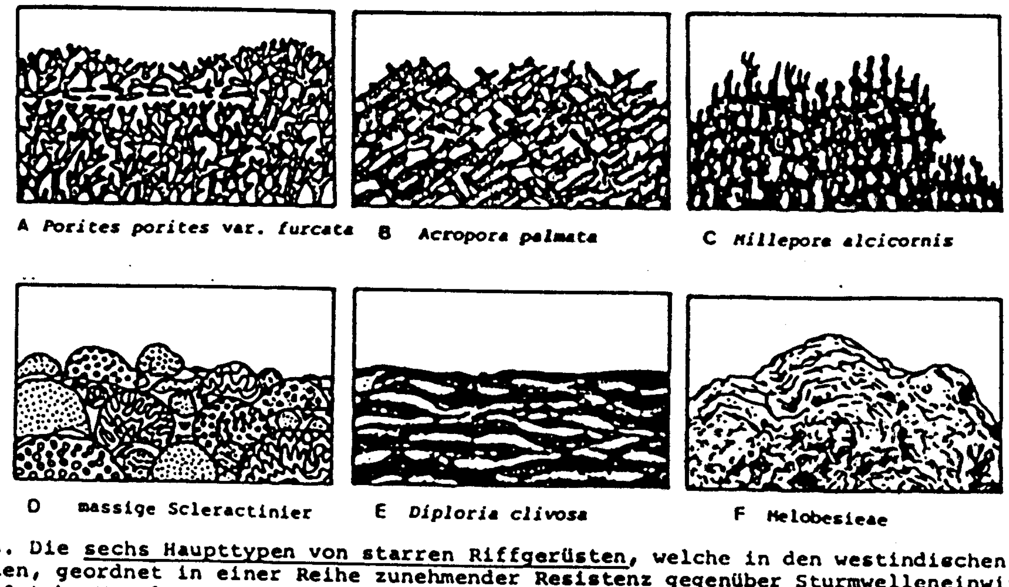
Riffe (3) Terminologie; Riffgerüste

deutsch	Abbildungen	englisch	spanisch
Bootskanal	Taf. 25/1 Abb. 3,4,17,18	boat channel	canal (m.) de embarcaciones
Lagune	Taf. 25/4,2/3	lagoon	laguna (f.)
Binnenlagune	Taf. 25/3,2/3	internal lagoon	laguna (f.) interior
Aussenlagune	Taf. 25/3,2/3	outer lagoon	laguna (f.) exterior
Lagunen-Becken	Taf. 25/2,8/1 Abb. 10	lagoonal basin	cuenca (f.) lagunar
Lagunen-Terrasse	Taf. 25/2,8/1 Abb. 10,30	lagoonal terrace	terraza (f.) lagunar
Sandkliff	Taf. 25/2,8/1-2 Abb. 30,32	sand cliff	barranca (f.) de arena
Riff-Querkanal	Taf. 25/1-2 Abb. 10,17-18	reef pass	pasaje (m.) arrecifal
Rückriff-Abhang	Abb. 5,18	rear slope of reef	vertiente (f.) del arrecife hacia la laguna, vertiente interna (f.)
Riffkamm	Abb. 4,26,27	reef crest	cresta (f.) de arrecife
Riffplatte,Riffdach	Abb. 3,5,8,12,15, 18,28	reef flat	plano (m.) del arrecife, mesa (f.) arrecifal
Kalkalgenwall, Algenrücken	Taf. 33/1-4 Abb. 8	algal ridge	cresta (f.) de algas calcáreas
Vorriff-Abhang	Taf. 27/2-4,4/1-3 Abb. 3,5,18	fore-reef slope	vertiente (f.) prearrecifal
Brandungsrinnen-System	Taf. 27/1-4,4/1 Abb. 5-8	groove-and-spur system	sistema (m.) de surcos y espolones
Brandungsrinne	Taf. 27/1-4,4/1-2 Abb. 5-8	groove	surco (m.)
Riffsporn	Taf. 27/1-4,4/1-2 Abb. 5-8	spur, reef buttress	espolón (m.)
Vorriff-Terrasse	Abb. 4-10,27	fore-reef terrace, reef-front terrace	terraza (f.) prearrecifal
Aussenabhang, Aussenriffhang	Taf. 28/4,8/3 Abb.4,6,9,19-23,29,31	outer slope	talud (m.) externo, vertiente (f.) externa
Riffwand, Riffmauer	Taf. 28/4 Abb. 20-23	reef wall	pared arrecifal (f.)
Riff-Talus	Taf. 35/1 Abb. 23	reef talus	depósito (m.) de talud arrecifal

← Geister 1985

Tab. 6. Beschreibende Termini der Geomorphologie von Lagune und Riff auf Deutsch, Englisch und Spanisch mit Abbildungshinweisen. Definitionen in Abschnitt 3.3.



A *Porites porites* var. *furcata* B *Acropora palmata* C *Millepora alcicornis*

D massige Scleractinier E *Diploria clivosa* F Melobesieae

Abb. 24. Die sechs Haupttypen von starren Riffgerüsten, welche in den westindischen Meeren auftreten, geordnet in einer Reihe zunehmender Resistenz gegenüber Sturmwelleneinwirkung. Ohne Maßstab. Vergleiche auch mit Taf. 29 und 30 sowie Taf. 33/3.

Lowenstam, 1950; reaffirmed by Nelson and others, 1962

- Organisms "passively" produced sediment, but not rigid, wave-resistant framework — BANK
- Organisms actively built rigid, wave-resistant framework — REEF

Kornicker and Boyd, 1962

- (BANK)
- Organisms in growth position that influenced adjacent sedimentation — REEF

Dunham, 1970

- Thick, laterally restricted mass of pure carbonate — STRATIGRAPHIC REEF
- Organisms built & bound framework — ECOLOGIC REEF

This paper

- No evidence of relief. (if high skeletal content, BIOSTROME)
- Evidence of positive topographic relief — BUILDUP (if large, broad, PLATFORM, SHELF)
  - No evidence of type indicated at right — BANK
  - Evidence of potential wave resistance or of turbulent water, implying wave resistance & evidence of some degree of control over surrounding environments. — REEF (if built mainly by organisms, ORGANIC REEF)
    - wave-washed talus absent
      - Organic framework present, but no evidence of water turbulence — POTENTIAL REEF (in deep or calm water)
      - Abraded-grain calcarenites + remains of rooted organisms — ORGANICALLY? BOUND SKELETAL-DEBRIS REEF
      - Early rims of drusy spar — SPAR-CEMENTED DEBRIS REEF
    - wave-washed talus present — FRAMEWORK REEF
      - Talus calcilutite: if stromatolitic, STROMATOLITE REEF; if abraded mud clasts, MUD-FRAMEWORK REEF
      - Talus inorganically bound by spar cement — INORGANIC-FRAMEWORK REEF; SPAR-CEMENTED FRAMEWORK REEF
      - Talus organically bound + large skeletal fragments — ORGANIC-FRAMEWORK REEF

FIG. 2.—Usage of terms "reef," "bank," "buildup" (and modifiers) in previously proposed and here proposed schemes of definition. Terms are in capital letters; criteria are in small letters. Usage proposed in this paper is largely hierarchical in that more [illegible] terms (above da[illegible]) include more sp[illegible] terms (below dashed lines), which allows refine[illegible] of terminology as [illegible] more evidence [illegible] available.

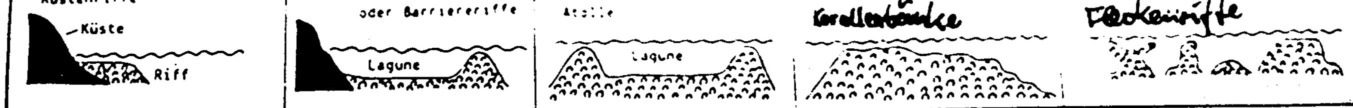
DESCRIPTIVE TERMINOLOGY FOR CARBONATE BUILDUPS

PREDOMINANT CONSTITUENT	SKELETAL GRAINS	LIME MUD	NONSKEL. GRAINS
DOMINANT ROCK TYPES	PACKSTONE, GRAINSTONE BOUNDSTONE	WACKESTONE, MUDSTONE	(OVER 70% TOTALLY NONSKEL. GRAINS)
GENERAL TERM	SKELETAL BUILDUP	LIME-MUD BUILDUP	OOLITE (etc) BUILDUP
DISTINCTION AS TO SHAPE	SKEL. MOUND, KNOLL, BAR, BARRIER REEF, ATOLL, etc.	LIME-MUD MOUND, LIME-MUD BAR	OOLITE MOUND, OOLITE BAR
DISTINCTION AS TO TYPE OF SKEL. MATERIAL	e.g. SPONGE MOUND, CORAL-STROMATOPOROID PATCH REEF, BRACHIOPOD KNOLL, DIVERSE SKELETAL ATOLL		
DISTINCTION AS TO DOMINANT HABIT OF SKELETAL MATERIAL	Use ENCRUSTED for encrusting or otherwise permanently attached skeletal material e.g. ENCRUSTED BRYOZOAN MOUND, ENCRUSTED OYSTER REEF Use LOOSE for solitary colonies, unattached, whole or disarticulated skeletal material e.g. LOOSE FORAM MOUND, LOOSE GREEN ALGAL-PELMATOZOAN REEF Use ABRADED for material exhibiting abrasion e.g. ABRADED DIVERSE SKELETAL BAR Use MIXED for buildups in which no one form or component is dominant e.g. MIXED DIVERSE SKELETAL-LIME MUD-PISOLITE BARRIER REEF		

↑ ← aus Heckel 1974

FIG. 3.—Suggested descriptive terminology for all carbonate buildups that is based on dominant constituent composition, general shape, and certain characteristics of skeletal constituents. Distinction between modifers "encrusted" and "loose" are based upon preserved appearance of skeletal material in record (see text).

