plored is the domain of Agricultural Science, that the rambler among its novelties may find, without encroachment, fruit and flowers in abundance wherewith to enrich our store and advance the public good.

To all who are interested in the objects of this journal we beg again to state, that the progressive improvement and extension of of the work will be commensurate with the support which may be accorded to it by the public, and the degree to which the Canadian Institute and the promoters of the Canadian Journal may be successful in soliciting and combining the talents of those classes to which they appeal.

Indian Remains.

NOTICE BY THE REV. C. DADE.

The following account of a remarkable Indian burying ground, which I visited soon after its discovery, may be interesting to you, though, no doubt it has been thoroughly ransacked since, and you may probably be acquainted with it. The spot is in Beverly Township, and was then a part of the farm of Mr. Call, ten or twelve miles from Dundas and two and a half from the Guelph road. The burying ground is situated on a ridge thickly wooded with beech, maple, &c., running east and west about a mile, and bounded by a rivulet called the Dundas Creek. On the summit I found several pits newly opened, and a vast quantity of human bones at the depth of about four feet. Among the bones were iron tomahawks, brass kettles, pipes, beads, wampum, conch shells, &c.

I brought home several specimens, and amongst the rest two skulls, (the owner of one had evidently fallen by the blow of a tomahawk,) a pipe elegantly formed of clay, a pipkin, &c. There were three or four pits which had been opened beyond the memory of the oldest settler. Trees were growing over the graves of the same size as those in the surrounding woods, (one beech being two feet in diameter.) It was thought that in the eleven pits, at least 2000 persons had been interred; in one of the smallest pits a person counted 125 skeletons. I visited this place in 1836.

P. S.—A neighbour of mine, last year, ploughed up a copper wedge, of the size and shape of common iron wedges used in splitting rails, about a quarter of a mile from the lake.

July 3rd, 1852.

On the Atmospheric Phenomena of Light: by J. Bradford Cherriman, M. A., F. C. P. S.,

(Fellow of St. John's College, Cambridge, and Dep. Prof. of Mathematics and Natural Philosophy in the University of Toronto.)

The atmosphere which surrounds the Earth possesses in common with other imperfectly transparent media the property of modifying the light which enters it, in three distinct ways, namely, by absorption, transmission and reflection, though in proportions whose amount is not exactly determinable. From the experiments of de Saussure on the plains of Germany, this much seems demonstrated, that, of the Sun's rays incident on the upper surface of the atmosphere, the Sun being in the zenith and the sky quite clear, not more than two-thirds reach the Earth, the rest being either absorbed or reflected. It is to this reflection that we owe the blue colour of the sky, the insensible gradation between day and night, and the diffused light by which objects are visible when not directly illuminated by the Sun's rays: without this, the shadow of every thick cloud would involve us in absolute darkness, and the stars would be visible all day, and at night appear as brilliant sparks in the midst of intense blackness. The amount of absorption will be greater as the density of the air which the ray traverses and the length of its path increase, and from these arise the diminished brilliancy of the Sun when on the horizon, and also the faintness of the light of distant terrestrial objects and their consequent indistinctness.

De Saussure has shewn by experiment that the blue rays of the solar light are more reflected by the atmosphere than the rest, and the red rays more easily transmitted; thus, as the depth and density of the stratum of air increases the more will the blue tint disappear and the red predominate, as we see in the Sun at its rising and setting. The blue tint is more decided in the zenith than on the horizon where the colour of the sky is sometimes quite white, and the intensity of the blue increases as we ascend from the earth; at a certain height, the sky appears nearly black.

On the evening of a clear day as the Sun approaches the horizon, the sky in his neighbourhood appears of a glowing red or orange colour, extending along the western horizon, but diminishing rapidly towards the zenith and the east: at the same time, in the point of the heavens opposite to the Sun, we often see the same red tint prevailing, and attaining its greatest intensity just at the instant of the Sun's sinking. Shortly afterwards, below this red part appears a circular segment of decided blue, the line of separation being in general sharply defined: as the Sun sinks lower, the red gradually disappears, and in the west is succeeded by a bright grey which fades off as it meets the blue eastern segment. This latter is due to the shadow of the Earth projected on the sky and coloured only by the blue diffused light; the grey, which constitutes twilight, is due to the reflection of the Sun's rays at the upper strata of the atmosphere by which we enjoy his light when it can no longer reach us by direct transmission: it deepens by degrees as the Sun sinks, and becomes altogether dark when the Sun is more than 18° below the horizon. The duration of twilight depends on the latitude of the place and the time of year; in the latitude of Toronto, the longest twilight lasts 1h. 36m. at the summer solstice; and the shortest, about 48 minutes, occurs in the present year on March 3rd and September 5th. In latitude 48½° and any place higher than this, twilight at the summer solstice will continue all night.

Sometimes, but very rarely, when the Sun has set, there is seen a pale glimmer extending upwards from him in a conical shape towards the north-west and reaching to a considerable height. A fine instance was observed in the present year; it is due, undoubtedly, to the light thrown on the sky by the strata of air actually below the horizon and directly illuminated by the Sun's rays.

When a ray of light proceeding from an object passes obliquely through a medium varying from point to point in density like the atmosphere, its path is no longer a straight line as in vacuo, but a curve whose nature depends on the law of variation of the medium, and as the direction in which the object is seen is determined by the direction of the ray on entering the eye, it follows that the places in which objects appear to be are not the places they actually occupy: the necessity of making an allowance for this gives rise to one of the most important astronomical corrections, called Refraction. The effect of this refraction is to raise all objects vertically above their real places by an amount which is greater as the object is nearer to the horizon:* thus the Sun's disc is completely visible to us when he has sunk quite below the horizon, and appears distorted in shape into a sensible oval, the horizontal

*It is recorded by a late African traveller, that in shooting on the sandy deserts there, at first he invariably fired too high, the birds appearing much above their real places from the unusually great refraction.