PALEONTOLOGY OF THE LOWER TRENTON GROUP OF CENTRAL NEW YORK STATE

by

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INTRODUCTION

The lower Trenton Group contains a broad spectrum of carbonate environments ranging from shallow nearshore to relatively deep offshore facies. Well preserved, diverse and abundant fossil assemblages are found at all stratigraphic levels. Many good, easily accessable outcrops are available for field demonstrations of principles of fossil community analysis and marine paleoecology. These outcrops extend from Canajoharie to Watertown and beyond into Ontario. However most of the major facies can be visited within a short belt extending from Little Falls to Middleville. This field guide will focus on this area.

GEOLOGIC SETTING

Five formations make up the lower Trenton Group. These are, in ascending order, the Napanee Limestone, the Kings Falls Limestone, the Sugar River Limestone, the lower Denley Limestone and the Dolgeville Facies (Kay, 1937, 1968). These units were deposited in a transgressing sea associated with an inversion of topography which accompanied the Taconic Orogeny (Rodgers, 1971). As the seas swept eastward through New York State the following sequence of environments appeared at the various locations. First a nearshore lagoonal facies appeared represented by the calcisiltites of the Napanee and lower Kings Falls Limestone. This was a generally quiet water environment with normal marine salinities. Following the lagoonal facies is a wave swept shoal facies represented by the sparitic coquinal calcarenites of the middle Kings Falls Limestone. Primary physical structures including pararipples, cross bedding, sheet laminations and intraclasts indicate very shallow, turbulent conditions (Mangion, 1972). This nearshore lagoon to shoal sequence characterizes the lower Trenton Group northwest of Boonville. In this area seas were transgressing over a nearly horizontal landscape. As the seas approached the Adirondack Arch the slope of the transgressed landscape increased. As a result the shoal facies migrated shoreward at the expense of the lagoon facies which disappeared altogether. The shoal facies of the northwestern outcrops grades into the shallow, turbulent nearshore facies in the southeastern outcrops. This facies pattern matches depositional models described by Anderson (1971).

Succeeding the shoal facies is the shallow offshore shelf facies of the upper Kings Falls Limestone. This facies is distinquished from the underlying shoal facies by a scarcity of high energy primary

