

Letter from Prof. Wall 'er  
the Catskill group of New York

Albany Oct 13<sup>th</sup> 1862

My dear Prof. Dawson

Having furnished you with a considerable number of specimens of Devonian fossil plants, from my own Cabinet (and from the State Collections) for study and description, I have felt not only great interest in the matter but much solicitude in regard to the geological position of some of them; and this feeling has been increased by studying your list of specimens with reference to the geological formations - for it seemed to me that there were some results not quite in accordance with palaeontological laws and that there was reason to question the geological order assigned to the specimens.

A considerable number of these had been collected by myself or under my immediate direction many years since, and of these I feel secure; but there were others which though obtained from authenticated localities of the Catskill group had not been collected by myself - and in regard to some of these and some of the others not of my own collecting I believe I expressed doubts, though the greater proportion were reliable.

Late investigations, combined with those heretofore made, have forced upon me the conviction that the greater part of the area colored on the Geological Map of

New York as Catskill group, is in fact occupied by the Portage and Chemung groups.

Several years since, in making sections across the country from north to south through the counties of Albany and Schoharie, I ascertained that the Hamilton group, as indicated by its well marked and characteristic fossils, extends to the southern limit of the coloring indicating Chemung group on the geological map. I am now prepared to show that the Hamilton group in the counties of Albany, ~~Schoharie~~ Greene, Schoharie, Otsego, and a part of Chenango, <sup>(with the exception of some outcrops on the higher hills)</sup> occupies nearly the entire belt ~~colored~~ as Chemung, the southern line corresponding very nearly with the limit assigned to that formation, — thus leaving the Chemung group with its southern limits still unassigned.

The investigation of the extent and limitation of this group has been beset with difficulties both towards the west and east of the typical region in southern central New York. In tracing to the eastward the strata of the Chemung group, we find them gradually assuming a coarser character, attended by a diminution of the number of fossils both of individuals and of species. With the accession of coarse materials, come the diagonal lamination, and abrupt changes in the nature of the sediment, with other attendant features indicating a

a deposit of more littoral character.

Until within a few years the State collection had been nearly destitute of fossils from the rocks of Delaware county, which according to the map is occupied by the Catskill group. Some time since, Prof. Orton, late of the Normal School in Albany, sent to the State Cabinet numerous specimens from the so called Catskill group of that region and they were thus arranged; but I readily recognized nearly all of these as characteristic Chemung fossils. Although obtained within the area colored on the map as Catskill group, it was still possible to suppose that they might have been derived from transported masses; and, no investigation having been made to decide this question, the matter rested.

More recently, Mr. J. M. Way of Franklin, Delaware county, has directed his attention to the fossils of his neighborhood, particularly to the fish remains which he has found in considerable abundance. From loose and scattered masses he has been able to trace the specimens to their position in the hill slopes, and has ascertained the existence of no less than three distinct beds containing these ichthyic remains. Associated with the latter, he has found numerous shells which are typical species of the Chemung group,

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and these he has traced to near the tops of the highest hills in Franklin, and occupying large areas of what have been regarded as the unequivocal Catskill group. Mr Way has sent collections of these fossil remains to several geologists in the country, with a view of obtaining information to aid him in his researches.

Having since, personally examined the region in question, I do not hesitate to say that we have in the fossil remains taken together the most unequivocal evidence of the occurrence of the Chemung group in these localities. A section from the north side of the Susquehanna river to the high hills in the south part of Franklin, gives the following beds; the characters of which I have not <sup>yet</sup> studied in detail, and the thickness given may be regarded as approximate.

1. Greenish gray sandstones and shaly sandstones - 100-150 feet to top of hills.
2. Fossiliferous band with scales, bones and teeth of fishes; *Aviculapecten?* and a few *Brachio-poda*. (Remains of plants, occur a little above the animal remains.)
3. Greenish and gray sandstones, shaly sandstones and shales - about 150 feet.

4. Fossiliferous band containing bones and teeth of fishes; Brachiopoda and Lamellibranchiata; among which the Spirifer mesastrialis<sup>Hall,</sup> is abundant, and Cypricardites Chemungensis of Vanuxem is common.
5. Sandstones and shaly sandstones, similar to those above but less greenish and sometimes more heavily bedded, between 100 and 150 feet.
6. A fossiliferous band similar to the one above, with the same species of fossils; and conspicuously marked by a compact argillo-calcareous band with carbonate of iron, and consisting largely of crinoidal remains in small fragments.\*
7. Non fossiliferous shale <sup>and shaly sandstone</sup> embracing flagstones and sandstones, about 100 feet.
8. Red shale and shaly sandstones with numerous fu-  
-coidal remains; 400 to 500 feet.
9. Greenish and gray shales and shaly sandstones with darker shales, to the top of the Hamilton group; the thickness not well ascertained.
10. Hamilton group.

\* Crinoidal bands of precisely similar character occur in the Chemung group in the Central and Western part of the State.

