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The Devonian system is well developed in New York and Pennsylvania where 20,000 to 15,000 feet of strata, largely shales and sandstones of Middle and Late Devonian age, are found along the axis of the Allegheny synclinalorium. These clastic rocks were derived from sediments carried westward and northwestward from mountains along the eastern coast of North America produced by the Acadian disturbance. The entire Middle and Upper Devonian sequence is usually interpreted to be a large delta or, more probably, a series of coalescing deltas forming a vast compound delta. It is widely known as the Catskill delta, named from exposures in the Catskill Mountains of eastern New York

Both marine and non-marine depositional environments are well represented. Fine-grained sediments accumulated in the marine waters of the inland seas; coarser deposits formed on the alluvial plains near the shore lines to the east. As the Acadian disturbance in the east and subsidence of the western basin continued the delta grew larger its shore line migrating westwardly and northwestwardly. The non-marine deposits of the Late Devonian extend further west than those of the Middle Devonian and overlie earlier marine beds. Thus a complete series of depositional environments is encountered in vertical sequence as well as laterally across the state. (See Figure 2). The non-marine conglomerates, red sandstones and shales grade westwardly into gray sandstones and shales bearing marine fossils which, further west, give way to interbedded siltstones and shales and finally soft calcareous shales, abundantly fossiliferous. Still further west these beds are replaced by black shales bearing meager faunas, largely of pelagic origin. These different phases were originally interpreted as successive formations, each younger than the more seaward deposits beneath it. It is only recently that their lateral gradation into each other and equivalency in age has been recognized.

Within the Wellsville region nearly all of these depositional environments can be recognized. The Dunkirk, South Wales and Hume shales represent the black or dark gray shale phase. More landward fossiliferous marine phases are contained within the overlying rock units of the Canadaway and lower Chadakoin groups. Near the shore line and upon the subaerial surface of the delta other phases were formed, represented by the Wolf Creek conglomerate and the non-marine red beds of the Germania and Cattaraugus.

The westward migration of the shore line was not uniform; periods of transgression by the seas upon the subaerial surface of the delta alternated with intervals during which the shore line advanced seaward. These alternations were caused largely by changes in the balance between the rate of sedimentation and rate of subsidence. This produced variations in the type of sediments being deposited at a given locality, variations which are now reflected in the differing rock types encountered in vertical sequence of that place. If subsidence exceeded sedimentation, the seas advanced over the delta and fine-grained sediments came to lie upon older, coarser deposits. As the rate of subsidence decreased and sedimentation continued, the grain size of the deposits at that place increased. A renewed period of subsidence in excess of sedimentation would cause fine-grained sediments to be re-introduced in that locality

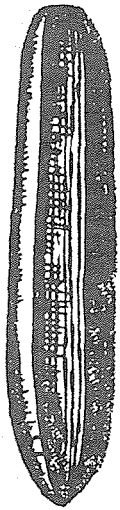
On this manner the variations in rock type seen in vertical sequence in one section and the lateral gradation of differing rock types into each other were produced. Recent workers in Upper Devonian stratigraphy have recognized these variations and have interpreted them as evidence of cyclic deposition. The application of this interpretation is controversial.

TYPICAL UPPER DEVONIAN FOSSILS

FROM

ALLEGANY AND CATTARAUGUS COUNTIES, NEW YORK

S P O N G E



Prismo dictya
(x1)



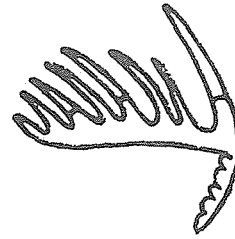
Spicules
(magnified)

C O N O D O N T S

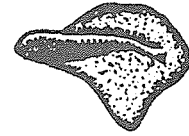
(x20)



Polygnathus

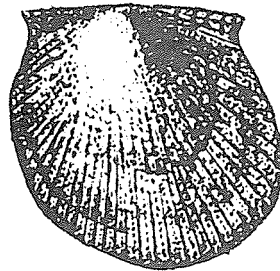


Ligonodina

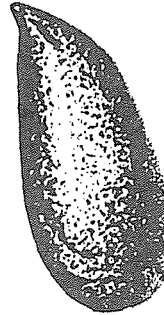


Palmatolepis

P E L E C Y P O D S



Pterinopecten suborbicularis
(x1)