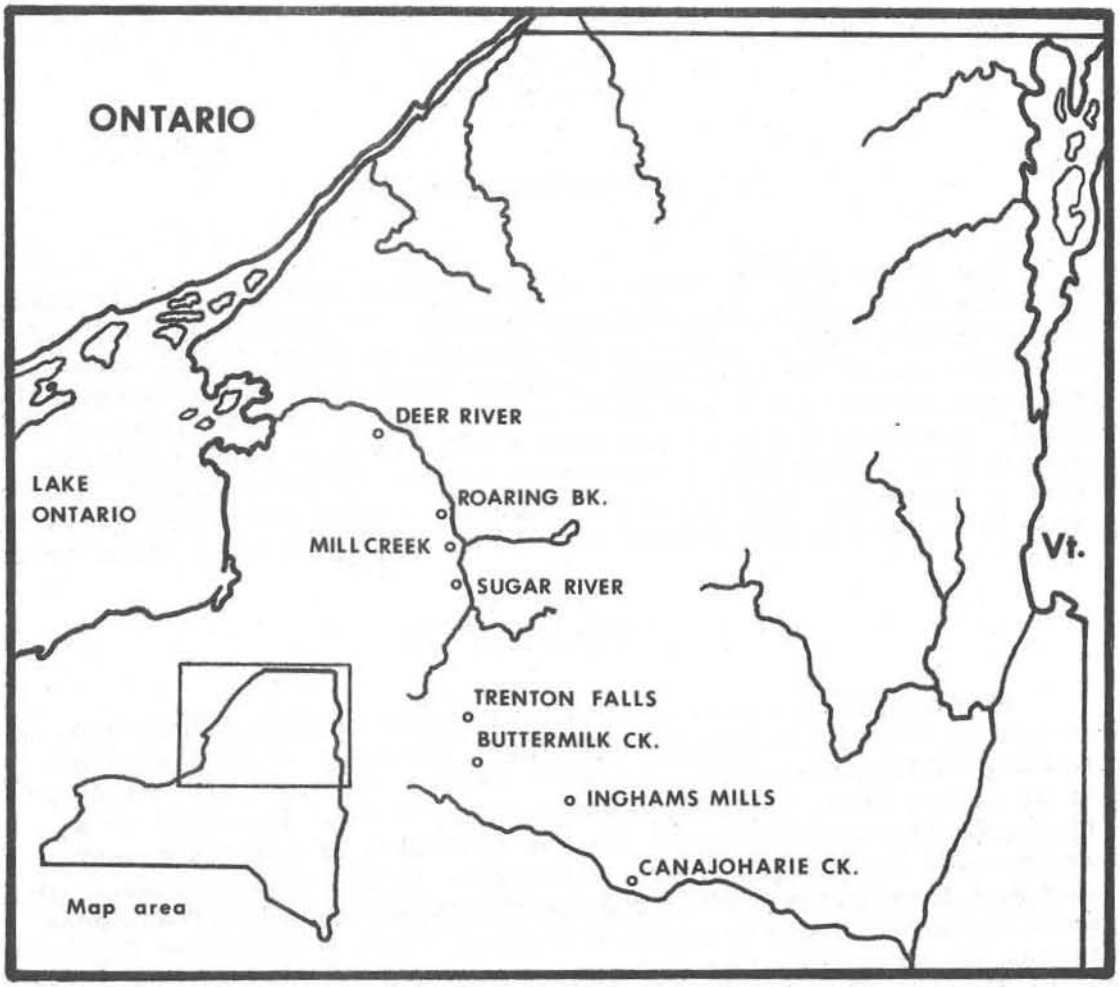
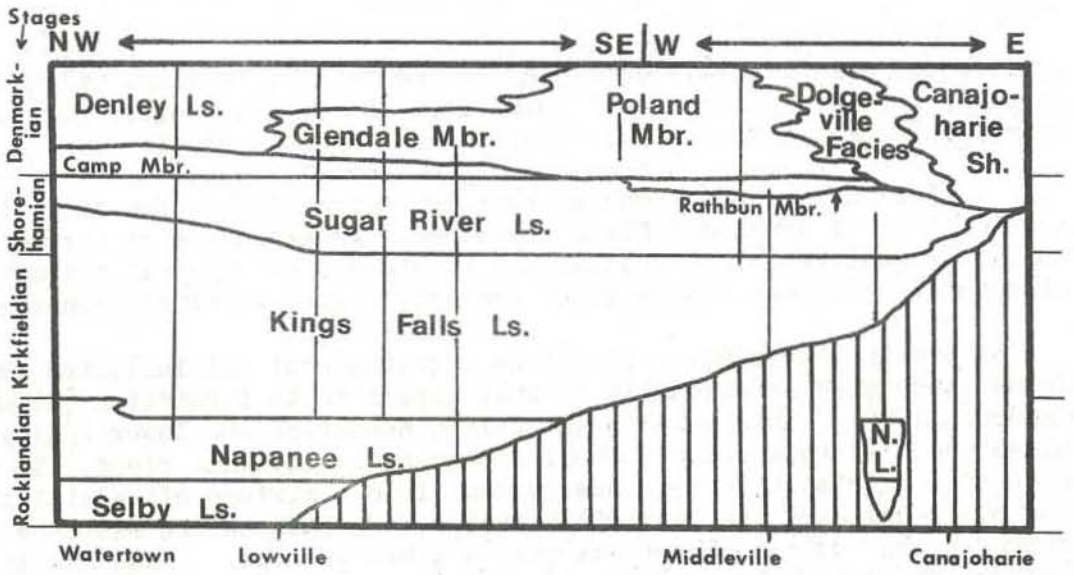
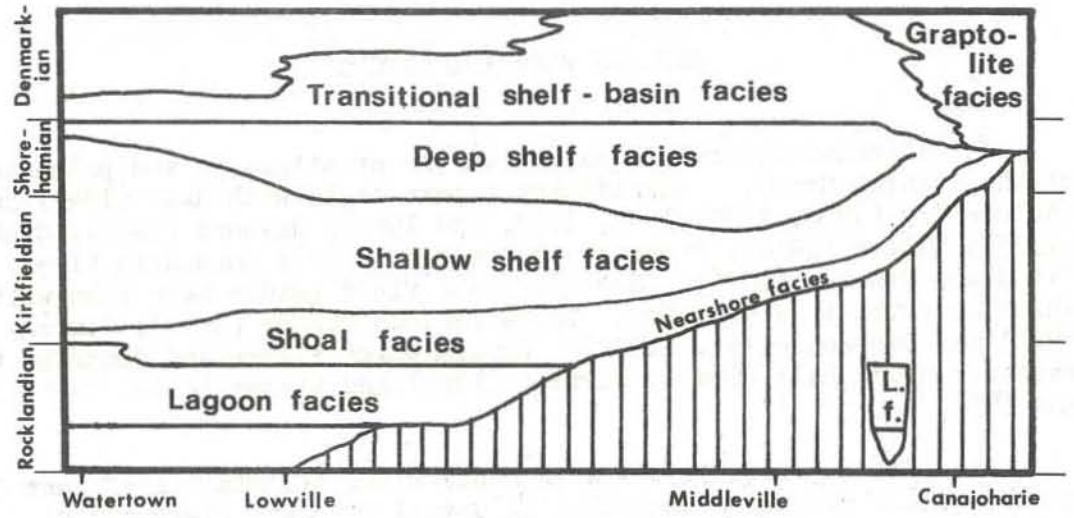
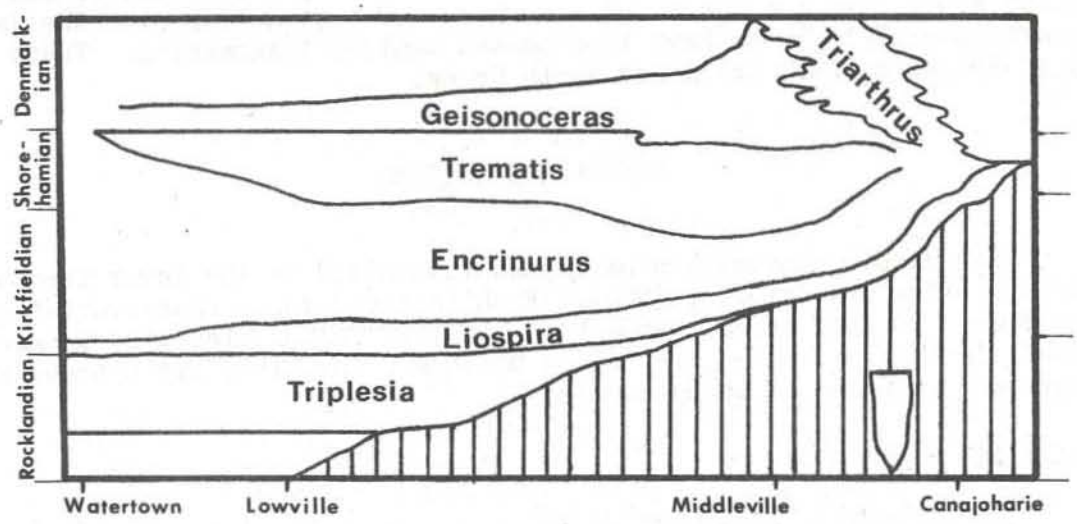


Fig. 1 (Above) Map of northwestern New York State showing major outcrops of Trenton Group.

