to those of later time, can be accounted for in part by gradual changes in the compositions of the atmosphere and oceans and in part by the depth of erosion.

Methods of study used in younger rock groups are all useful in the Precambrian, but extreme metamorphism over wide areas, more abundant igneous intrusive masses, and a dearth of fossils useful in correlation make the interpretation of the record less certain.

Methods of classification and naming recommended by the American Commission on Stratigraphic Nomenclature are now being adopted by Precambrian geologists, some of whom have assisted in their formulation. This should lead to clearer understanding and better communication.

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DISTRIBUTION OF THE REEF-BUILDING COMMUNITY IN FLORIDA AND THE BAHAMAS

Luxuriant growths of reef-building corals and associated biota are characteristic of easterly facing margins of the Florida and Bahamas platforms. Along the eastern margins the reef community is most luxuriant and continuous seaward of islands; it is absent or poorly developed where islands are absent. The reef community is absent along almost all the western margins of the platforms and its few occurrences seaward of islands or shoals are small, discontinuous, and without the variety and vitality of the eastern examples.

The reef community favors the eastern margins because wave agitation and circulation of oceanic water that promotes its growth is more intense there than on the western margins. The western margins are unfavorable because water from the platform interiors, warmer and saltier than normal, is moved westward across them by the prevailing easterly winds.

The most luxuriant growths of the reef community are seaward of islands because the islands protect these areas from unfavorable currents. The islands prevent the existence of the normal cross-platform currents that produce bottom-sediment movement (oölitic sands) unfavorable for the reef community. The islands shield areas seaward of them from tidal runoff of platform-interior water that is inimical to the growth of the reef community.

Can these "principles" be applied to ancient reefs?

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SOME MINERALS FROM THE OKA ALKALINE COMPLEX, OKA, QUEBEC

The carbonate rocks of the Oka complex contain abnormally high amounts of Zr, Nb, Ce, La, Nd, Sr, Ba, P, Mn, Ti, Na, K, F, S, and Cr, and give rise to an impressive array of unusual and rare minerals. Sixty-five minerals have been so far identified from the alkaline rocks and carbonatite at Oka.

As in most alkaline complexes the paucity of silica is reflected in the low silica type of minerals they contain, by the presence of oxide minerals of iron, titanium, phosphorus, and niobium, and undersaturated silicate rocks. Substitution of elements in some of the minerals is inferred from their chemical composition, and probably accounts for their anomalous optical properties. The constituent minerals of the silicate rocks are commonly characterized by high alkali, alumina, manganese, and low silica content, with in some cases unusually high substitution of alumina for silicon. In the oxide minerals niobium commonly substitutes for titanium.

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RELATIONSHIP OF MINERALIZATION TO STRATIGRAPHY IN THE PRECAMBRIAN VOLCANIC-SEDIMENTARY COMPLEX, MICHIPICOTEN AREA, ONTARIO

The Michipicoten group of older volcanic and sedimentary rocks comprises flows and pyroclastic rocks of andesite-rhyolite association together with conformable zones of clastic sediments and banded iron formation. Later intrusive rocks consist of dacite, granite, and diabase.

The typical volcanic cycle progressed from (1) widespread and prolonged extrusion of andesite-basalt flows, through (2) violent ejection of rhyolite-dacite pyroclastics, to (3) extensive hot-spring and fumarolic activity. Banded iron formations are considered to represent chemical products of this last stage. Development of the Michipicoten group is viewed as a continuous process which, once initiated, proceeded through explosive, erosional, chemical, and intrusive phases to produce a complex family group of which the members, although each possesses unique characteristics, are related by common volcanic heritage.

Iron, gold, and base metal deposits occur within, or marginal to, the principal acid volcanic zones. In general, mineralized centers coincide with what may be reasonably interpreted as centers of maximum explosive volcanic discharge. In this manner, siderite-pyrite members of banded iron formation overlie coarse acid pyroclastic zones; gold and base metal deposits occur within, or marginal to, nearby porphyry intrusive stocks. Acid extrusive rocks, porphyry intrusions, and mineral deposits are considered to have a common, sub-volcanic derivation and to owe their present stratigraphic association to common generative volcanic processes.

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MILLERITE AT STRATHCONA MINE, SUDBURY DISTRICT

Millerite occurs in relative abundance with chalcopyrite, pentlandite, violarite, pyrrhotite, and sparse pyrite in discontinuous stringers and disseminations along fractures and joints in leucocratic and amphibolitic footwall gneisses near the norite contact more than 3,000 feet below the present surface. Some roughly equidimensional masses up to 8–10 centimeters in size show splendent crystal faces and excellent cleavages barred by polysynthetic twinning. Gangue minerals include sodic and potassic feldspar, quartz, amphibole, epidote, garnet, and biotite. Partial chemical analysis on hand-picked cleavage fragments of millerite gave 62.0% Ni, 0.04% Cu, 0.33% Co, and 1.44% Fe. The x-ray powder diffraction pattern gave $a_0 = 9.622 \pm 0.006$Å and $c. = 3.150 \pm 0.005$Å. Primary origin by crystallization from a hot sulphur-rich iron-poor fluid is proposed from the environmental evidence available.

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AN ALGORITHMIC PROGRAM FOR THE ANALYSIS OF DETRITAL RESERVOIR ROCKS

The objectives of this program are essentially fourfold: (1) the data gathering process leads to a quantita-