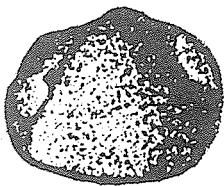


Mytilarca chemungensis
(x1)

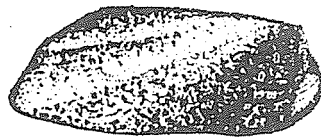
C E P H A L O P O D



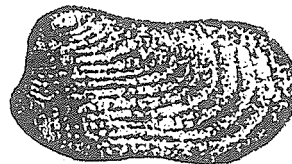
Orthoconic nautiloid
(x1)



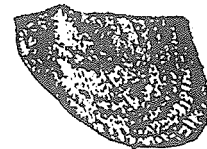
Schizodus oblatius
(x1)



Sphenotus contractus
(x1)

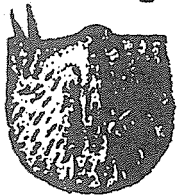


Grammysia communis
(x1)



Ptychopteria saoi
(x1)

B R A C H I O P O D S



Productella lachrymosa
(x1)



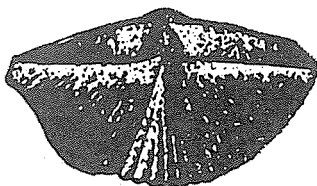
Athyris angelica
(x1)



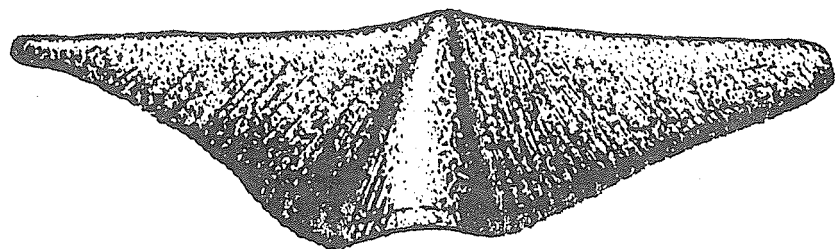
Tylothyris mesacostalis
(x1)



Camarotoechia contracta
(x1)



Cyrtospirifer disjunctus
(x1)