Fig. 2 (To the right, next page) Three cross sectional views of the lower Trenton Group. View one (top) shows the stratigraphy of the lower Trenton Group. View two (middle) shows the stratigraphic distribution of the various facies of the lower Trenton Group. View three (bottom) shows the stratigraphic distribution of the various communities.


Stages
NW
SE
W
E
Denmark-ian
Shore-hamian
Kirkfieldian
Rocklandian
Denley Ls.
Glendale Mbr.
Poland Mbr.
Dolgeville Facies
Canajoharie Sh.
Camp Mbr.
Rathbun Mbr.
Sugar River Ls.
Kings Falls Ls.
Napanee Ls.
Selby Ls.
N. L.
Watertown
Lowville
Middleville
Canajoharie


Denmark-ian
Shore-hamian
Kirkfieldian
Rocklandian
Transitional shelf - basin facies
Graptolite facies
Deep shelf facies
Shallow shelf facies
Nearshore facies
Shoal facies
Lagoon facies
L. f.
Watertown
Lowville
Middleville
Canajoharie


Denmark-ian
Shore-hamian
Kirkfieldian
Rocklandian
Triarthrus
Geisonoceras
Trematis
Encrinurus
Liospira
Triplesia
Watertown
Lowville
Middleville
Canajoharie

structures, more micritic calcarenites and thinner bedding. Although still probably subject to occasional turbulence this was a deeper, farthur offshore, quieter and more stable environment than the shoal.

A still deeper shelf environment is represented by the micritic calcarenites of the Sugar River Limestone. An abundance of burrow reworked structures, thin bedding and an absence of physical primary structures indicates a more quiet probably deeper water environment.

Above the Sugar River Limestone a sequence of calcisiltites is found interupted occasionally by what appear to be turbidites (Titus and Cameron, 1976). This unit is the Poland Member of the lower Denley Limestone. It represents a shelf to basin transitional slope. To the east this calcisiltite sequence grades into a mixture of calcisiltites and black shales, the Dolgeville Facies. Furthur to the east the limestones pinch out and the black shales alone persist. These are the Canajoharie and Utica black shales.

EARLIER WORK AND OUTCROPS

An extensive literature exists on the stratigraphy and paleontology of the Trenton Group. Significant papers begin with Hall (1847) and include Kay (1933, 1937, 1943, 1953, and 1968); Raymond (1903); Cushing (1905); Miller (1910); Prosser and Cumings (1897); Chenoweth (1952) and Titus and Cameron (1976). Several other field guides have been written which describe this vicinity. These include Fisher (1966); Cameron (1969, 1972) and Cameron et al. (1972). Papers which figure and describe the faunas include Hall (1847); Raymond (1921) and Wilson (1946, 1947, 1951 and 1956).

The best outcrops in the area occur along tributaries of West Canada Creek. These have been described in detail by Kay (1943, 1953). Good, thick exposures are found along Stony Creek, City Brook, Buttermilk Creek, Shedd Brook, Rathbun Creek and elsewhere. Unfortunately over the past few years several of these have been posted against trespassing. These in-City Brook, Rathbun Creek and North Creek.

FOSSIL COMMUNITIES

Six fossil communities have been recognized in the lower Trenton Group (Titus and Cameron, 1976). Each is named for a characteristic species. In life these communities occupied belts which lied progressively farther offshore. Following Walther's rule they are exposed in a vertical sequence at each outcrop.

Triplesia Community

The Triplesia Community occupied the protected quiet mud bottomed facies of the Napanee and lower Kings Falls limestones. The community

is named for the orthid brachiopod which serves as an index for the Rocklandian Stage (Kay, 1937; Cameron and Mangion,1977).

The Triplesia Community is much more heterogeneous than any of the others. It also has the longest faunal list (74 taxa). About a third of the species are brachiopods. Of these the strophomenids are most abundant. Sowerbyella is the most common form making up over 50% of the remains. At least 7 species of Rafinesquina and 3 of Strophomena are present. Orthids make up most of the rest of the brachiopods with Paucicrura and Hesperorthis being very common.

The bryozoa, especially trepostomes, are locally abundant. Prasopora and Amplexopora are the most prominent genera. Sometimes slabs are densely littered with the remains of these forms. The fanlike Phylloporina is sometimes common.

A number of groups are present in the Triplesia Community but uncommon elsewhere. Corals are rarely found outside this community. Streptolasma is the most abundant but also found are Columnaria and Foerstephyllum. Clams are more abundant here than elsewhere. Colpomya and Endodesma are locally abundant. Ostracodes are very abundant but few have yet been identified.

Also common are snails, nautiloids, trilobites and crinoids. Generally uncommon, but present, are conularids, algae and sponges.

The community is dominated by the low filter feeders which include brachiopods, bryozoa and clams. Grazers, including snails, trilobites and ostracodes are next most abundant. The only other significant trophic groups are the carnivores (nautiloids) and the high filter feeders (crinoids).

Generally community populations are scattered into dense localized clusters. Scarcity of suitable substrate in this muddy facies probably accounts for this.

Liospira Community

The Liospira Community occupied a wave swept shoal environment offshore from the Triplesia Community. In the Middleville-Little Falls area, however, the lagoonal facies is absent and the Liospira Community occupied an onshore facies. The community is named for the pleurotomarid gastropod which has a range which closely parallels that of the community.

