ment beneath the coastal-plain strata. The continental rises are formed by a seaward-thinning wedge of sedimentary strata inclined nearly parallel with the sediment-water interface ($<1°$).

However, development of the two continental margins differs. Sedimentary strata of the northwest African margin are deformed by intrusive bodies and by structures which resemble horsts and grabens. An extensive offshore Triassic and/or Aptian salt-dome province extends from Morocco to Senegal. The eastern Canary Islands and the Cape Verde Islands are a strongly folded Jurassic through Eocene fold belt. Sedimentary strata of the Hatteras margin, in contrast, are relatively undeformed except for structures which can be explained by massive rotational slumping and gravitational gliding. The sedimentary strata of neither continental slope nor rise show the effects of compressive stresses expected in models of sea-floor spreading by convection currents that turn downward at the continental margins.

Thus, the opposing continental margins investigated are not mirror images as might be expected if the two margins had been joined and then had separated and had undergone parallel development. Although much of the stratigraphic framework of the two continental margins appears to be similar, their development differs.

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Arctic Margin of Canada

Recent investigations have added to knowledge of the northern margin of Canada and the structure of the Arctic Ocean. The geosynclinal belt rimming the North American craton has been deformed with a sequence and style of tectonism that in Paleozoic time were generally similar to those of the Appalachians and the Brooks Range, whereas the later history bears a resemblance to that of parts of the northwest cordillera.

Problems remain with regard to the possible extension of the geosynclinal belt and structures at each end of the present exposures in the Arctic archipelago. At its west end the belt trends beneath the continental shelf toward the Canada Basin; the magnetic and gravity patterns over the shelf and continental slopes are not clearly related to known structures. A major positive gravity anomaly along the outer edge of the shelf lies athwart the projection of known geologic trends, and possible explanations of this anomaly by crustal thinning or intrusions are not supported by available magnetic and seismic data. That this area is still active tectonically is suggested by the unusual depth of the shelf which appears to have been drowned since Quaternary time but is still isostatically overcompensated, by magnetic and seismic anisotropy, modern microseismicity, and other features.

At its northeast end the geosynclinal belt of Arctic Canada abuts the geosynclines of northeast Greenland, whose faunal content and deformational history show European rather than American affinities since Paleozoic time. The relationship between these two provinces appears to be related to the evolution of the structures of the Arctic Ocean. Present evidence appears compatible with the hypothesis that the trans-Arctic Alpha Cordillera was connected with the Mid-Atlantic Ridge, and that the connection has been dislocated by the widening of the Altantic basin, leading progressively to the development of Baffin Bay and the Nares rift valley, and to the extension of the Atlantic fracture into the Siberian crustal block, splitting off Lomonosov Ridge as a continental remnant that abuts against, but does not join, the structures of Arctic Canada.

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Selective Dolomitization of Stromatolites

Selective dolomitization of stromatolites occurs in the Boundary Member of the Schooler Creek Formation (Triassic) of British Columbia, Canada. The member is as thick as 34 ft and is a repetitive cyclic sequence of stromatolite-pelmicrite-micrite-pelmicrite-stromatolite.

Interpreted depositional sites are: (1) micrite—local basin center; (2) pelmicrite—nearshore to low intertidal; (3) stromatolite—intertidal; and (4) anhydrite beds—restricted intertidal. Lateral change within the member is slight except for coalescing of units toward the paleoshoreline. Landward, within the major stromatolitic interval, there are tongues of anhydrite; seaward there are tongues of pelmicrite containing composite oöliths.

The stromatolites and beds in contact with them are dolomite with abundant large anhydrite crystals and clots of crystals. The rest of the member is limestone, slightly dolomitic in part, with sparse euhedral anhydrite crystals. The amount of anhydrite and dolomite increases toward the stromatolitic intervals.

Three conclusions are drawn: (1) the association of anhydrite clots and crystals with desiccation features indicates that diagenesis was partly penecontemporaneous with stromatolite formation, (2) dolomite in the beds adjacent to the stromatolitic intervals indicates that some dolomitization occurred after shallow burial of the stromatolite, and (3) selective dolomitization of stromatolitic intervals suggests that these intervals originally had relatively high permeability. Brines from evaporating pans in the landward area refluxed through the permeable zones and dolomitized the stromatolites.

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Correlation Theory Between Thin-Section and Loose-Grain Arithmetic Mean Sizes on Number-Frequency Basis

Projection diameter (P, or p), the diameter of a circle having an area equal to that of the grain area, *long diameter* (A, or a), and *short diameter* (B, or b) can be measured for loose grains in a stable position in the gravitational field (capital letters) and for grains in the thin section. The stable position of an irregular loose grain in the gravitational field need not be a unique position, but generally the thickness of the loose grain (C) remains vertical. In such a situation $\bar{B}$ and $\bar{p}$ are the best estimators of the arithmetic mean nominal diameters B and p, respectively, on a number-frequency basis. However, $\bar{B}$ and $\bar{p}$ need not be unbiased estimators of the nominal diameters if some nonspherical grains are present either in the thin section or in the loose grains.

From Krumbein's theory of thin sectioning of spherical grains,

$$\bar{d}_n = (\pi/4)\bar{D}_n, \qquad (1)$$