ART. VIII.—*On the identification of the Cattskill Red Sandstone Group with the Chemung*; by Prof. A. WINCHELL, (in a letter addressed to Prof. Dana.)

University of Michigan, Ann Arbor, 10th Dec., 1862.

Dear Sir:—The announcement by Col. Jewett¹ of the grounds of his disbelief in the existence of the Cattskill group, within the State of New York, is producing a sensation among geologists: but it seems to me that no one who has recognized the Carboniferous aspect of the fauna of the Marshall group of Michigan and its equivalents at the West, can feel a particle of surprise at this announcement; especially if he has been in the habit of admitting the equivalency of these western rocks with the Chemung of western New York. You will remember that as long ago as last March, in referring the rocks of Michigan to their New York equivalents in compliance with your request to do so, I expressed my conviction of the equivalency of the Marshall and Chemung groups, and of their common Carboniferous character, and entirely omitted the Cattskill in consequence of my disbelief of its existence as a distinct group, and serious doubts about the Devonian character of the Old Red Sandstone of New York. These doubts originated in the winter of 1859–60, and have since been confirmed by observing the close analogy of many Marshall fossils with Old Red Sandstone species—leading me to include within the Marshall (Chemung) group the American representation of that *so-called* Devonian horizon of the Old World. I may also be permitted to allude to the interesting coincidence of my having last summer communicated to others the opinion that as the "Cattskill group" was the only serious obstacle to the elevation of the New York Chemung, with its western equivalents, into the bounds of the Carboniferous system, so that obstacle would yet be proved to be imaginary through the observations of some geologist who would show that it does not in reality overlie the Chemung.

Researches in the rocks of this age, to which I have given special attention for the past eighteen months, have furnished me with the data for some interesting conclusions, which I shall soon be prepared to present in detail; but the great interest belonging to the questions affected by my investigations, will perhaps justify me in saying at this time, that the following results are reached:—Species common to Michigan and Rockford, Ind., 7;—common to Michigan and Burlington, Iowa, 7;—common to the three localities, 3;—common to Rockford, and Missouri, 6;—common to Burlington and Missouri, 8;—common to Burlington and Ohio, 2;—common to Burlington and New York, 3;—besides

¹ This Journal, Nov. 1862, (xxxiv, 418).

an almost universal generic identification, establishing fully the equivalency of the Chemung, Marshall, Ohio, Rockford, Burlington and Chouteau strata. The evidences that these localities are all of Carboniferous age are: 1st, The fact that, of the 135 species now known from the yellow sandstones of Burlington, no less than 40 ascend into the base of the Burlington limestone, while two rise to the upper portion of it, and one recurs in the Coal Measures. 2d. The fact that, of the known species of this horizon, at least 9 occur in the Coal Measures, or upper part of the Carboniferous limestone; while 3d, multitudes of species are clearly the local representatives of European and American Carboniferous types.

Prof. Hall's recent declaration in the Canadian Naturalist, that large areas of the rocks of New York hitherto regarded as Chemung do really fall within the limits of the Hamilton group, will at once account for the Devonian aspect of *some portions* of the Chemung fauna, as heretofore understood; and thus tend to confirm a broad generalization, and complete the adjustment of American to European Palæozoic formations.