Again the brachiopods are numerically dominant. Orthids are particularily common. Paucicrura makes up over 50% of the remains. Other common orthids include Dinorthis, Hesperorthis and Plectorthis . The strophomenids are still common with at least seven species present.

Gastropods are more abundant in this community than elsewhere. Hormotoma, Loxoplocus, Phragmolites, Sinuites and Liospira itself are found.

High filter feeding forms did not do well in the turbulent environment. Both the crinoids and bryozoa are relatively less common in this environment than elsewhere. However one crinoid, Schizocrinus nodosus, did thrive in this facies and is commonly represented by large round columnals.

Overall diversity of the Liospira Community is very high (71 taxa). Curiously, however, diversities of the individual bedding surfaces are generally very low. This apparent conflict between low bedding surface diversities and high overall diversity is resolved if the shoal facies is envisioned as being composed of many microenvironments each with a low diversity microcommunity. The sum of all of these microcommunity faunal lists produces the high overall diversity.

Equitability figures are consistantly low. Paucicrura averages 54% of the bedding surface assemblages and sometimes makes up over 90% of some assemblages. The low diversities and equitabilities of the bedding surface assemblages clearly indicate that the Liospira Community was a physically controlled community (Sanders, 1968).

The community is overwhelmingly dominated by low filter feeders and most all of these are brachiopods. The only other significant trophic group is the grazers represented by gastropods and trilobites.

Encrinurus Community

Lying offshore of the shoal facies was a shallow shelf which was occupied by the Encrinurus Community. The community is named for the phacopid trilobite which is most easily identified by its distinctive pygidium.

While the brachiopods Paucicrura and Sowerbyella still dominate the community (46% and 15% respectively) the importance of other groups is much greater than in the nearshore communities. Bryozoa in particular are abundant. Trepostomes, including Prasopora, Amplexopora and Eridotrypa make up the most obvious non-brachiopod components of the community. Cryptostomes, including Stictopora and Escharopora are also abundant.

Trilobites also reach their peak in diversity in this community. Besides Encrinurus there is found Ceraurus, Flexicalymene and Hemiarges. Crinoids too reach a peak in diversity. Unfortunately few fully articulated skeletons have been found but study of the stems and columnals has indicated the presence of Cupulocrinus, Dendrocrinus, Ectenocrinus, Glyptocrinus and Heterocrinus.

Conspicuously absent are the mollusks. Virtually no gastropods, nautiloids or pelecypods are known from this community.

Overall diversity of this community is high (61 taxa) but lower than was found in the more nearshore communities. This is surprising because bedding surface diversities reach a maximum in the uppermost beds containing the community. This problem can again be solved by considering the role that microenvironments and microcommunities play in the overall diversities of large communities. The shallow shelf facies must

have been much more monotonous than was the case for the shoal. A corresponding lower number of microcommunities must have existed. The stable nature of the shallow shelf facies promoted high diversities within the microcommunities but with fewer of these microcommunities overall diversity was depressed.

Equitability figures for this community rise above the levels found in the Liospira Community. The most abundant form (Paucicrura) makes up an average of 46% of the bedding surface assemblages. Increased equitability apparently reflects the greater stability of the offshore facies. This was largely a biologically accommodated community.

There is also a more equitable distribution of the trophic groups in this community. The low filter feeders are still dominant but also common are the high filter feeders (crinoids and bryozoa). The grazers (trilobites) are also common.

Trematis Community

Moving offshore on the shelf depths gradually increased, current activity decreased, condition became more stable and the substrate became more muddy. This offshore shelf habitat was occupied by the Trematis Community. The community is named for the small inarticulate brachiopod which occurs in abundance. Another good guide fossil for the community is the trilobite Cryptolithus tesselatus.

About a quarter of the species of this community are brachiopods with Paucicrura once again dominating (38% of the assemblages). Bryozoa are numerically very important. Prasopora makes up about 20% of the assemblages. Also abundant are the genera Eridotrypa and Amplexopora.

Crinoids continue to be abundant here with the small pentagonal columnals of Iocrinus being diagonistic of the community. Trilobites are also abundant, especially Flexicalymene.

Gastropods and nautiloids continue to be quite scarce in this community as in the Encrinurus Community. Apparently the Shallow shelf environment was not suited to these groups. A few clams do appear and are sometimes locally abundant.

Overall community faunal lists become progressively shorter in an offshore direction. The 74 species of the nearshore Triplesia Community compare with 53 in the offshore Trematis Community. Again this is not reflected on the individual bedding surfaces. Diversities of these surfaces are among the highest found in the lower Trenton Group. Again, as in the Encrinurus Community, the environmental picture suggests a quiet, stable seafloor with uniformly high diversities and a small number of microcommunities.

Equitability figures reach a peak in this community. The most abundant species, Paucicrura, only makes up 38% of the bedding surface assemblages. This is the lowest level of dominance found in the lower Trenton Group. The high diversity and low dominance figures indicate that the Encrinurus Community was a biologically accommodated community.

Low and high filter feeders continue to dominate in this community. These are represented by the brachiopods, bryozoa and crinoids. The only other significant trophic group is the grazers represented by the trilobites.

Geisonoceras Community

The lower Denley Limestone was deposited beyond the carbonate shelf in a bank margin environment sloping to the east. In this facies the lithologies become dominated by calcisiltites as the calcarenites disappear. The Geisonoceras Community occupied this facies and reflects the mud bottomed substrate.

Only 7 species of brachiopods are found here but Paucicrura continues to dominate (44%). The bryozoa continue to thrive in the quiet water environment with at least 9 species present.