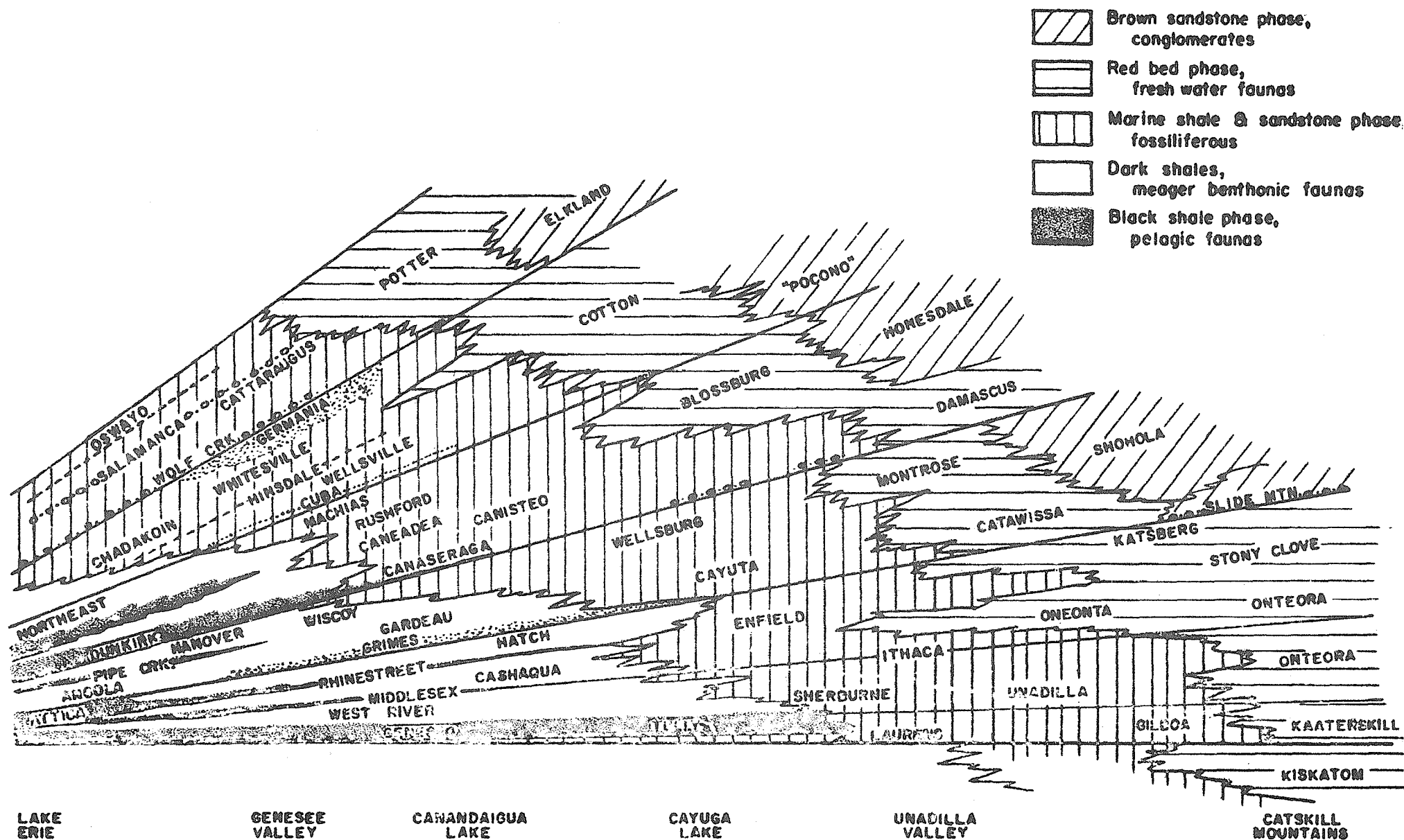
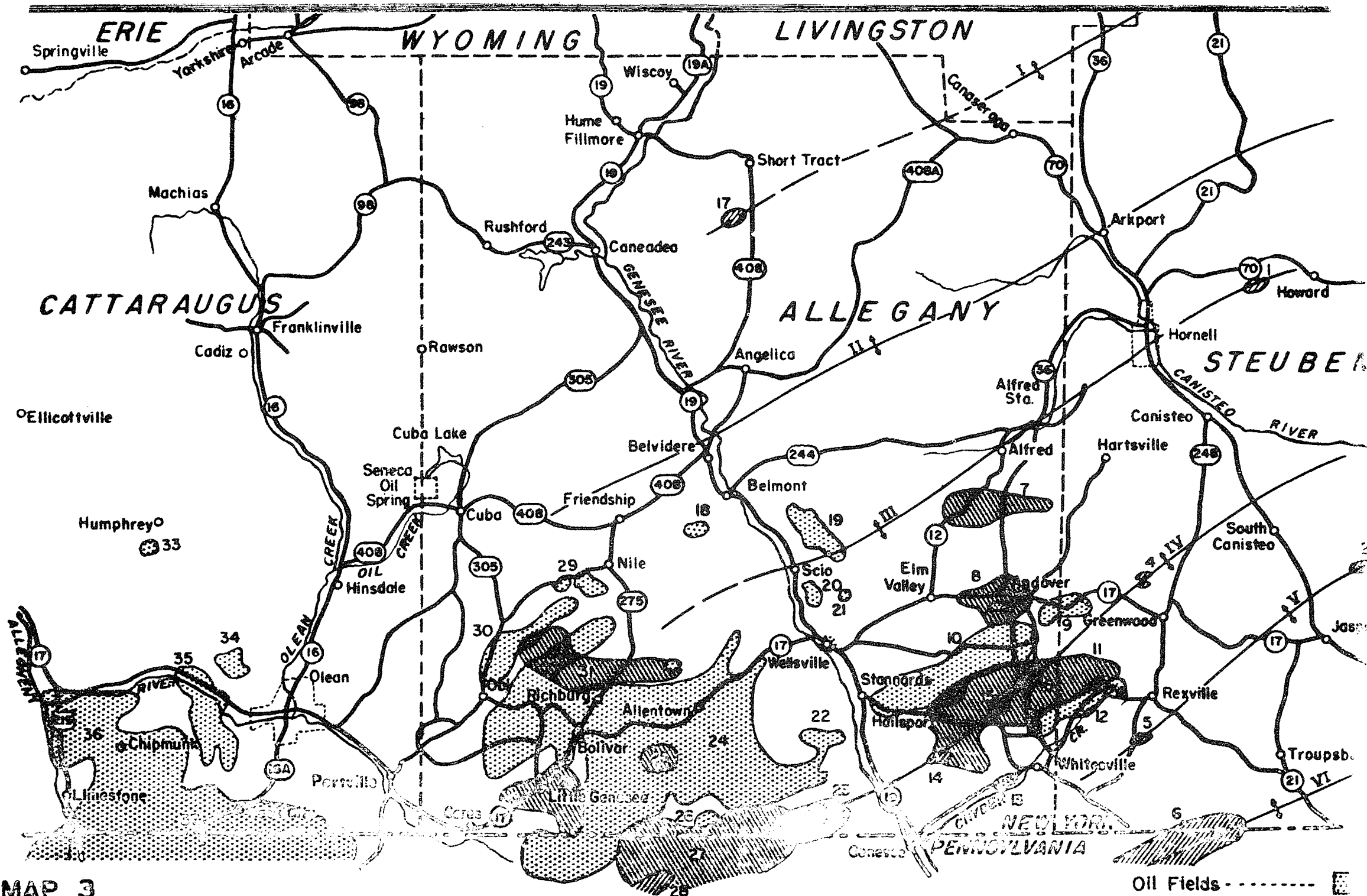