Riffe (11) Rifftypen

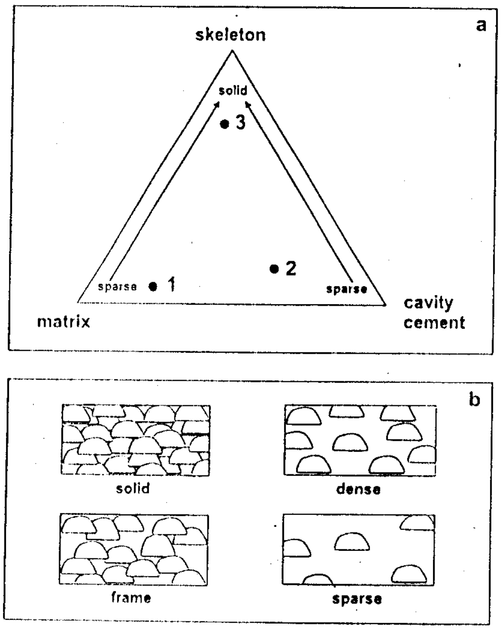


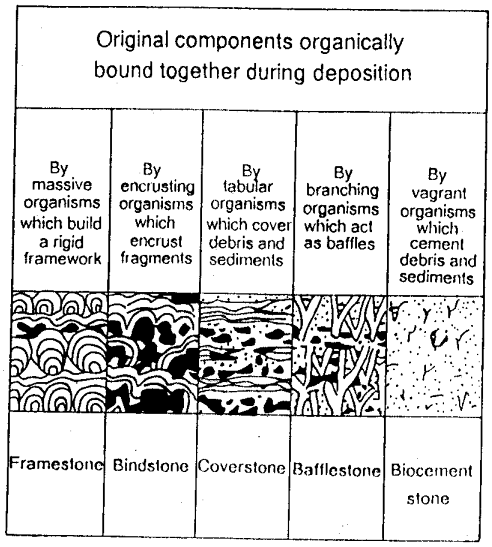
	Geomorphologische Grundtypen von Korallenriffen / nähere Charakterisierung der Riffe	Saumriffe oder Küstenriffe	Wallriffe oder Barriereriffe	Atolle	Korallenbänke	Fleckenriffe
Lage auf Kontinentalschelf oder Ozeanboden	Riffe auf dem Kontinentalschelf (Schelfriffe)	Schelfsaumriffe an der Küste von Jamaika, Kuba	Schelfwallriffe von Belize, Florida	"Arrecife Alacrán", ein Schelfatoll vor Yucatán	"Pedro Bank", eine Schelf-Korallenbank auf dem Nikaragua-Rücken	Schelf-Fleckenriffe von Veracruz
	ozeanische Riffe	ozeanisches Saumriff an der Südostküste von San Andrés	ozeanische Wallriffe der Inseln San Andrés und Providencia	ozeanische Atolle: Courtown Cays, Serrana Bank, Roncador Bank	ozeanische Korallenbank von Islote Aves	ozeanische Fleckenriffe vor St. Lucia
Lage auf Insular- bzw. Kontinentalschelf	Bankriffe	Banksaumriffe vor Kuba und an der SE-Küste von San Andrés	Bankbarriere-Riffe von San Andrés, Providencia, Florida, St. Croix	Bankatolle: Courtown Cays, Serrana Bank, Roncador Bank	———	———
	Schelfkantenriffe	?	Schelfkanten-Wallriff Belize	Schelfkanten-Atoll Glovers Reef	———	———
Lage im offenen Meer oder in einer Lagune bzw. Bucht	offenmeerische Riffe	offenmeerisches Saumriff an der SE-Küste von San Andrés	offenmeerische Wallriffe von Providencia, Belize, Florida	offenmeerisches Atoll: Glovers Reef, Courtown Cays, Serrana Bank	offenmeerisch sind alle bekannten westindischen Korallenbänke	offenmeerische Fleckenriffe (z.B. Kelchriffe) von Bermuda und St. Lucia
	Lagunenriffe	Lagunen-Saumriff "Little Reef" vor San Andrés, Bahía de Concha bei Sta. Marta	Lagunen-Wallriff, z.B. die innere Barriere bei den Riffkomplexen von Martinique und St. Croix	Lagunenatolle: "Rhomboid Shoals" von Belize	nicht beschrieben	Lagunen-Fleckenriffe von Glovers Reef-Atoll
Lage zum heutigen Meeresspiegel	seichte Riffe (Flachwasserriffe)	alle oben genannten Riffe	alle oben genannten Riffe	alle oben genannten Riffe	seichte Korallenbänke: Pedro Bank, Isla de Lobos, Islote Aves	alle oben genannten Riffe
	ertrunkene Riffe	?	ertrunkene Wallriffe von Florida, Barbados, San Andrés	ertrunkenes Atoll: Saba-Bank	ertrunkene Korallenbänke: Flower Garden Banks	ertrunkene Fleckenriffe von West Flower Garden Bank und Saba-Bank
	aufgetauchte Riffe	nicht beschrieben	aufgetauches Wallriff der Rosario-Inseln	nicht beschrieben	nicht beschrieben	nicht beschrieben
Lage zum Passat	luvseitige Riffe	luvseitiges Saumriff vor Galeta Point, Panamá	luvseitiges Wallriff von Providencia	———	———	luvseitige Fleckenriffe im NE und E von Bermuda
	leeseitige Riffe	leeseitiges Saumriff von Barbados und Curaçao	leeseitiges Wallriff von Barbados (ertrunken)	———	———	leeseitige Fleckenriffe vor Anegada, Jungfern-Inseln
Anzahl der parallelen Riffzüge	einfache Riffe	alle oben genannten Riffe	fast alle bekannten Wallriffe	alle genannten Atolle Ausnahme: Saba-Bank	———	———
	doppelte bzw. mehrfache Riffe	dreifaches Saumriff von Great Corn Island	doppeltes Wallriff von Martinique und St. Croix	doppeltes Atoll der Saba-Bank (ertrunken)	———	———

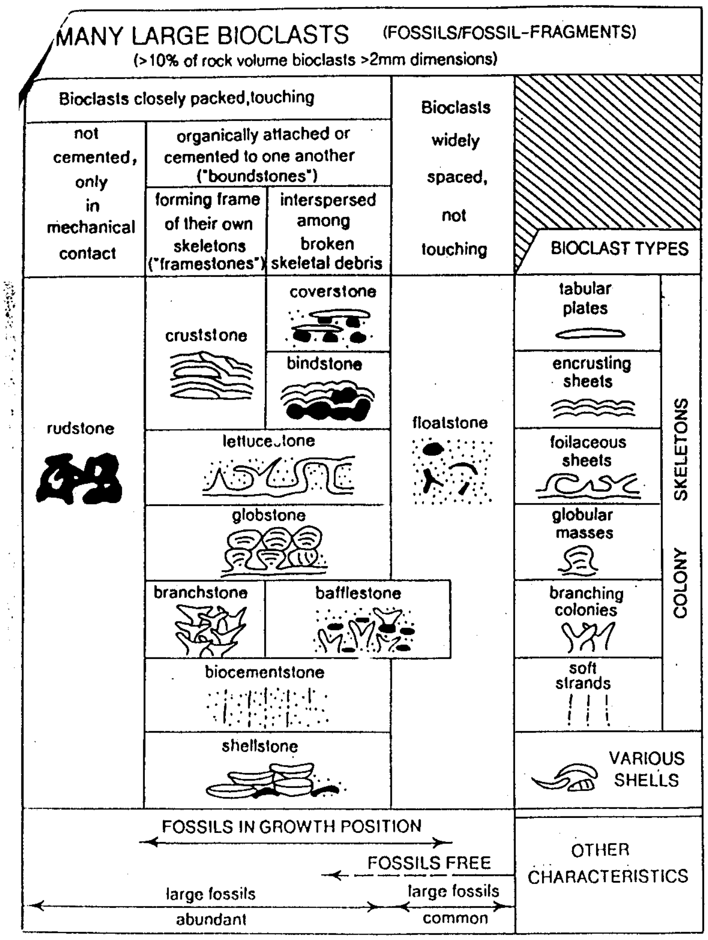
Tab. 4. Die 5 geomorphologischen Grundtypen von Korallenriffen und Riffkomplexen und ihre nähere Charakterisierung nach ihrer Lage und besonderen Ausbildung. Es sind Beispiele für die einzelnen unterschiedenen Rifftypen aus den westindischen Meeren angeführt, von denen einige auf den Abb. 3 bis 18 abgebildet werden. Literatur ist in Tab. 5 genannt.

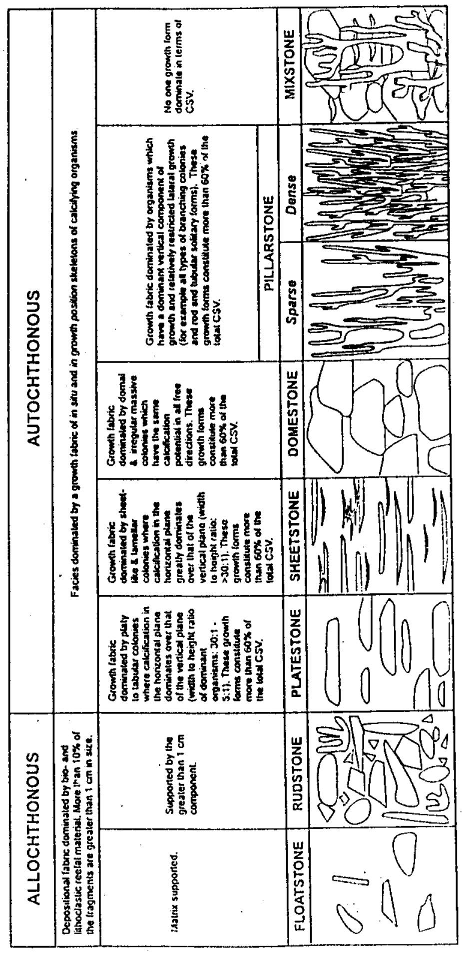
The five basic geomorphologic types of coral reefs and coral reef complexes subdivided according to their position and special development. Examples from the West Indies of the resulting reef types are indicated. Some of these have been figured in Figs. 3 to 18. See literature in Table 5.

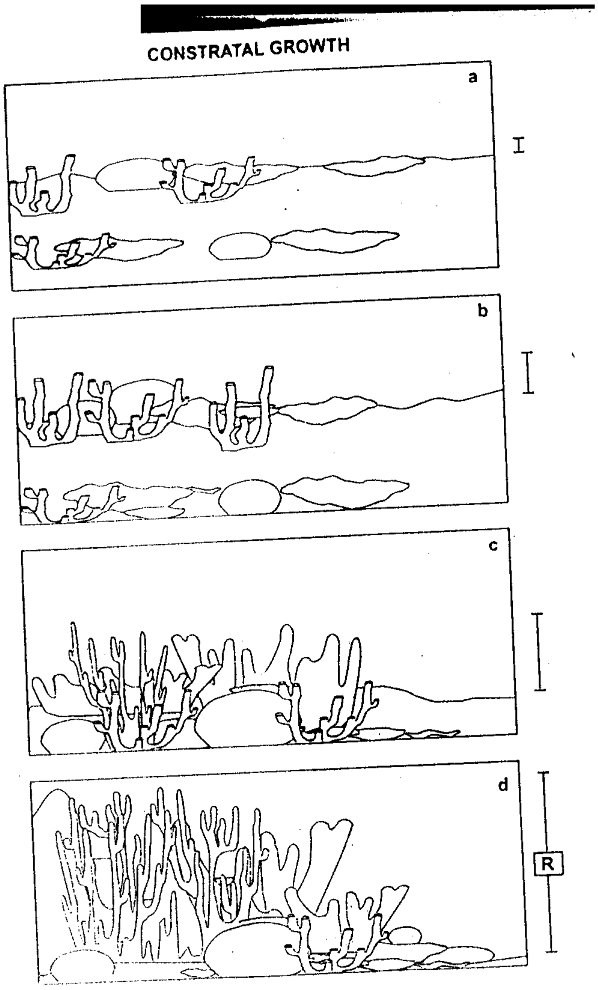
aus Geister 1983

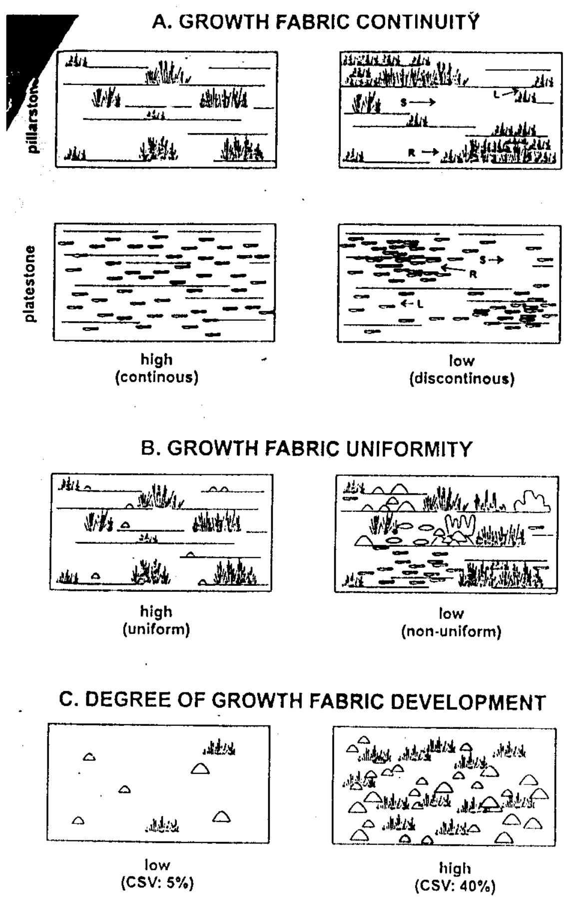

a
skeleton
solid
3
1
2
sparse
sparse
matrix
cavity cement
b
solid
dense
frame
sparse


Original components organically bound together during deposition
By massive organisms which build a rigid framework
By encrusting organisms which encrust fragments
By tabular organisms which cover debris and sediments
By branching organisms which act as baffles
By vagrant organisms which cement debris and sediments
Framestone
Bindstone
Coverstone
Bafflestone
Biocement stone


