for his cruelty and violence, until he ended a bad life by an equally bad beath; but Henry would be wise and prudent, peaceful, unless when compelled to war: he would gain wide lands, and die in peace. When King William lay on his deathbed he remembered the saying of his wise men, and bequeathed Normandy to Robert, England to William, and his treasures, without land, to his younger son Henry, who eventually became King of both countries, and reigned long and prosperously.—*Wright's England in the Middle Ages.*

To our Readers.—Mr. Hutton has been appointed collecting agent for the Herald.—Our City friends will therefore be waited upon by and by for their subscription, and as the sum is small, we are satisfied, that parties only require an opportunity to pay to one authorized to receive it.

To our Readers.—The Canadian Family Herald is published by Mr. Charles Fletcher, Bookseller, No. 54, Yonge Street. It is kindly requested therefore that all communications intended for the Herald be addressed to the publisher, in order to prevent confusion, or delay in attending to them.

CANADIAN FAMILY HERALD.

TORONTO, SATURDAY, MAY 15, 1852.

OUR EXPERIMENTAL FARM

We are very much gratified to learn that the preliminary arrangements necessary to the establishment of an Experimental Farm, in connexion with the Chair of Agriculture in our University, are rapidly progressing. The University Park, comprising about eighty acres, is in process of being levelled and drained, after which it will be seeded down with permanent grasses, chiefly from England, as they cannot be got here. The University buildings are expected to be proceeded with immediately; and contracts will be taken in, it is understood, about the latter end of the month. The trees at present in the park, and which are all of second growth, are to be "set out" in clumps of various figures. About fifty acres of this park will be devoted to the Experimental Farm, and will be under the entire management of the Board of Agriculture of Upper Canada, for the purpose of testing newly imported varieties of seeds, grasses, agricultural implements, &c. &c. This department will form the chief scene of the labours of our amiable and highly talented professor—W. Buckland, Esq., for lectures on theoretical and practical agriculture, and experimental researches in the growth of plants, and the application and relative powers of manures, the fattening of animals, &c. &c. Every facility will be afforded to the public to inspect the Farm, and also to perambulate through the Park, which, when seeded down, and ornamented with tastefully arranged clumps of trees, will form an admirable sylvan retreat during the sultry summer months. It is expected that when the drainage has been completed, this delightful place will be entirely free from toads, mosquitoes, or other noisome insects. The most cheering part of our story remains to be told. The University have resolved to set apart eight or nine acres for a Botanic Garden,

in which to illustrate, the nature and family of plants, their mode of cultivation and propagation, and their medicinal and economical uses in the arts and manufactures. For the sup..rint ndence of this department we shall have a Chair of Natural History and Botany which is expected shortly to be filled. In this garden we shall have an Arboretum and a Herbarium, besides an extensive range of hot-houses for the propagation of Exotics. There will also be a Pond for aquatic plants. The grounds after some labour and expense, will be found very suitable for such a purpose, as nature has been very liberal in bestowing a finely undulating surface, and a running stream of water, which will require only to be taken advantage of to produce a most enchanting scene. The buildings, when finished, will be of a highly ornamental character; and when the garden wall comes to be put up we trust the superintending parties will display the Paxton theory, which is rapidly developing itself in such constructions. By this means the visitor will see all that is going on inside without an undue confinement in a heated temperature. We had intended to say a few words on the civilizing tendencies of such an appendage to a large city, but will return to the subject.

THE CANADIAN INSTITUTE.

On Saturday evening a Special General Meeting of the Canadian Institute was held, Captain Lefroy, 1st Vice-President, in the Chair. This being the closing meeting for the season, various arrangements were made in reference to the improvement of the recess. The Council were instructed to proceed with their new Journal in which the transactions of the Institute are to be published. This Journal will be a Monthly, about the size and character of "The Builder," and will contain a variety of illustrations. Its cost will be 12s. 6d. per annum. We have had the pleasure of an early glimpse at the prospectus, in proof. It will be issued to the public shortly, and if the details therein given are carried out, the forth coming Journal will be an ornament to our City. In intimate connexion with this Institute, is Professor Cherriman's speech on Kirkwood's Analogy, which appeared in No. 20 of the Herald. As this speech called forth some remarks in a City Paper, the Professor has since written at full length on the subject, to Silliman's Journal, the medium through which Kirkwood's Analogy was heralded, and has received a communication from the Editor stating that his treatise will appear in next number of that Journal. Meantime Professor Kirkwood has replied to the sketch given in the Herald, in the following communication, which we cut from Thursday's Globe. The communication is headed.