The most characteristic and interesting components of the community are the nautiloids, gastropods and crinoids. The lowermost beds which contain the community are extremely rich in nautiloids. Hundreds of specimens are found littering the bedding surfaces at this level. Genera include Trocholites, Endoceras, "Orthoceras" and most abundant Geisonoceras itself. Associated with these and especially common at the base of the Denley is the snail Sinuites bilobatus corrugatus. Above the nautiloid beds are encrinites rich in the remains of the crinoid genus Merocrinus.

Trilobites are represented only by Flexicalymene and Isotelus, with many whole specimens of the former commonly observed.

The overall faunal list is still shorter in this community. Only 49 taxa have been found. Bedding surface diversities had reached a peak in the strata near the boundary of the Encrinurus and Trematis community zones. Above this level diversities steadily decline to relatively low levels in the Geisonoceras Community zone.

Equitability levels decline in the Geisonoceras Community zone. Paucicrura reached a low level of dominance in the Trematis Community (38%) but then rebounded in importance in the Geisonoceras Community (44%). Evidently this community is at least partially physically controlled. A physical factor which may have introduced instability into this deep water community was the presence of turbidity currents. Graded beds which appear to be turbidites are common in the lower Denley Limestone. The low filter feeders are the dominant group but other trophic groups are important there as well. The carnivores (nautiloids) and the high filter feeders (crinoids and bryozoa) are significant members.

Triarthrus Community

The lower Denley Limestone apparently represents a slope descending from the carbonate shelf to a relatively deep basinal environment. At these greater depths the carbonates begin to interfinger with black shales. This sequence of alternating shale and limestone is known as the Dolgeville Facies and was inhabited by the Triarthrus Community. The community is named for the small trilobite which is often found in great abundance.

This is the only community not dominated by brachiopods. However several inarticulates are present and these include rare specimens of Lingula.

The dominant Group is the ostracoda. At least six species are found and they comprise nearly 90% of the individuals present. These include the genera Aparchites, Primatia and Primatiella.

The only other group of any significance in this community is the trilobita. Isotelus, Flexicalymene and Triarthrus are moderately abundant.

A number of planktic forms occur with the Triarthrus Community. These include graptolites, annelid worms (Spirorbis and Serpulites) and a brachiopod (Leptobolus).

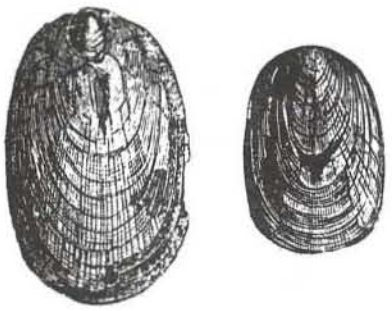
A number of thick beds are rich in forms that are usually only found in the shallow water communities. Sinuites, for example, is very abundant in a few beds. These are evidently transported remains, which probably rode turbidity currents into the deep water zones. Care must be taken when collecting in the Dolgeville Facies to recognize and avoid these beds.

Although the overall faunal list for this community is low, the fossiliferous slabs which are found often have fairly diverse assemblages on them. Equitability figures in this community are probably useless because many of the ostracode remains may represent molting during life rather than actually representing the body of a dead individual.

Table One - An abbreviated faunal list of lower Trentonian taxa. Listed are common visable fossils. Omitted are rare or microscopic forms.

Group Species	Community					
	Trip.	Lios.	Encr.	Trem.	Geis.	Tria.
Brachiopods						
Anazyga recurvirostris			X			
Dinorthis pectinella		X				
Doleroides pervetus		X				
Hesperorthis tricenaria	X	X				
Leptobolus insigna						X
Lingula curta						X
L. reciniformis				X	X	X
L. rectilateralis major	X			X		
Oepikina inquassa	X	X	X			
Parastrophina hemiplicata	X	X				
Paucicrura rogata	X	X	X	X	X	X
Platystrophia sp.			X	X	X	
Plectorthis plicatella		X				
Protozyga exiqua	X	X				
Rafinesquina trentonensis	X	X	X	X	X	
R. praecursor	X			X	X	
R. prestonensis	X	X	X	X		
R. robusta	X					
Rhynchotrema sp.		X				
Sowerbyella sericea	X	X	X	X		
Strophomena filetextra	X	X				
Trematis terminalis	X			X		
Triplesia cuspidata	X					
Bryozoa						
Amplexopora minnesotensis	X	X	X	X	X	
Corynotrypa inflata	X					
Eridotrypa mutabilis	X	X	X	X	X	
Escharopora recta	X		X			
Pachydictya acuta	X	X	X	X	X	
Phylloporina sp.	X		X			
Prasopora similatrix	X	X	X	X	X	X
Protocrisina exiqua			X			
P. perantiqua				X		
Stictopora blackensis	X	X	X	X	X	
Gastropods						
Hormotoma gracilis	X	X				
H. trentonensis	X	XX		X		
Liospira americana	X	X				
Loxoplocus sp.		X				
Phragmolites compressus	X	X	X			