MANY LARGE BIOCLASTS (FOSSILS/FOSSIL-FRAGMENTS)
(>10% of rock volume bioclasts >2mm dimensions)
Bioclasts closely packed, touching
not cemented, only in mechanical contact
organically attached or cemented to one another ("boundstones")
forming frame of their own skeletons ("framestones")
interspersed among broken skeletal debris
Bioclasts widely spaced, not touching
BIOCLAST TYPES
rudstone
cruststone
coverstone
bindstone
lettucestone
globstone
branchstone
bafflestone
biocementstone
shellstone
floatstone
tabular plates
encrusting sheets
foilaceous sheets
globular masses
branching colonies
soft strands
VARIOUS SHELLS
COLONY SKELETONS
FOSSILS IN GROWTH POSITION
FOSSILS FREE
large fossils abundant
large fossils common
OTHER CHARACTERISTICS


ALLOCHTHONOUS
AUTOCHTHONOUS
FLOATSTONE
RUDSTONE
PLATESTONE
SHEETSTONE
DOMESTONE
PILLARSTONE
Sparse
Dense
MIXSTONE





11

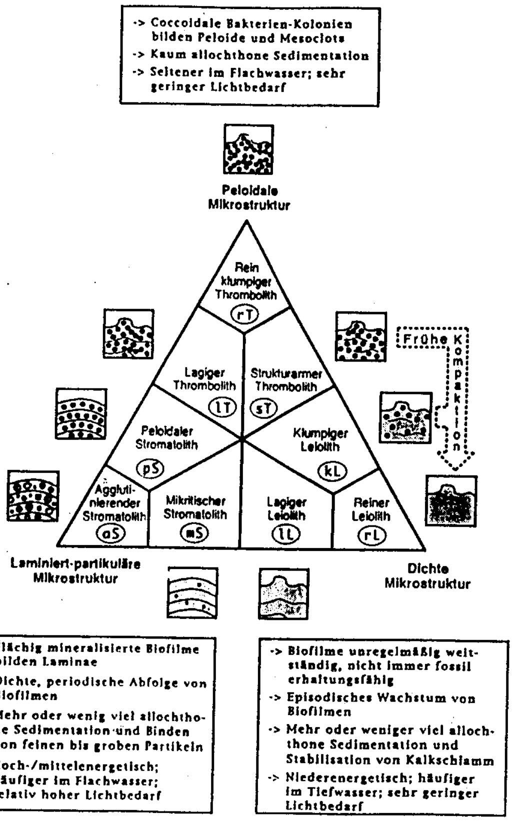


Abb. 10: Prozesse, welche für die Entstehung der drei Hauptgefügetypen von Mikrobolithen bestimmend sind.
Fig. 10: Processes determining the development of the three main fabric types of microbolites (cf. fig. 8).

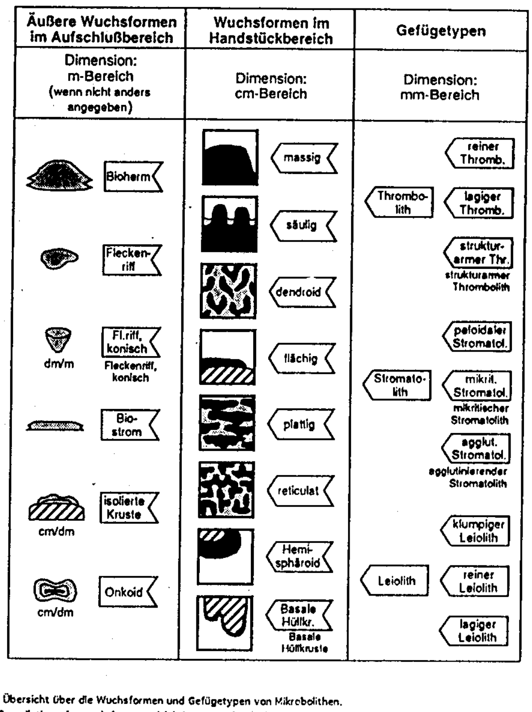


Abb. 52: Übersicht über die Wuchsformen und Gefügetypen von Mikrobolithen.
Fig. 52: Compilation of growth forms and fabric types of microbolites.

Substrate aller Art anbohren kann (s. Kap. 6.3.1). Diese Art stellt die älteste bekannte Bohrforaminifere dar. Sie ist in der Flachwasserfazies relativ weit verbreitet; ihr Anteil an der Bioerosion ist allerdings wohl eher gering.

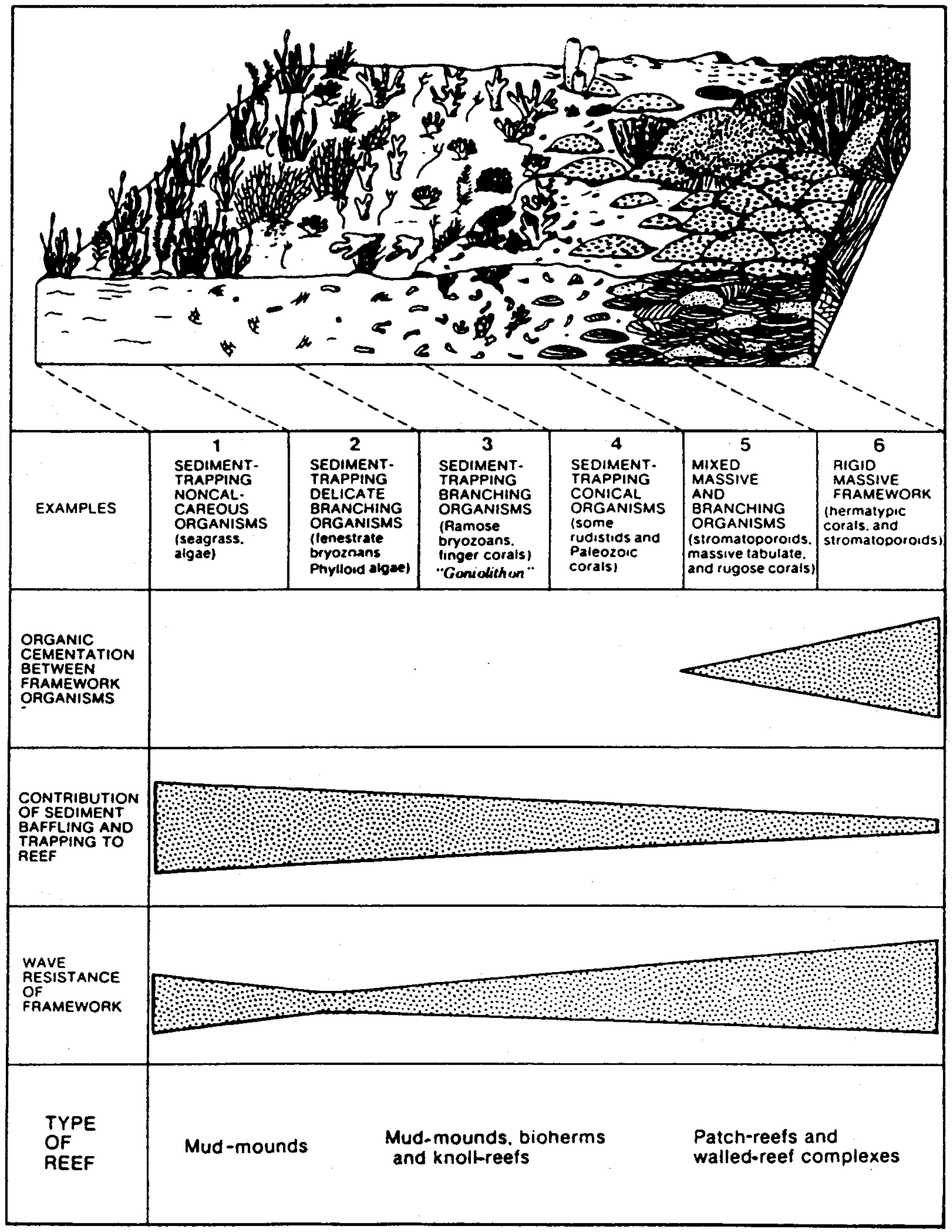
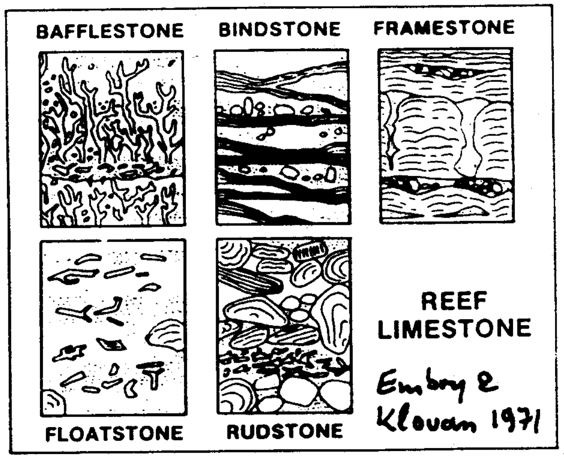


FIG. 5.—Variation in types of reef framework from non-calcareous "invisible" frameworks such as sea grass might form to massive organically-bound skeletal biolithites



Embry & Klovan 1971

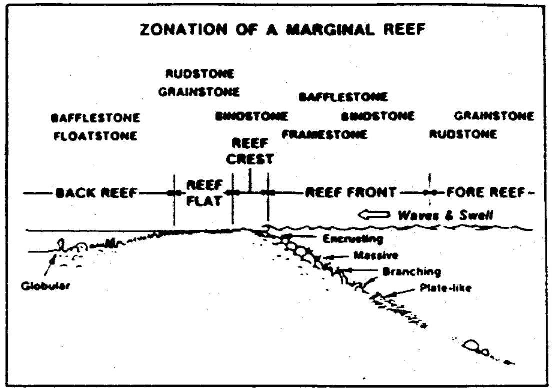


Figure 9
Cross-section through a hypothetical, zoned, marginal reef illustrating the different reef zones, spectrum of different limestones produced in each zone, and environment of different reef-building forms.

↕ James 1984

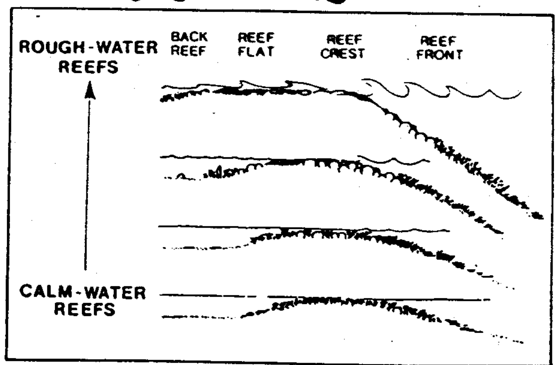


Figure 10

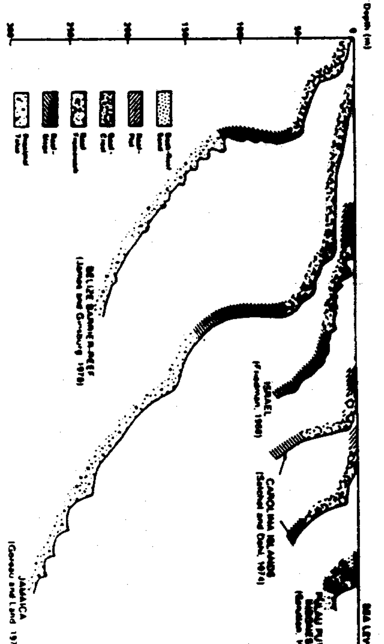


FIG. 11.—Profiles of selected modern reef complexes showing the distribution of various facies.

