GEOLOGIC HISTORY

OF NEW YORK STATE

Eon Million years ago	Era	Period	Epoch Million y	Life on Earth	NY Rock Record Sediment
	_	QUATERNARY	HOLOCENE PLEISTOCENE	0.01 Humans, mastodonts, mammoths	
TER	CENOZOIC	NEOGENE	PLIOCENE	5.3 Large carnivorous mammals	P.05
PHANERO-ZOIC		PALEOGENE	OLIGOCENE 35		+
300		PALEOGENE	PALEOCENE 65	Many modern groups of mammals 5.5 Mass extinction of dinosaurs, ammonoids, and many land plants	
1000	MESOZOIC	CRETACEOUS	LATE	many land plants Earliest flowering plants	
OIC	M First I sexually reproducing		EARLY	Diverse bony fishes	1 1
A N ROTEROZOI	D organisms	JURASSIC	LATE MIDDLE	Earliest birds Abundant dinosaurs and ammonoids	
LER	E	JUNASSIC	EARLY 200		
Q.	E	mpi aceta	LATE	Earliest mammals	
	A R Oceanic oxygen begins to enter the atmosphere PALEOZOIC	TRIASSIC	MIDDLE EARLY or	Earliest dinosaurs	1 1
B			LATE 251	Mass extinction of many land and marine organisms (including trilobites) Mammal-like reptiles	\vdash
A M		PERMIAN	EARLY	Abundant reptiles	
1000	Oceanic oxygen produced by cyanobacteria combines with iron, forming iron oxide layers on ocean floor L E Earliest stromatolites Oldest microfossils E	PENNSYLVANIAN	LATE EARLY 215	Extensive coal-forming forests	
		CARBONII EROUS WIGHISSISSIM	LATE	Abundant amphibians Large and numerous scale trees and seed ferns	
			MIDDLE	(vascular plants); earliest reptiles	
NAN		DEVONIAN	LATE	Earliest amphibians and plant seeds Extinction of many marine organisms	
RCHEAN			MIDDLE	Earth's first forests Earliest ammonoids and sharks Abundant fish	ш
AB	A Evidence of biological	SILURIAN	EARLY 416	Earliest insects	+
200400	R carbon		EARLY	Earliest land plants and animals Abundant eurypterids	
4000	L Y Oldest known rocks	ORDOVICIAN	LATE 444		
			MIDDLE	Invertebrates dominant Earth's first coral reefs	
			EARLY		
4600	Estimated time of origin of Earth and solar system		LATE 400	Burgess shale fauna (diverse soft-bodied organisms	
	of Earth and solar system	CAMBRIAN	MIDDLE	Earliest fishes Extinction of many primitive marine organisms Earliest trilobites	
			542 580	Great diversity of life-forms with shelly parts Ediacaran fauna (first multicellular, soft-bodied	
	/			marine organisms)	
(Index fossils no	ot drawn to scale)		1300	Abundant stromatolites	
(A) (B		F G	H (1)	J K L A M	(N)
MA	自動力が	90)	YW		大张
Crypto. Elliptocephala	lithus Valcouroceras Cent Phacops Hexameroceras	roceras Eucal Manticoceras	yptocrinus ²⁸ Ctenocrii	Tetragraptus Coelophysis nus Dicellograptus Eurypt	Stylonurus erus

Time Distribu (including importan The center of each lettered circle existence of a specific index fossi of the Early Cambrian).	t fossils of N	New York)	Important Geologic Events in New York	Inferred Positions of Earth's Landmasses
THE RESERVE THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO I	0) (S)		Advance and retreat of last continental ice	
NAUTILOIDS NAUTILOIDS	BRDS		Sands and clays underlying Long Island and Staten Island deposited on margin of Atlantic Ocean Dome-like uplift of Adirondack region begins	59 million years ago
voms c critorins	ASCULAR PLANTS	OPODS	Initial opening of Atlantic Ocean North America and Africa separate (Intrusion of Palisades sill) Pangaea begins to break up	119 million years ago
TRILOBITES AMMONOUDS	VA	GASTROPODS	Alleghenian orogeny caused by collision of North America and Africa along transform margin, forming Pangaea	232 million years ago
C F G I	O O O O O O O O O O O O O O O O O O O		Catakill delta forms Erosion of Acadian Mountains Acadian orogeny caused by collision of North America and Avalon and closing remaining part of lapetus Ocean Salt and gypsum deposited in evaporite basins	359 million years ago
B D J	la d	HŤ	Erosion of Taconic Mountains; Queenston delta forms Taconian orogeny caused by closing of western part of lapetus Ocean and collision between North America and volcanic island are	
• '		11	Widespread deposition over most of New York along edge of Iapetus Ocean Rifting and initial opening of Iapetus Ocean Erosion of Grenville Mountains	458 million years ago
			Grenville orogeny: metamorphism of bedrock now exposed in the Adirondacks and Hudson Highlands	