Group / Species	Community					
	Trip.	Lios.	Encr.	Trem.	Geis.	Tria.
Sinuites cancellatus	X	X				
S. bilobatus corrugatus					X	
Subulites elongatus	X	X				
Nautiloids						
Endoceras proteiforme	X		X	X	X	
Geisonoceras lineolatus					X	
G. tenuitextum	X				X	X
G. tenuistriatum	X				X	
"Orthoceras" amplicameratum					X	
Spyroceras bilineatum		X				
Trocholites ammonius					X	
Pelecypods						
Colpomya faba	X					
Ctenodonta levata		?	?	X	X	
Endodesma trentonensis	X					
Lyrodesma sp.	X	X				
Vanuxemia sp.	X	X				
Trilobites						
Bumastis porrectus	X	X	X			
Calliops callicephalus			X			
Ceraurus pleurexanthemus	X		X	X		
Cryptolithus tesselatus				X		
Encrinurus cybeliformis			X			
Flexicalymene senaria	X	X	X	X	X	X
Hemiarges paulianus		X				
Isotelus gigas	X	X	X	X	X	X
Triarthrus becki						X
Miscellaneous						
Primatia spp.						X
Primatiella unicornis						X
Schizocrinus nodosus	X	X				
Streptolasma corniculum	X	X				
Conularia trentonensis	X		X			

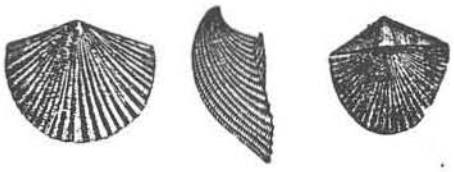


LINGULA RECTILATERALIS MAJOR

TREMATIS TERMINALIS

PAUCICRURA ROGATA

DINORTHIS PECTINELLA



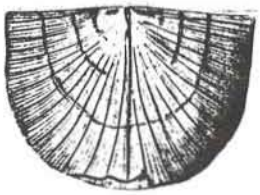
HESPERORTHIS TRICENARIA

PLECTORTHIS PLICATELLA

PLATYSTROPHIA SP.

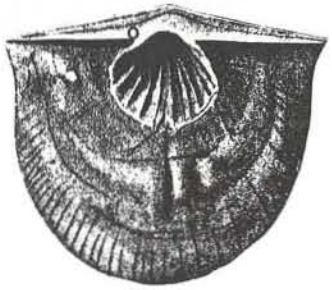
TRIPLESIA CUSPIDATA

PARASTOPHINA HEMIPLICATA

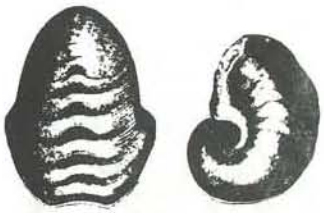


RAFINESQUINA TRENTONENSIS

SOWERBYELLA SERICEA

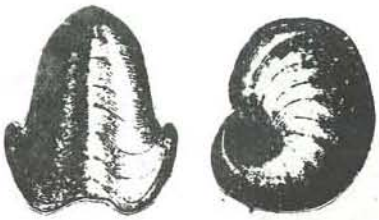


STROPHOMENA SP.