Longman 1981

Riffe (12): Bautypen, Riffmorphologie

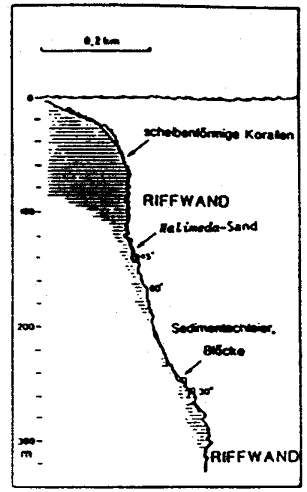


Abb. 21. Kombination von vertikalen Kliffen und steilen Sedimentabhängen im natürlichen Schüttungswinkel. Beachte, daß sich der Au-ßenabhang unterhalb von 300 m als vertika-

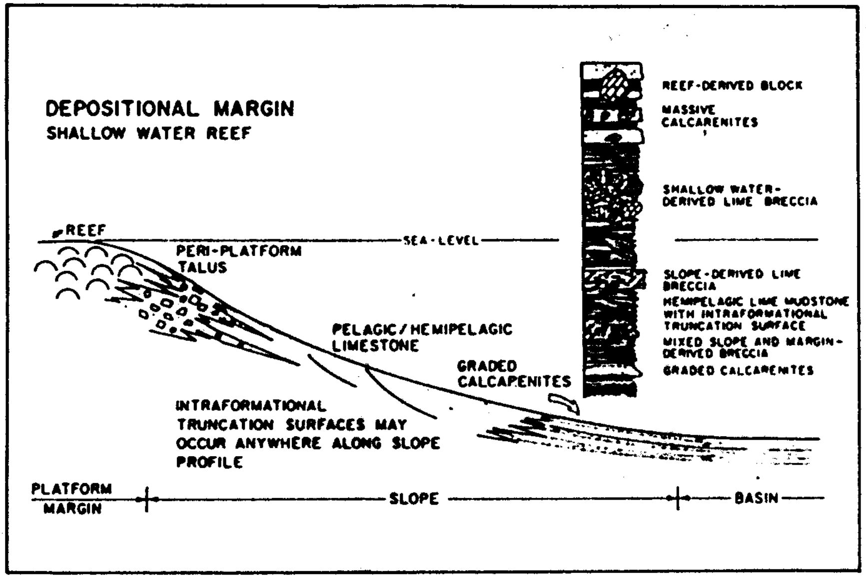


Figure 12
Variations in the style of slope sedimentation as a function of water depth on an adjacent carbonate platform.

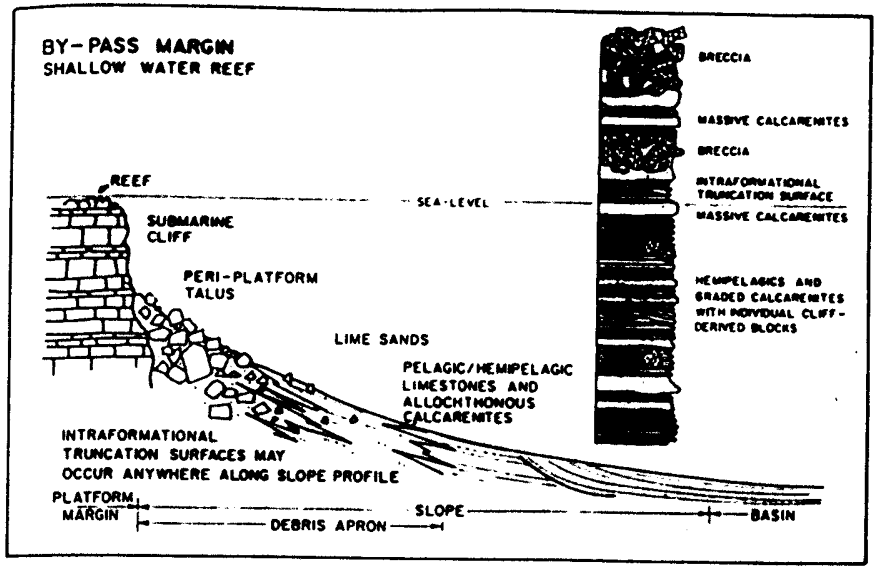


Figure 14
Schematic model for a depositional carbonate margin dominated by shallow-water lime sands and illustration of a hypothetical sequence of adjacent basinal slope deposits.

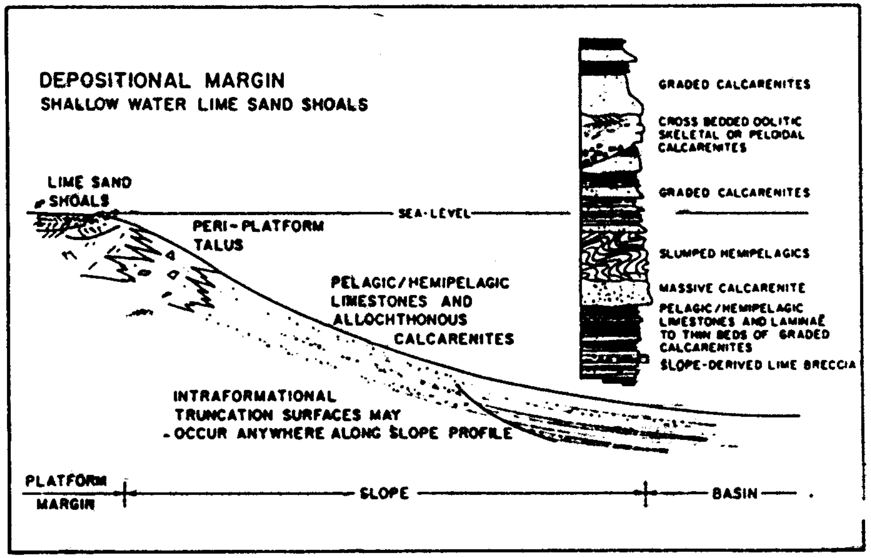


Figure 13
Schematic model for a shallow-water, reef dominated, depositional carbonate margin and illustration of a hypothetical sequence of deposits within the adjacent basin slope.

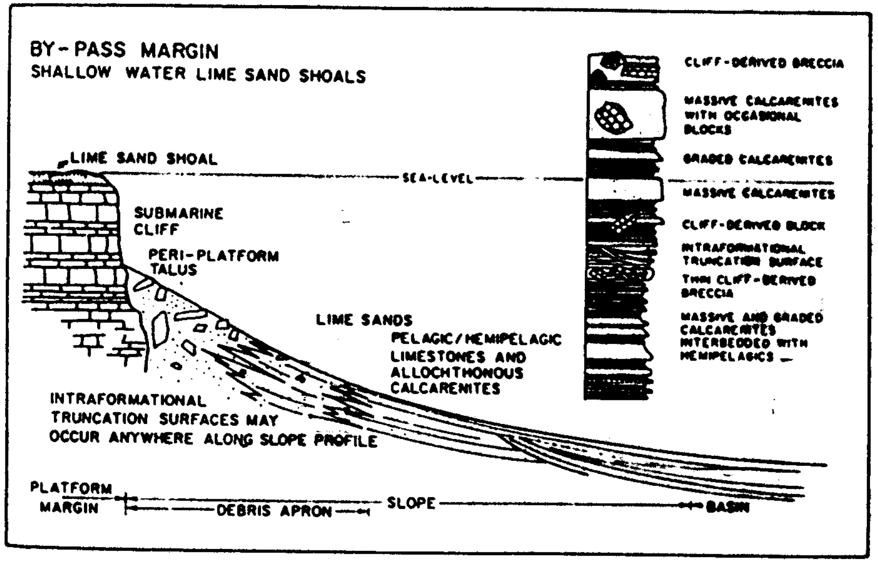


Figure 15
Schematic model for a shallow-water, reef-dominated, by-pass type of carbonate margin in a shallow-basin and illustration of a hypothetical sequence of deposits within the adjacent basin slope. In a deep basin there is an extensive by-pass slope below the peri-platform talus. Debris, including turbidites is funnelled through gullies onto the basin floor.

aus James 1978, 1984

... im Vorriffbereich

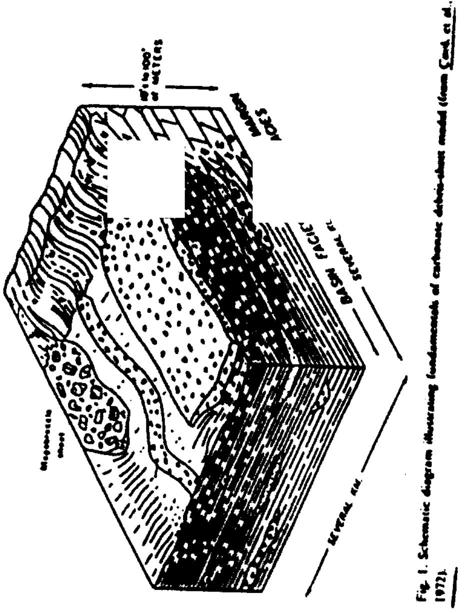


Fig. 1. Schematic diagram illustrating fundamentals of carbonate debris-sheet model (from Cook et al. 1972).

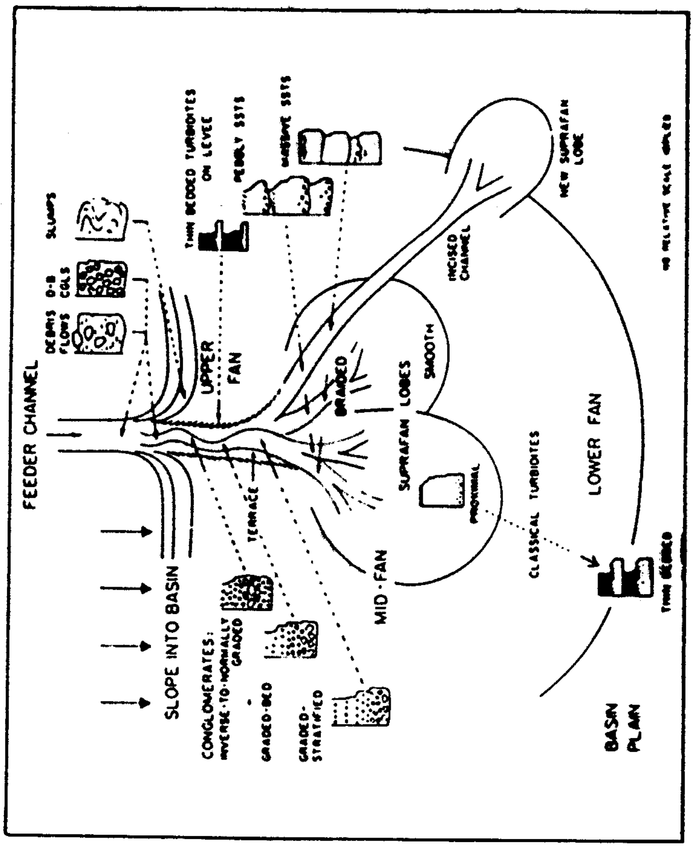


Figure 15
Fan model proposed by Walker (1978). Note that it incorporates features (terraces, inner fan meandering channel, levees, etc.) which although common, may not occur on all fans. Facies defined in ancient rocks are shown in their inferred positions on the fan. An incised channel is also shown, indicating a phase of downcutting, fan extension, and new lobe development (as in the modern La Jolla Fan of California).