Associated with these fossiliferous beds, and more conspicuously with the upper ones, we have bands of a peculiar greenish shaly conglomerate, or concretion, which likewise contain fish remains. These concretions with their fossil remains were noticed by Mr Vanuxem, in his Report upon the adjacent country.

There is a thickness of between 1000 and 1200 feet above the Hamilton group, the lower half of which is not yet known to be fossiliferous beyond the facoids in the red shaly sandstone.

This red shaly sandstone and the dark and green shale, below, together with the non fossiliferous beds of No. 7 of the section, represent the Postage group, while the upper members are always marked by characteristic fossils of the Chemung group.

I have carried forward observations across the country from the Susquehanna to the Delaware river, and up to the "Head of the Delaware" at Stamford, and I am satisfied that in the region to the north and west of the west branch of the Delaware, and to a great extent (if not entirely) between the east and west branches of the Delaware there are no beds of rock of more recent age than the Chemung. And from what I have seen elsewhere, I am inclined

to believe, that until we ascend the slopes of the Catskill mountains and rise to an elevation of at least 2000 feet above tide water, we find no rocks of newer age than the Chemung group.

The Catskill group has been compared with strata newer than the Chemung group and consisting mainly of red and greenish shales and shaly sandstones. I am now satisfied that the red shaly sandstone near the base of the section, as here presented, has misled most of those who have heretofore investigated these rocks; while at the same time the harder and more arenaceous character of the Hamilton rocks in their eastern extension (in which character they simulate the Chemung rocks) has caused them to be identified with the latter. I am satisfied moreover that though this means Mr Vanuxem was misled; and though I have not re-examined the section at Mount Npton, the locality of the characteristic bivalve shells, - I am not willing to believe it will prove to be newer than Chemung, even if it be much above the top of the Hamilton.

You will perceive therefore, that all the specimens of plants sent you as coming from the Catskill group, are really from beds of the Chemung

group proper, and, so far as possible in this hastily written note, I have given you my reasons for adopting this belief.

In looking back to the history of the adoption of the term Catskill group, it would appear that there was not entire unanimity as to its significance in some points, among the geologists of the 1<sup>st</sup>, 2<sup>d</sup>, and 4<sup>th</sup> Districts.

Prof. Mather in adopting the term, says it includes nos. IX, X, XI and XII of the Pennsylvania Survey, while Mr Vanuxem restricts it to no. IX. As both these gentlemen placed it above the Chemung group, as defined in central and western New York, I regarded it (without having made personal examination) as identical with a red shaly sandstone and conglomerate which clearly comes in above the Chemung in the adjacent counties of Pennsylvania bordering the 4<sup>th</sup> District. Having considered the Chemung group as no. IX of the Pennsylvania Survey, I regarded the red rock with *Holoptychius* as no. XI, the conglomerate, no. X had not been recognised in my district or adjacent to its southern limits.

I consider that at this time there can be no doubt that the Chemung group is identical with

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No. IX in the original nomenclature of the Pennsylvania Survey; and the term Chemung group having been adopted and well understood in its relations and signification, and well marked by its fossils, we cannot with any propriety continue to extend the term Catskill group over a large area occupied by the older rocks and well characterized by their contained fossils.

Mr. Mather in his descriptions of the rocks, has recognized the Chemung group as lying below the Catskill group, but, as I have shown, the area colored by him as Chemung, is really Hamilton group; and it now becomes necessary to restrict the term Catskill group to the beds above or to those formerly known as X and XI of the Pennsylvania Survey.

Adopting this view, which is imperatively required of us, some modification is necessary in the reference of certain fossils; but I am satisfied that it will remove one great cause of misunderstanding relative to the groups of strata on the confines of the coal measures, and we shall avoid the complication which must ensue from referring the same species of fossils to two distinct groups of

strata, according to the present application of our nomenclature.

On reference to the Geological Reports of New York, you will observe that the fossils of the Catskill group, given in the 1<sup>st</sup> and 4<sup>th</sup> Districts, are of plants, with two species of shells. In the 4<sup>th</sup> District the red shaly sandstone, (called old red sandstone or Catskill group) resting in outliers on some of the higher hills <sup>in the 4<sup>th</sup> District</sup>, and occurring ~~in~~ continuous strata in Pennsylvania near the southern limit of New York, did not afford specimens of these plants or shells; while the scales and other remains of *Holoptychius* are the characteristic fossils of the rocks in these western localities. But, so far as I am aware, no scales of *Holoptychius* have been found in the area colored as Catskill group in Delaware and the adjacent countries on its west.

In tracing the Chemung group westward, there are many indications that it may yet require to be restricted in its designation. The lowerly sandstone <sup>group</sup> of the Ohio reports, at one time regarded as entirely equivalent to the Portage and Chemung groups, may in ~~the~~ <sup>its</sup> upper members constitute a distinct group, though we do not yet know any line of demarcation between them.

I remain very sincerely yours

James Hall

