

customs were brutal. Still I consider the subject of education and school discipline far from satisfactory and settled at the present time.

Perhaps after oscillation between extremes a wholesome eclecticism may solve matters satisfactorily.

SCIENCE AND NATURE.

PROF. F. B. Andrews, of the Geological Survey of Ohio, has recently promulgated a new theory as to the successive deposition of beds of coal, which is at variance with the opinions formerly held on this subject. He believes that coal-seams have been formed in marshes along the sea-shore, and therefore at or near the water-level; that the subsidences by which the coal-seams were successively formed, and successively buried, were continental and general in their nature, and that consequently, from their mode of formation, all coal-seams must necessarily be parallel with one another, and can never either divide or approach one another. Professor Newberry, the distinguished Director of the Ohio Geological Survey, has expressed his dissent from these views and his adherence to the opinions formerly entertained. He adduces various instances in which the intervals between known seams of coal are not constantly the same at different points; and he expresses his conviction that there is abundant and varied evidence to show that the subsidence of the coal areas was often very local, and that "in the long interval which elapsed between the formation of one coal-seam and the accumulation of carbonaceous matter above it, the strata were sometimes warped and folded in the most local and complicated way."

It is interesting to learn from an admirable paper published by Mr. Selwyn in the last number of the *Canadian Naturalist*, that there is a reasonable probability of obtaining coal of fair quality and in fair quantity on the Saskatchewan between Rocky Mountain House and Edmonton. This coal is, of course, not of true carboniferous age, but much later, apparently belonging to the cretaceous period. The strata

exposed between the points above named are stated by Mr. Selwyn to consist chiefly of soft, friable, green, gray, or brown concretionary sandstones, alternating with blue and grey arenaceous and argillaceous shales, and layers and beds of lignite and bright jet-like brown coal. In the shales there are layers of nodules of clay-ironstone holding numerous fragments of plants, and containing about thirty-five per cent. of metallic iron on an average. At one place on the right bank of the Saskatchewan, about forty miles below the confluence of the Brazeau, Mr. Selwyn found a seam of jet-like coal, which measured no less than from eighteen to twenty feet in thickness. Two exposures of this bed were found about four miles apart. "In the first exposure, which extends some fifty or sixty yards in length, but which, owing to the swiftness of the current flowing at its base, was not easily examined, the seam is flat, and rises from the water in a nearly vertical cliff, exposing eighteen feet of apparently excellent coal. The bottom of the seam here was beneath the water, and could not be examined; above it the cliff was not accessible, and the rocks were concealed by slides of earth and other debris. The second exposure, which is no doubt a continuation of the same seam, occurs in an arched form, and shows eighteen feet, with one small two or three-inch parting of shale. The specimens collected were all taken from the surface, and it is not unlikely that beyond the influence of atmospheric action, the coal in these seams will prove to be of better quality than is indicated by these specimens."

Canada has the advantage at present of being the fortunate possessor of the earliest known fossil, the *Eozoön Canadense*, which was found