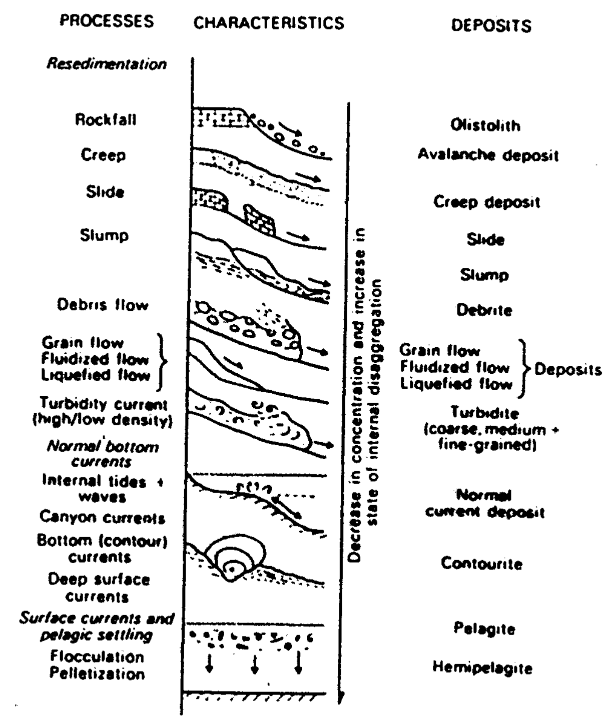
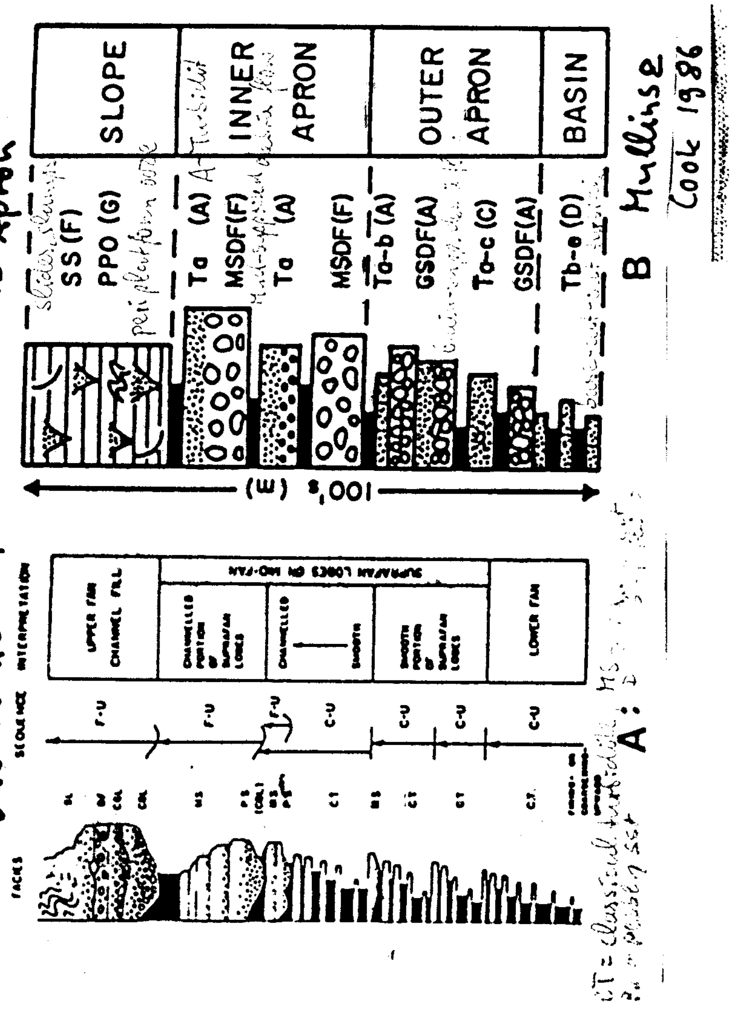


Fig. 12.3. Process continuum of the main transport and depositional processes and deposits in the deep sea.

Reading 1986



Riffe (15): Lagunäre Fazies

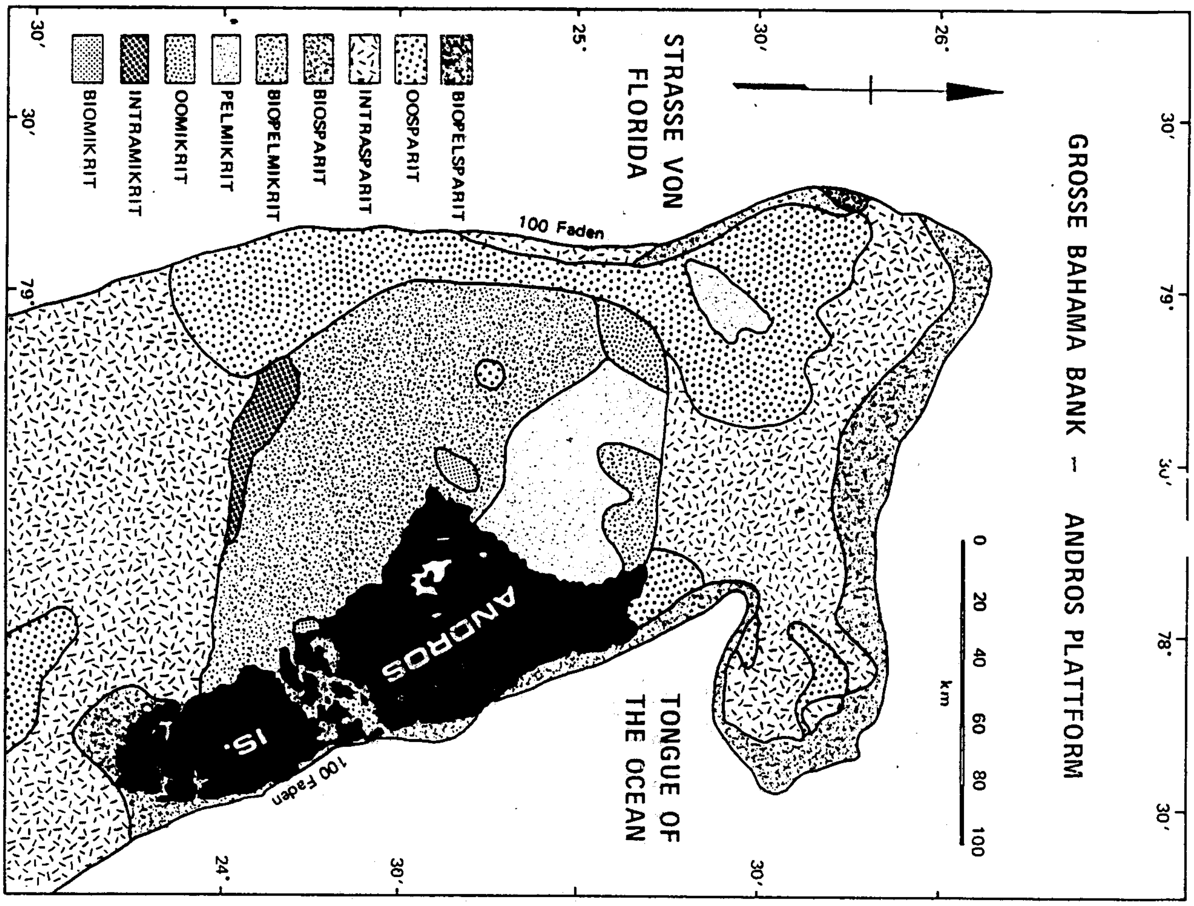
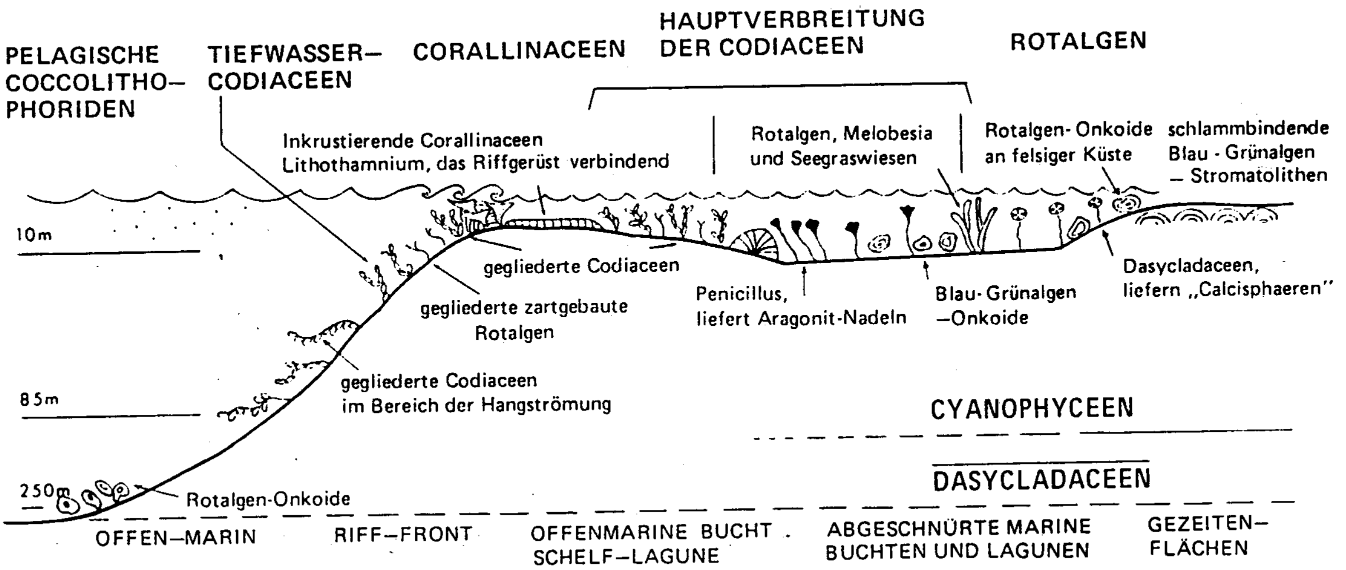


Abb. 58. Sedimentverteilung auf der Großen Bahama-Bank. Nach Imbrie u. Purdy (1962). Oosparite entsprechen der „Oolith-Fazies", die Intrasparite repräsentieren die „Aggregatkorn-(Grapestone-)Fazies"; die „Korallen-Algen-Fazies" ist durch Biosparite und Biopelsparite charakterisiert. Alle übrigen mikritischen Karbonattypen beziehen sich auf die „Schlamm-Fazies" bzw. bioklastische „Schlamm-Subfazies" und die „Peloid-Schlamm-Subfazies" nach Purdy (1963)



aus Flügel 1978

Riffe (15a) Gezeitenfazies

arid   humid

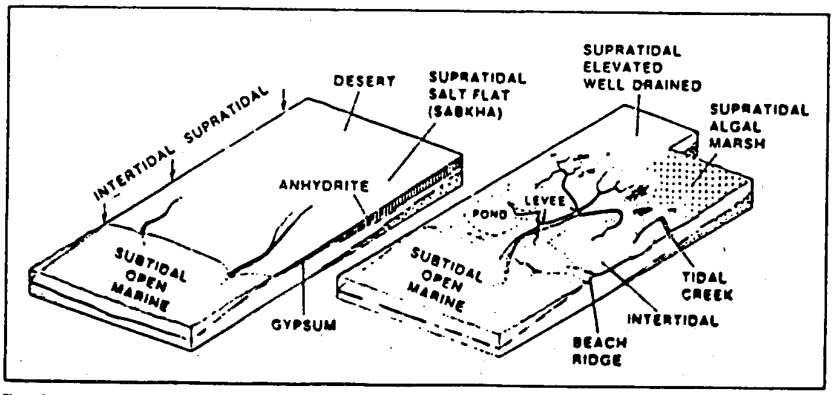


Figure 6
Block diagrams showing the major morphological elements of a tidal flat. left - a hypersaline tidal flat with few channels and bordering a very arid desert (similar to the modern Persian Gulf); right - a normal marine tidal flat with many channels and ponds and bordering an elevated well-drained area of low swamp algal marsh in a humid climate (similar to the modern Bahamas)

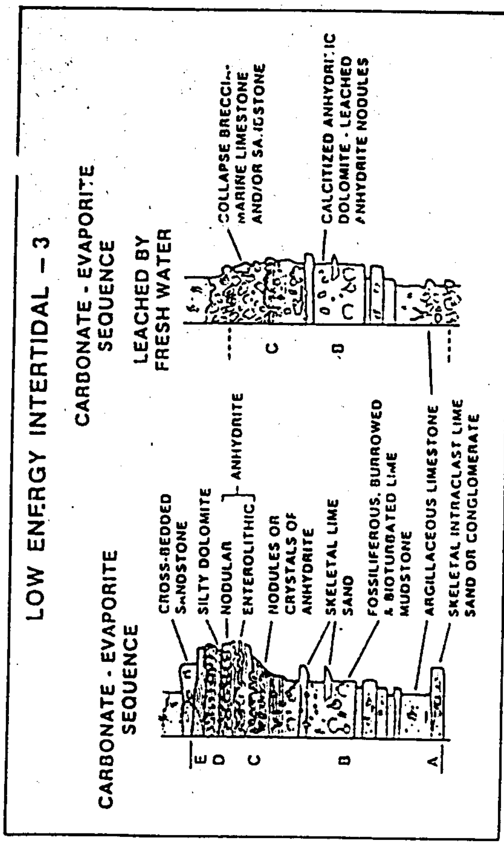


Figure 15
Two hypothetical sequences with a low-energy intertidal unit and a supratidal unit developed under arid conditions; on the right the evaporites have been dissolved by percolating fresh waters ... upper part, is commonly altered to calcite, in the reverse of the dolomitization process (so-called "dedolomitization").