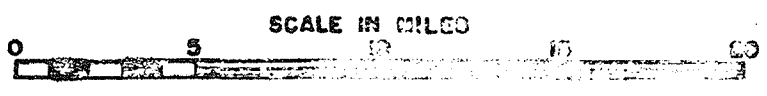
FIGURE 2
 UPPER DEVONIAN DEPOSITIONAL PHASES
 SOUTHERN NEW YORK

TABLE 3 - KEY TO OIL AND GAS FIELDS AND ANTICLINES OF MAP 3

<u>Oriskany</u>	<u>Shallow Gas</u>	<u>Shallow Oil</u>
	OIL AND GAS FIELDS	
1. Howard		
2. Jasper		
3. Woodhull		
4. Greenwood		
5. Gilbert Hill		
6. Harrison		
	7. Alfred	
	8. Andover	8. Andover
		9. Greenwood
		10. Fulmer Valley
	11. Willing-Independence	12. Potter-Marsh
		13. Cryder
14. Beech Hill		
15. Independence W.		
16. Independence N.		
17. Allen		
		18. Corbin Hill
		19. Scio (Main)
		20. Scio (shallow)
		21. Madison Hill
		22. Fords Brook
23. State Line (north & south)		24. Allegany (main)
	25. Gas cap	26. Alma
	27. Alma	
28. Sharon		29. Nile
		30. Clarksville
	31. Bolivar	
	32. Little Genesee	
		33. Humphrey
		34. Five Mile
		35. Bradford Sand
		36. Chipmunk
		37. Bradford (main)
38. Allegany St. Park		
	ANTICLINAL AXIAL TRENDS	
	I - Lodi	
	II - Severne Point	
	III - Firtree	
	IV - Watkins - Sharon	
	V - Alpine	
	VI - Van Etten - Harrison	



MAP 3
STRUCTURE MAP OF WELLSVILLE AREA
WITH OIL AND GAS FIELDS



- Oil Fields - [stippled pattern]
- Shallow Gas Fields [diagonal lines pattern]
- Deep Gas Fields - [cross-hatched pattern]