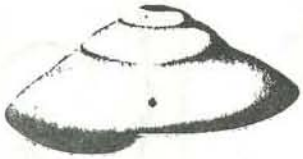
1. SINUITES BILOBATUS

2. HORMOTOMA TRENTONENSIS



3. SINUITES CANCELLATUS

4. HORMOTOMA GRACILIS

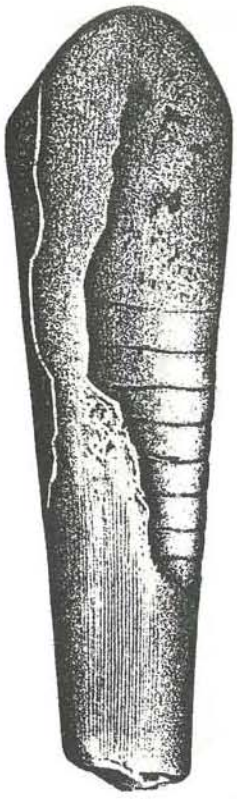


5. LIOSPIRA AMERICANA

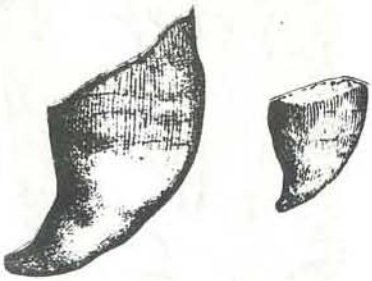
6. PHRAGMOLITES COMPRESSUS

7. SUBULITES ELONGATUS

8. CONULARIA TRENTONENSIS



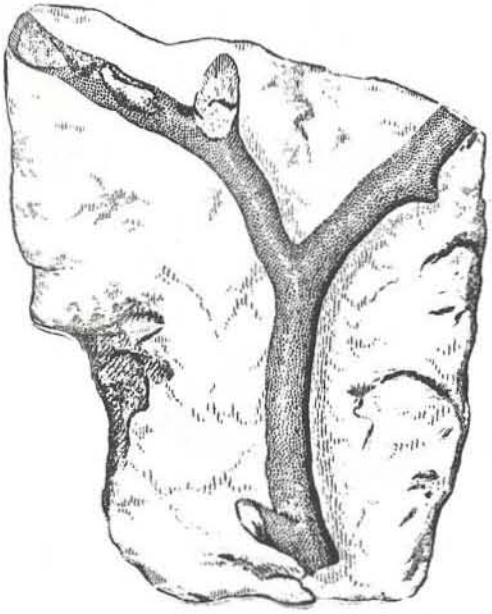
9. GEISONOCERAS TENUITEXTUM



10. STREPTOLASMA CORNICLUM

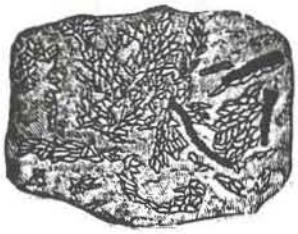
11. TROCHOLITES AMMONIUS

1. ESCHAROPORA RECTA

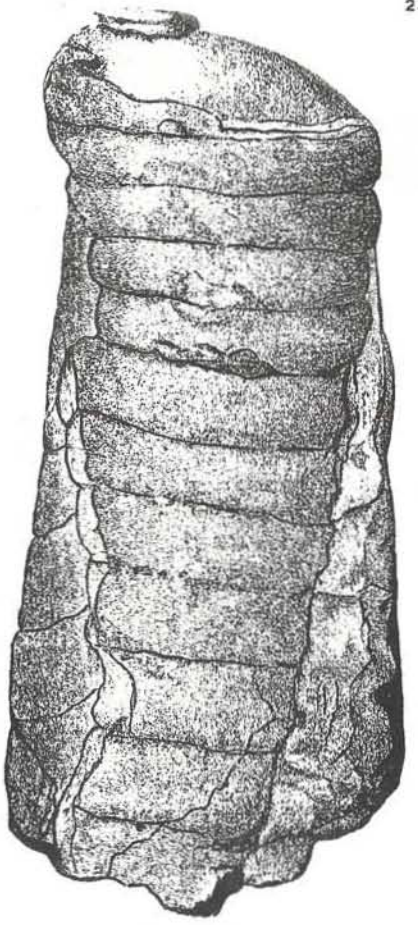


2. AMPLEXOPORA MINNESOTENSIS

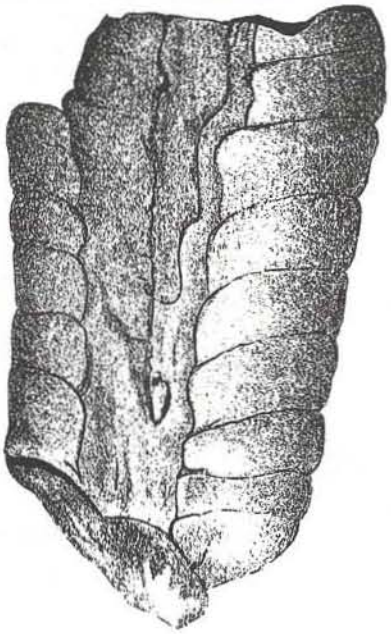
3. PACHYDICTYA ACUTA



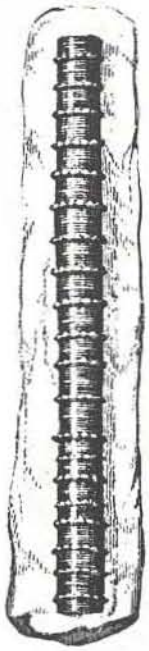
4. PHYLLOPORINA SP.