arid

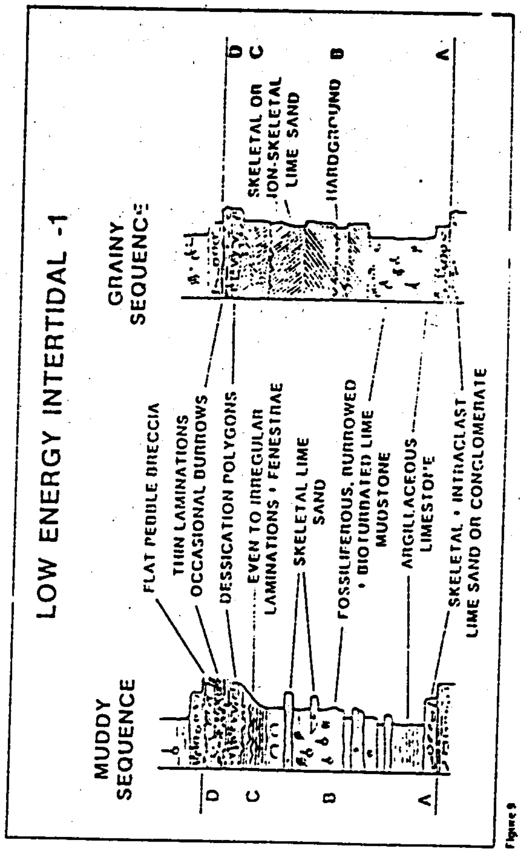


Figure 9
Two hypothetical sequences with a low energy tidal flat and ... energy subtidal un... (left) and a high energy lime sand unit (right).

humid

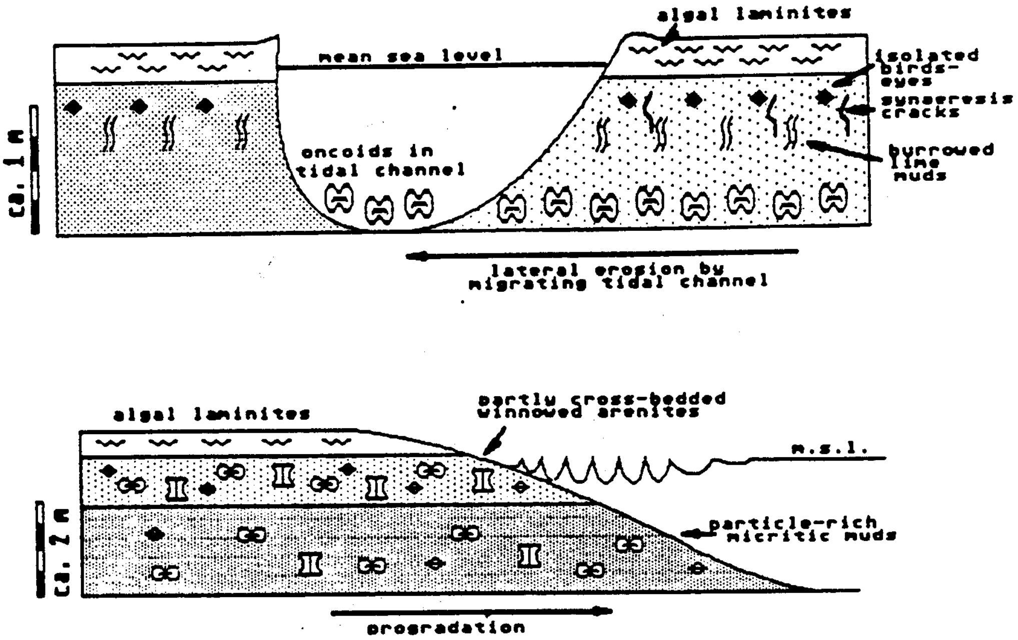
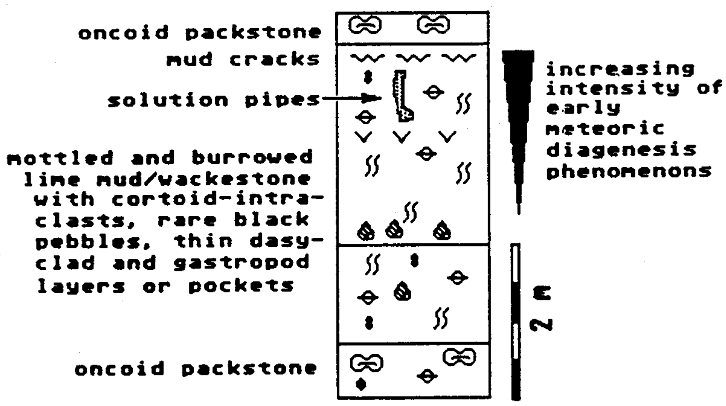


Abb. 22: Autozyklische Modelle zur Erklärung der "shallowing up" Sequenzen in der Gezeitenzone des Otakalks.

oben: Gezeitenkanal-Migrationsmodell nach SHINN *et al.* (1969), verändert und angewandt auf die südliche Gezeitenzone des Otakalks. Die laterale Migration von Gezeitenkanälen führt zu einer zweiteiligen "shallowing up" Kleinsequenz (inhomogene Subtidalfazies und Loferite). Basale "lag" Anreicherungen sind häufig vorhanden.

unten: Gezeiten-Progradationskeil-Modell für den Nordteil der Ota-Gezeitenzone. Dieses Modell erklärt das Vorhandensein von sparitischen Bereichen sowie von Strandschrägschichtung im mittleren Teil von "shallowing up" Kleinsequenzen (s. Text)



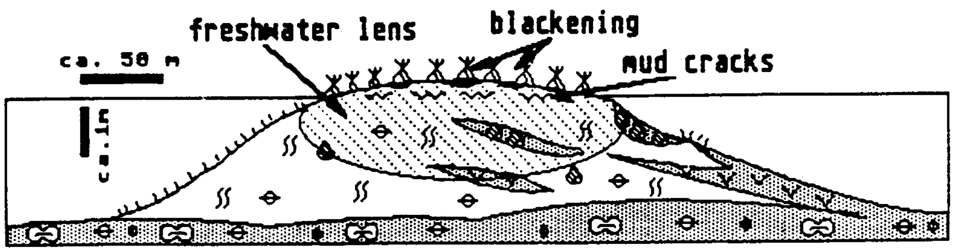


Abb. 27: Das Schlammhügelmodell für die lagunäre Zone des Otakalks, in Anlehnung an die rezenten Schlammhügel der Bucht von Florida. Das Modell erklärt die autozyklische Entstehung isolierter "shallowing up" Kleinsequenzen in der lagunären Zone (s.Text).

aus Leinfelder 1989

Figure 19
A diagram illustrating how a large-scale shallowing-upward sequence is produced under conditions of slow platform subsidence and a uniform rise and fall in eustatic sea level.

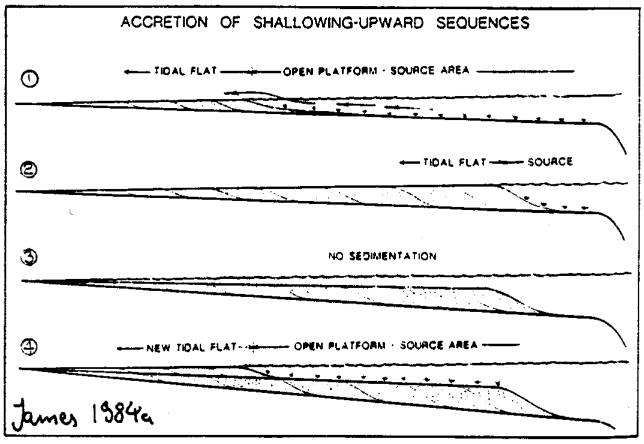
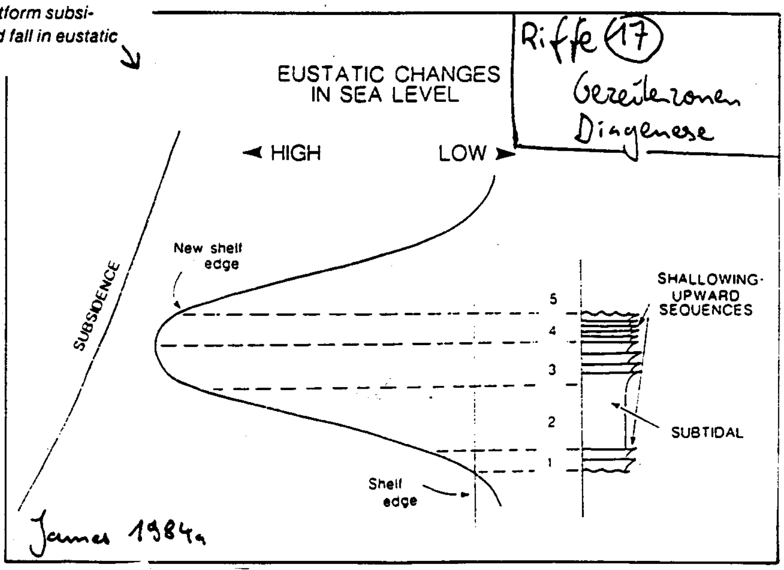


Figure 18
A sketch illustrating how two shallowing-upward sequences can be produced by progradation of a tidal flat wedge. These general conditions apply in the case of both eustatic and autocyclic models.



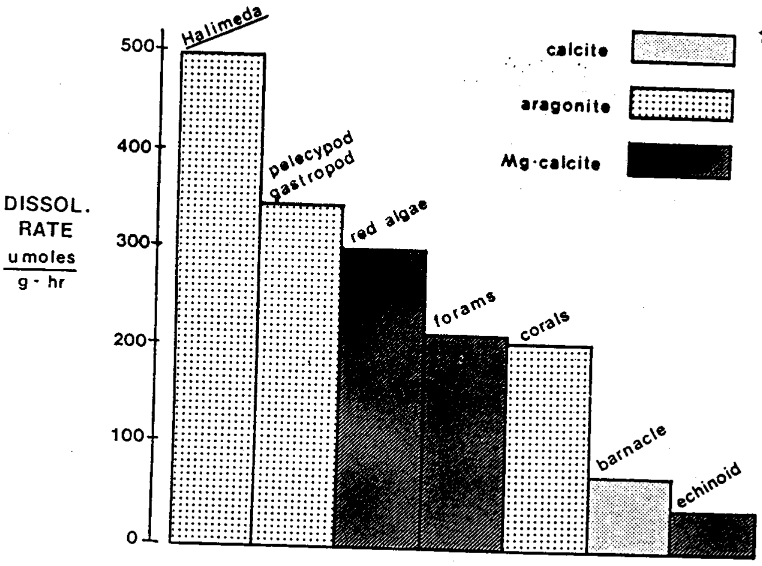


FIG. 3.—Histogram of relative dissolution rates of biogenic carbonates in seawater below calcite saturation (solution 0.5 times saturated with respect to calcite).

aus Walter 1985

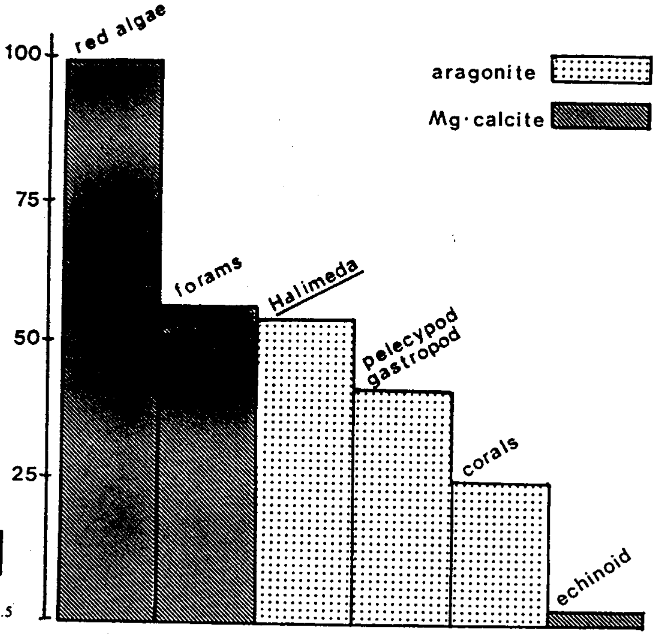


FIG. 4.—Histogram of relative dissolution rates of biogenic carbonates in seawater between calcite and aragonite saturation (solution 0.8 times saturated with respect to aragor·