A Reply to Professor Cherriman's Speech on Kirkwood's Analogy; by Professor Daniel Kirkwood, of Delaware College.

I have just seen the report of a lecture recently delivered at Toronto, C. W. by Professor Cherriman, in which the author undertakes to prove my new planetary harmony inconsistent with the elements of the solar system. His objections, which are not original, have all been answered. As his remarks, however, may have been read by many who have not examined the subject, they may possibly produce erroneous impressions. I beg leave, therefore, very briefly to respond.

The law in question has been stated as follows:—" *The square of the number of times that each Planet rotates during one Revolution in its orbit,*

is proportional to the cube of the diameter of its sphere of Attraction." This, then, is the proposition to which we are assured the elements of the planetary system did not afford even a shade of support."

Instead of considering, seriatim, the remarkable assertions of Professor C., I shall confine myself to a simple statement of the facts which cover the entire ground.

There are seventeen independent variable quantities to be used in testing this Analogy; viz., (1) the mass, distance, and time of rotation of each of the planets, Venus, the Earth, and Saturn; (2) the masses and distances of Mercury, Mars, Jupiter and Uranus; these latter being all necessary to determine the spheres of attraction of the former three. The introduction of quantities whose values are *entirely unknown*, I am free to admit, could not " afford even a shade of support to the Analogy," while every philosophical mind must as readily grant that they cannot be made the legitimate ground of an objection against it. The question therefore, does not admit of argument: it is simply one in regard to the facts.

Of those seventeen quantities, the distance and periods of rotation are well known, and may be taken from any recent standard work on astronomy. Encke's mass of Venus, the Earth, Mars, Jupiter, and Saturn, which I adopt, are those generally received. There remain only the masses of Mercury and Uranus, in regard to each of which there is confessedly some uncertainty. The most recent values of the mass of Mercury are those of Encke and Leverrier. Encke's mass of Uranus, deduced from the observations of Lamont, has been since found by Struve to be somewhat too great. I have accordingly adopted the determination of the latter as the nearest approximation to the true value.

Now it is known to every one who has given the subject sufficient examination to form a just estimate of the claims of my Analogy, that of these seventeen elements, fifteen—all except the masses of Mercury and Uranus—perfectly harmonize with my law of rotation. In regard to the mass of Mercury, it is certainly remarkable that the value which the Analogy requires is between those of Encke and Leverrier. Of course no more can be demanded. There remains but the mass of Uranus, in regard to which it is sufficient to remark, that the value which harmonizes with the law in question is only ⅓th less than Struve's determination. In the language, therefore of Professor Walker, " Whether this Analogy is, or is not the expression of a physical law, it is at least that of a physical fact in the mechanism of the universe."

Here then I might pause. There are a few other points, however, which may require a passing notice. The first is the rotation of Uranus, which according to my Analogy is not completed in less than thirty-eight hours, while the period assigned as probable by some astronomers is nine and a half hours. " It happened, however," said Professor C., " that this latter rotation was only a result of theory and not of observation, although with other planets, the same theory gave results which accorded with observation, and there was no reason for distrusting it in this case." The time of rotation of this planet, it is admitted, has never been observed. The conjecture given above was derived from Madler's measurement of the polar compression, and is based upon the hypothesis that the figure is that of the equilibrium of a homogeneous fluid. Now, in regard to the other members of the planetary system, this theory, Professor C. assures us, gives "results which accord with observation." Let us examine.

Of the members of the polar system whose time of rotation has been measured, there are but five in which a difference has been observed between the polar and equatorial diameters. These are the Sun, the Earth, Mars, Jupiter, and Saturn. The sun is not an *oblate*, but a *prolate* spheroid; the apparent polar diameter being several seconds greater than the equatorial. The polar compression of the earth is nearly that which the theory requires. Arago's determination of the figure of