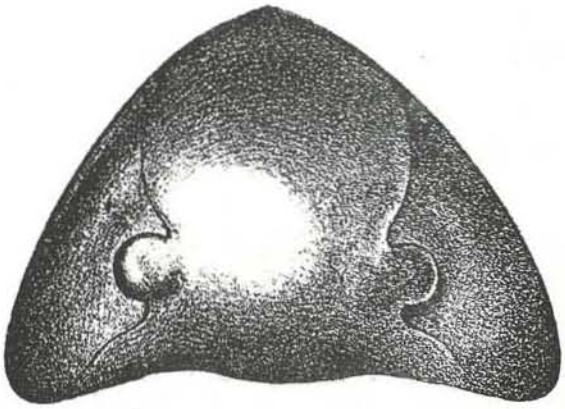
5. ENDOCERAS PROTEIFORME

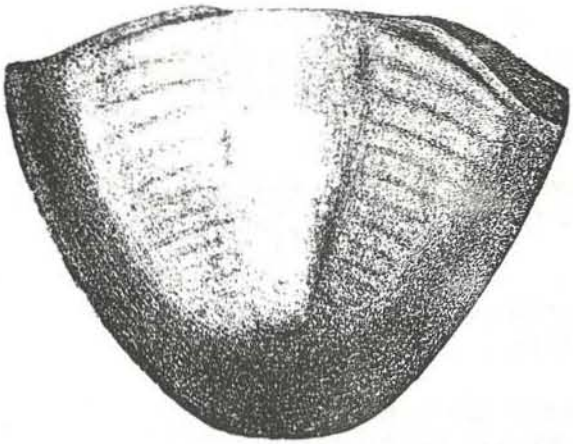


6. E. PROTEIFORME



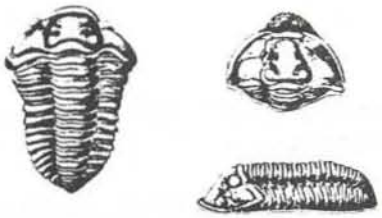
7. SHIZOCRINUS NODOSUS



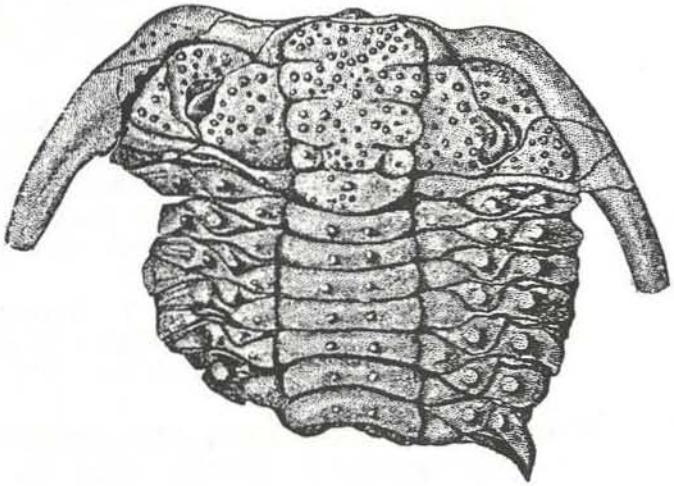


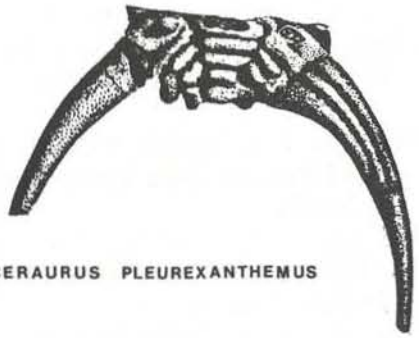
1. ISOTELUS GIGAS

4. TRIARTHRUS BECKI



2. FLEXICALYMENE SENARIA





3. CERAURUS PLEUREXANTHEMUS

5. CRYPTOLITHUS TESSELATUS

MILEAGE LOG

This mileage log begins at the intersection of routes 28 and 5S in the town of Mohawk. This intersection is near to the Herkimer exit of the New York State Thruway (exit 30). This trip is within the Little Falls and Utica quadrangles.

InMi*	CumMi	
0.0	0.0	Proceed east on Route 5S.
6.2	6.2	Turn right on Route 167
0.8	7.0	Park alongside the road about 1 block short of the Thruway overpass.
		STOP 1: Outcrop along the road is an exposure of the Dolgeville Facies and contains remains of the Triarthrus Community. In the summer and early fall this outcrop is likely to be well grown over but in the spring it is an excellent exposure. The best fossil collecting is on thin brown shales where ostracodes are very abundant. Fissile black shales often yield abundant remains of Triarthrus, other trilobites and brachiopods. Also present at this outcrop are folds in the strata produced while the sediment was still soft. Above the thruway overpass is an excellent exposure of the Dolgeville Facies. Unfortunately the State Troopers will throw you off of this outcrop if they see you.
0.8	7.8	Turn around and proceed back to the intersection with Route 5S. Turn left on Route 5S and then immediately turn right onto Route 167.
2.1	9.9	Proceed north on Route 167 heading toward Little Falls. After crossing the Mohawk River turn right at Sam's Supe Service and then immediately turn left onto Route 169.
1.3	11.2	At this point there is an intersection marked by a sign for the Little Falls Junior/Senior High School. Turn right and proceed up the road one block. To the left beyond the bushes is an abandoned quarry.

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* InMi = Incremental mileage; CumMi = Cumulative mileage.

Side trip A: We will not visit the quarry on this field trip because at this time of the year the quarry is badly overgrown and very difficult to get into. However, in the spring this is a good exposure of the lower Kings Falls Limestone. The quarry contains abundant remains of the Liospira Community.

0.0	11.2	Continue north on 169.
6.6	17.8	At this point we are crossing Stoney Creek. A large white farmhouse is on the left.

Side trip B: Upstream are good exposures of the Poland Member of the Denley Limestone which contain very sparce remains of the Geisonoceras Community in generally baren calcisiltites. Downstream are good exposures of the Sugar River Limestone containing abundant remains of the Trematis Community.

0.6	18.4	Continue north on 169. A large abandoned quarry is found on the right hand side of the road.

Stop 2. This is a larger quarry than at first appearance. Around toward the back of it is a good exposure of the Lowville Limestone. About 17 feet of this formation is exposed. Lying unconformably upon this unit is the Kings Falls Limestone. The lower beds are very shelly but overlying strata become finer grained. The lower five feet contain elements of the Triplesia Community (Schizocrinus, Streptolasma and a great abundance of Sowerbyella). Overlying these beds are strata containing typical Liospira Community faunas. A bentonite lies a few feet above the base of the Kings Falls Limestone. Towards the back of the quarry there is the waterfall of an intermittant stream. Following this stream bed one can see discontinuous exposure of nearly the whole Trenton Group. Beds containing assemblages from the Encrinurus, Trematis and Geisonoceras communities are exposed here.

0.0	18.4	Continue towards Middleville on Route 169. Enter downtown Middleville.
1.1	19.5	Turn right onto Route 29 east.
1.3	20.8	Proceed uphill on Route 29. Pass an exposure of the upper Little Falls Dolomite and then stop at a road outcrop of the Trenton Group.

Stop 3: This road outcrop shows an exposure of the Kings Falls and Sugar River Limestones. The lower 10 feet contain remains of the Liospira Community. The next 20 feet contain assemblages from the Encrinurus Community and the uppermost beds contain Trematis Community faunas. Just above the road outcrop Maltanner Creek crosses the road. Stream outcrops expose a complete section of the Trenton Group from its base to the lowermost Denley Limestone. This section is of historical interest because it was intensely studied by James Hall in the early 1840's. Probably 50 or more species were originally described from this outcrop. Unfortunately while this land is not posted the owner is apt to throw people off of his property.

0.0	20.8	Turn around and head back to Middleville.
1.3	22.1	Enter downtown Middleville and turn right onto Route 28.
4.4	26.5	Enter Newport and turn left on Bridge Street.
0.3	26.8	Cross the West Canada Creek and turn left onto Newport Road.
1.4	28.2	Park in dirt lot on left side of road. Beware of mud.

Stop 4: This is Shedd Brook which shows an exposure ranging from the upper Kings Falls Limestone to the Denley Limestone. Strata containing assemblages from the Encrinurus, Trematis and Geisonoceras communities are exposed. Of greatest interest are the beds just below the parking lot. These contain a great abundance of nautiloids most of which are of the genus Geisonoceras. These beds represent assemblages of the Geisonoceras Community. Also present are Endoceras, and Trocholites in moderate abundances.

End of trip. Retrace the road back to Newport and Route 28.