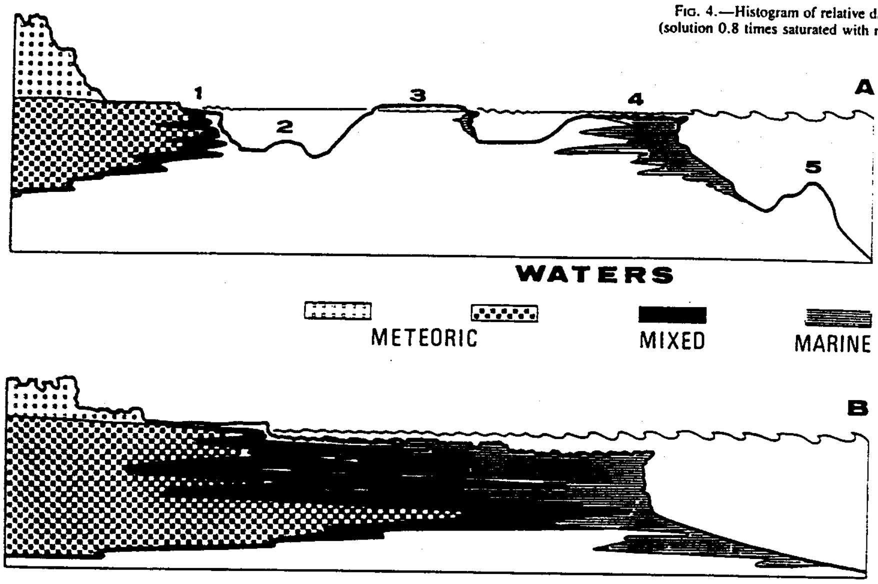


Fig. 4 A, B. Simplistic sketch showing possible geometric relationships of various water masses within a given profile. A Profile showing the relationship between reef-type and its potential diagenesis. *1* a fringing reef bordering high relief is strongly affected by meteoric and/or mixed waters; *2* submerged patch reef protected from oceanic currents probably has little diagenetic modification; *3* lagoonal island may have a thin brackish lense and minor marine cementation on its seaward margins; *4* barrier reef strongly affected by oceanic currents will probably be affected by marine cementation; *5* deep oceanic reef, little affected by oceanic currents, will probable be little affected by diagenesis. **B** Profile showing the relationships between various water-types within a given reef. NB. These examples are based mainly on contributions to this Volume

aus Purser & Schroeder 1986

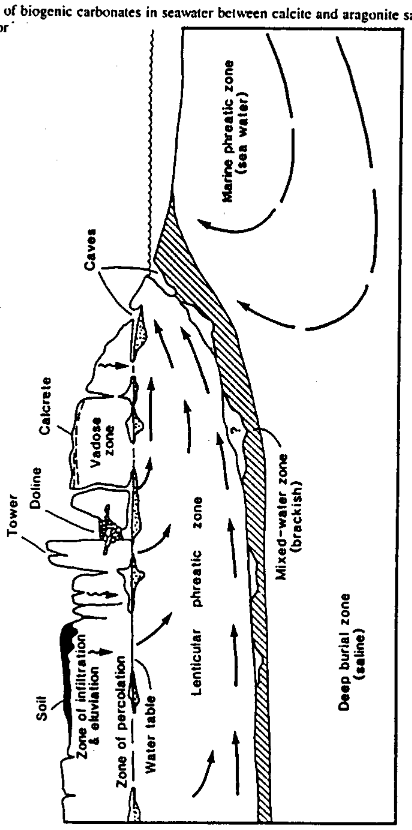


FIGURE 1. A diagram showing the general elements and hydrology of a karst terrane developed on recently deposited carbonates adjoining the sea.

aus Choquette & James 1988

Blatt 17a

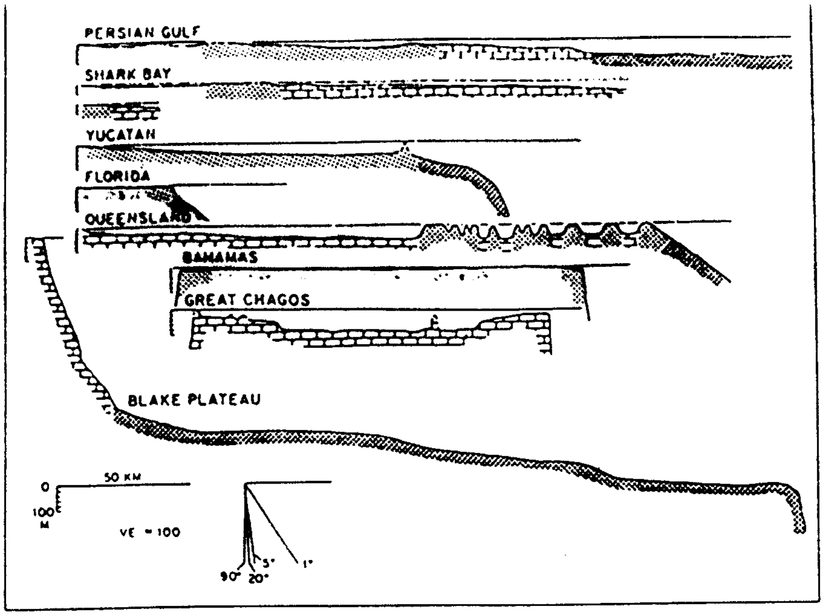


Figure 1—Profiles of carbonate ramps, rimmed shelves, and drowned platforms plotted at same scale. Persian Gulf and Shark Bay are homoclinal ramps. Yucatan is distally steepened ramp with local buildups on outer platform. Florida and Queensland are rimmed shelves, and the Bahamas and Great Chagos are isolated platforms. Note Queensland and Great Chagos also reflect incipient drowning. Queensland transect oblique to shelf trend. Blake Plateau is a drowned shelf.

Bl. 17a+b aus:

READ, J. F. (1985): Carbonate Platform Facies Models.- Amer. Ass. Petrol. Geol. Bull. 69(1): 1-21

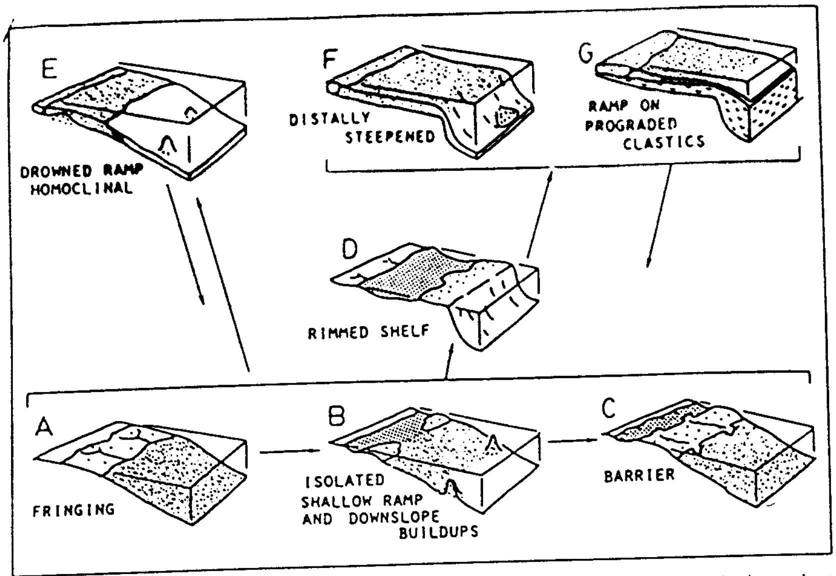
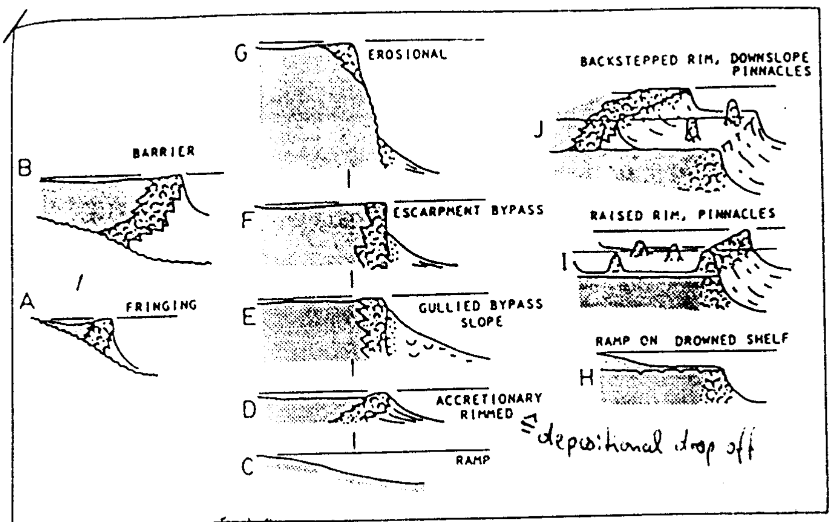


Figure 3—Ramp evolution. Ramps may start with fringing shallow water complexes (A) that change with time into barrier complexes (C), possibly by way of coalescence of shallow ramp buildups (B). These ramps may evolve into rimmed shelves (D) or into drowned homoclinal ramps (E). Where the rimmed shelves are drowned, these form distally steepened ramps (F). Where clastics bury the rimmed shelf, ramps (G) will be developed if carbonate sedimentation resumes.



a drop off shelves

Figure 5—Evolution of rimmed shelves. A. Fringing-reef complex developed following transgression of high-relief surface. This later evolves into barrier reef complex (B). Many rimmed shelves develop from earlier ramps (C) into rimmed shelves, passing through accretionary (D), gullied bypass slope (E), escarpment bypass (F) to erosional rimmed margins (G). With drowning, rimmed shelves may develop into ramps (H) or into incipiently drowned shelves (I) with raised rim and high-relief reefs in the deep lagoon, or into drowned shelves (J) with backstepped rim with pinnacle reefs on deep shelf seaward of rim.

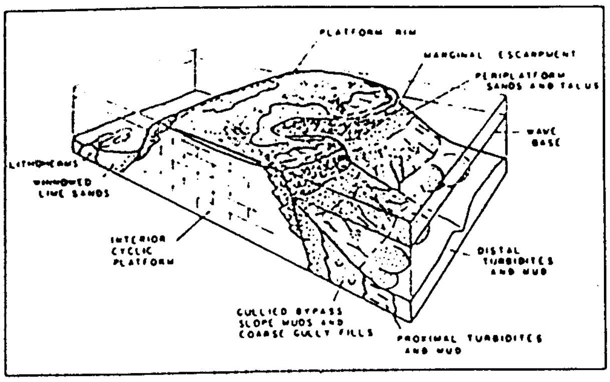


Figure 6—Block diagram of isolated platform aggraded to sea level.

