on bar surfaces under upper flow-regime conditions. Flow separation along bar edges allows avalanche slipfaces to form. During low-water stages, when flow is mostly confined to channels, lateral erosion removes bar deposits and some channel deposition occurs under lower flow-regime conditions.

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Triassic Carbonate Buildups of The Dolomites, Northern Italy

In the Middle Triassic of the Dolomites of northern Italy thick carbonate bodies (1,000 m) of relatively restricted extension are surrounded, and in places covered, by volcanic rocks and clastic sediments. These bodies, characterized at the periphery by inclined beds dipping basinward (15-35°), are formed by massive carbonates, mostly crystalline dolomite (Schlern Dolomite); in many places the massive facies is replaced laterally by stratified carbonate rocks. Organisms in the massive dolomite are uncommon (some corals, a few pelecypods and crinoidal plates) and poorly preserved; in the massive limestones and in the bedded carbonate rocks, calcareous algae, crinoids, mollusks, rare corals, foraminifers, and ostracods are present. The central part of the buildups lies directly on a biostromal blanket dolomite (Serla Dolomite) which extends throughout the region. A sequence of cherty micritic limestone (Livinallongo Formation) in places nodular or bitumi-