Blatt 17b

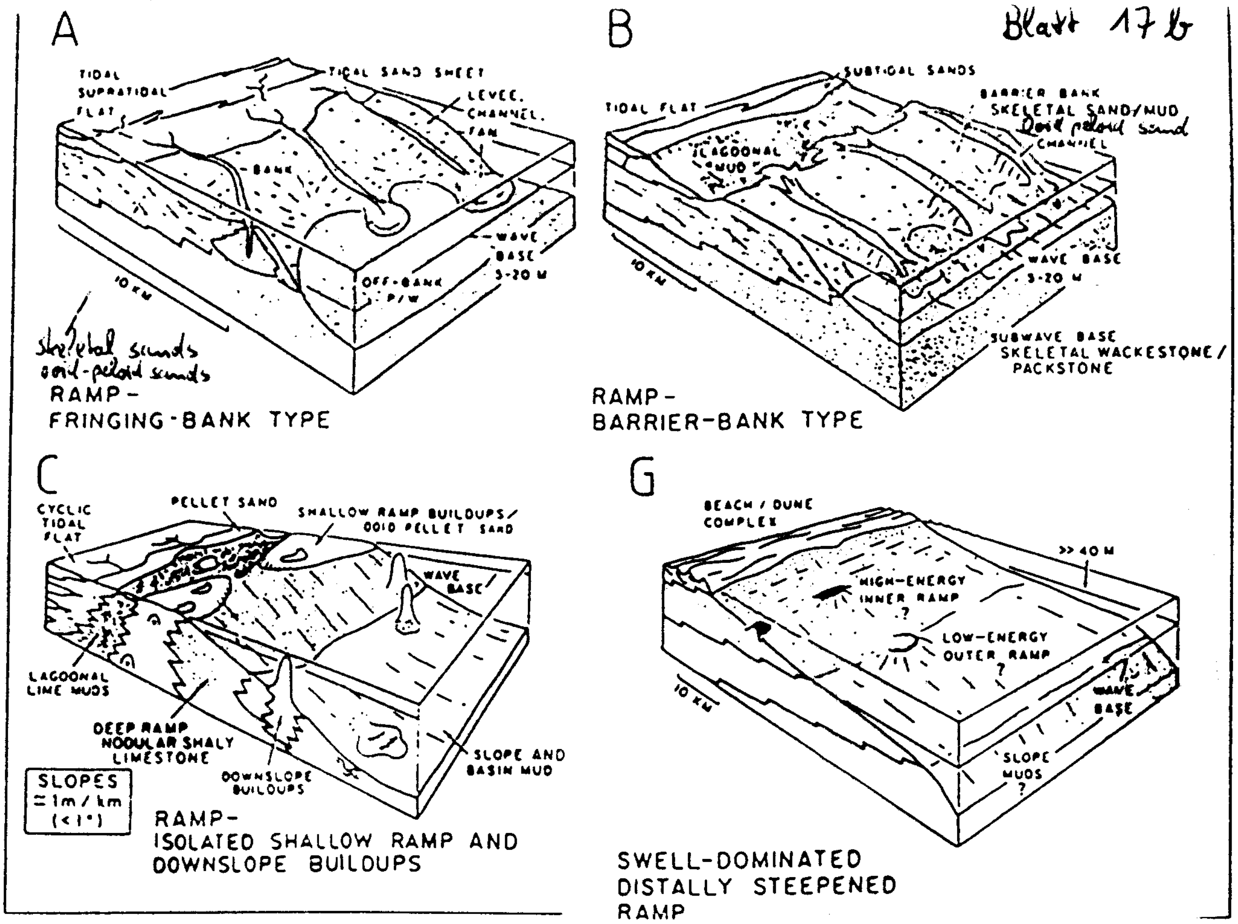


Figure 2—Carbonate ramps. A. Fringing bank complex on carbonate ramp. B. Barrier bank complex on carbonate ramp. C. Shallow ramp and downslope buildups on carbonate ramp. Ramp is homoclinal. D. Fringing ooid shoals on carbonate ramp. E. Barrier ooid shoals on carbonate ramp. F. Distally steepened ramp formed under low-energy conditions. G. Distally steepened ramp formed under high-energy, swell-dominated conditions.

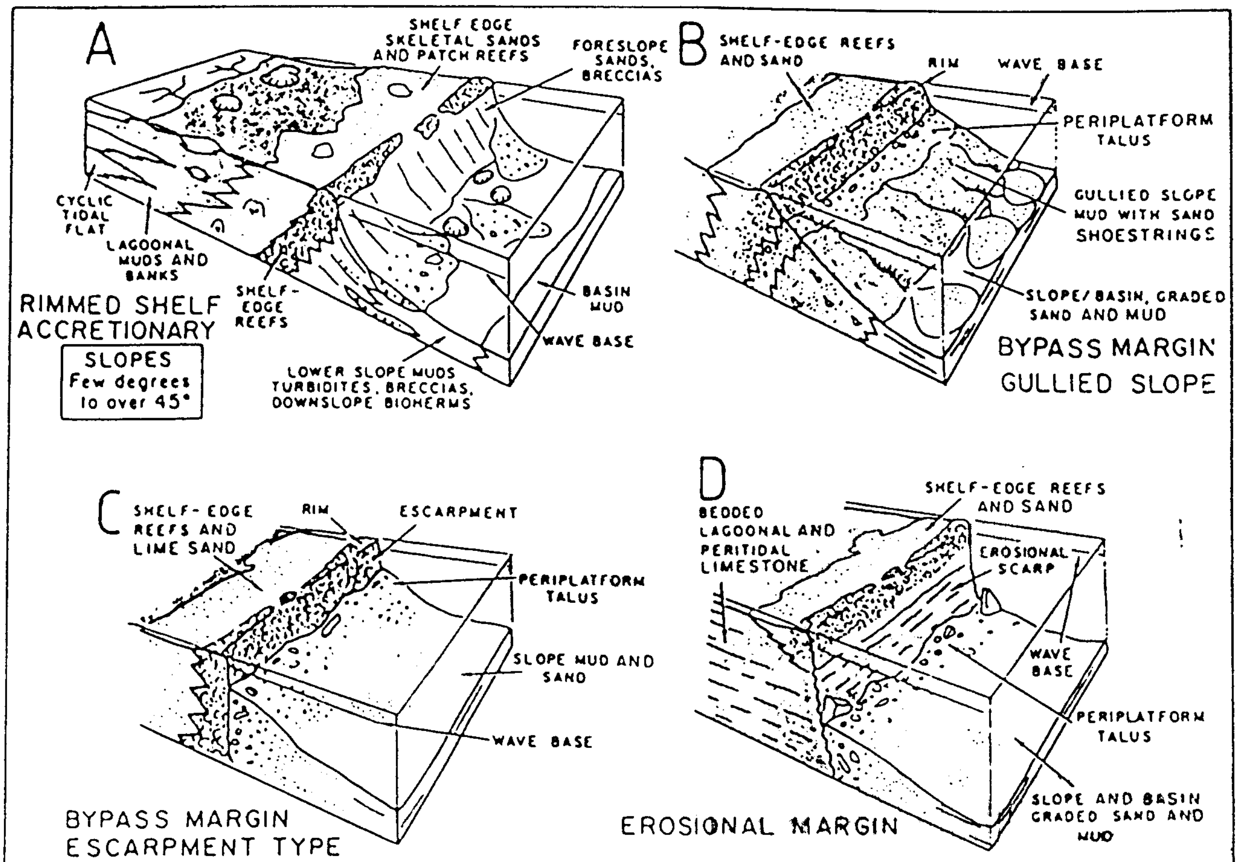


Figure 4—Rimmed shelves. A. Accretionary rimmed shelf. Reflects sedimentation exceeding relative sea level rise, causing shelf to prograde as well as build upward. B. Rimmed shelf with gullied bypass slope. C. Rimmed shelf with escarpment that functions as bypass slope. D. Rimmed shelf with erosional margin that exposes bedded platform-interior facies on escarpment. E. Rimmed shelf with deep reefal rim. Note that rim stays relatively deeply submerged throughout its growth and does not grow to sea level.

17c

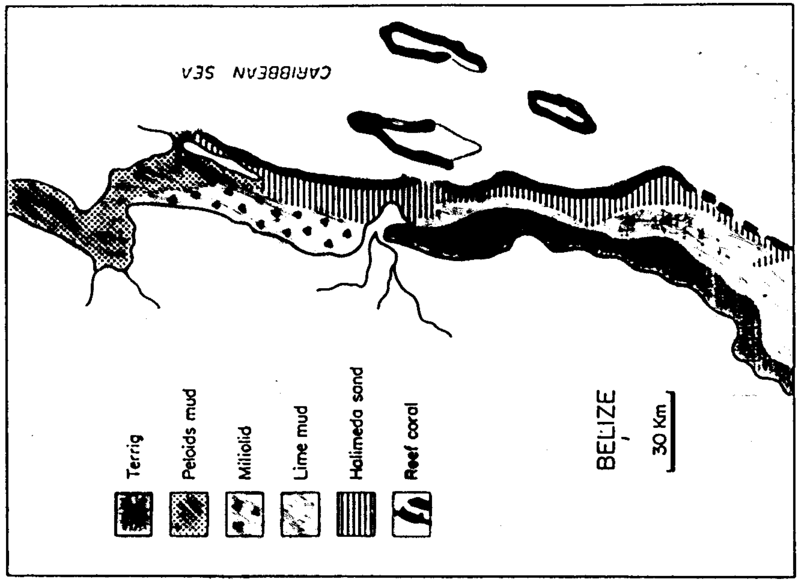


Figure 33—Belize shelf margin drop-off model showing facies belts.

aus Scholle (ed) 1983

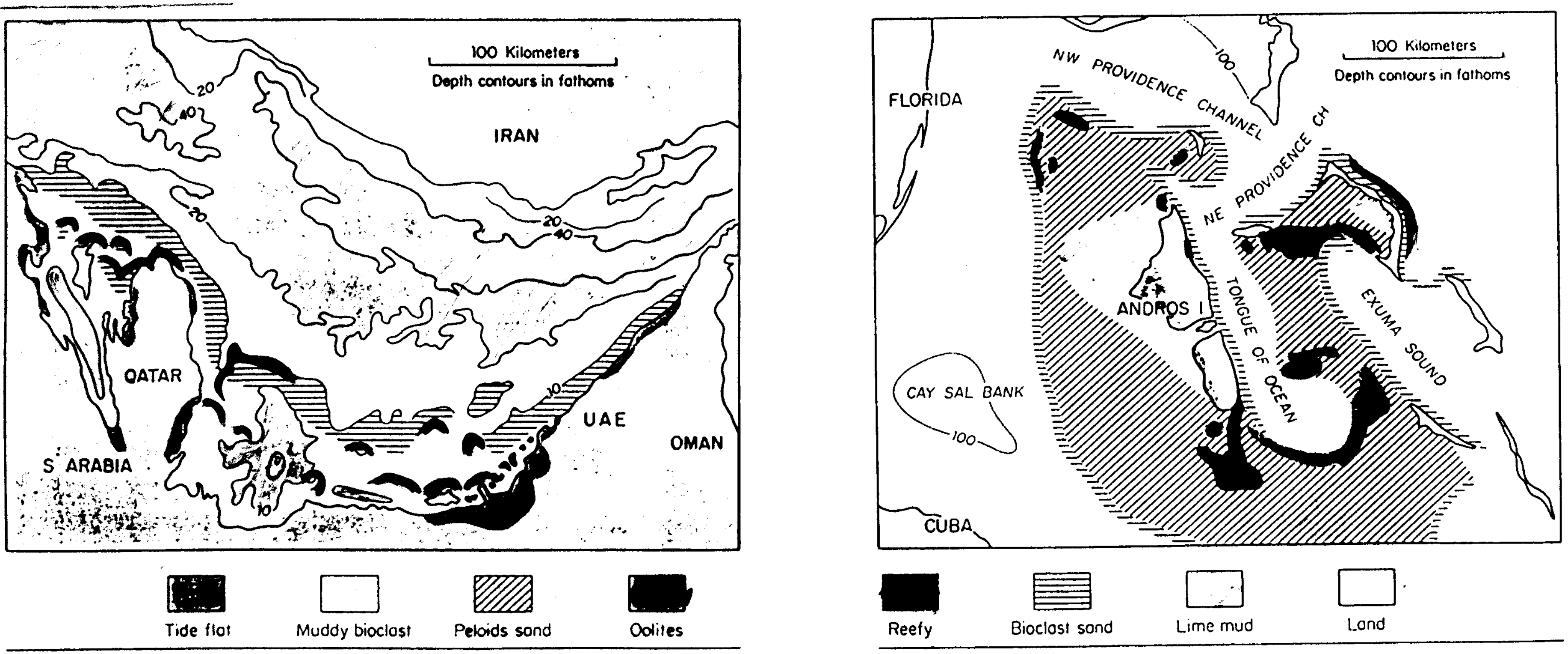


Figure 32—Comparison of modern carbonate facies of Persian Gulf Great Pearl Bank (ramp model) and Great Bahama Banks (drop-off model) on