Mars would indicate a rotation-period of less than *nine hours*; Herschel's less *than six hours*; and a mean between the two, about seven hours. The true period of Mars, therefore, exceeds that inferred from the form of the planet in about the same proportion as my period for Uranus exceeds that obtained in a similar manner. In the oblateness of Jupiter there is a reasonable agreement between theory and observation. The figure of Saturn, it is well known, is not that of a regular spheroid, the equatorial diameter being sensibly less than that at the parallel of forty-five degrees. *This figure therefore, could not have been produced* simply by the centrifugal force due to the planet's rotation. Of those five bodies, then, only two have any reasonable approximation to the figure which the theory assigns, while *two others are utterly inconsistent with it.* Yet these are the "results" which we are told "accord with observation."

Professor C. continues:—"the rotation thus deduced from theory was seen to be probable from certain *distinctive features which appear* to give us the means of dividing the planets into two marked classes." The two marked classes here referred to are separated by the region of the asteroids between Mars and Jupiter; and we are to understand that in magnitude, density, time of rotation, &c., there is a striking uniformity between the members of each group. What are the facts? The volume of the Earth or Venus is about seven times that of Mars, or nearly twenty times that of Mercury; while in the exterior group the volume of Uranus or Neptune is less than one-tenth that of the other two major planets. Again: Venus and the Earth have greater masses, compared with Uranus and Neptune, than these latter in comparison with Jupiter and Saturn. The "certain distinctive features," therefore, to which Professor C., refers as unfavourable to the truth of my Analogy, are not so very "distinctive," after all.

It may be proper here to remark, that in the able examination of my Analogy by Professor S. C. WALKER, (*See Proc of the Am. Assoc for the Adv. of Sci for* 1849) a numerical error in Jupiter's time of rotation was admitted, which to some extent vitiated his results.

In conclusion I may be permitted to observe, that "a singular fatality has attended any attempts" hitherto made to invalidate the claims of my Analogy. The reason is sufficiently obvious. No KNOWN FACT IS INCONSISTENT WITH ITS TRUTH.

TORONTO MECHANICS' INSTITUTE.

In our last we announced the Annual Meeting of the members of this Institute for the election of office bearers for the ensuing year, and also the fact that T Cumberland, Esq. had been re-elected President, an honour to which his recent valuable services so fully entitle him. In the long and eloquent address of the President, delivered at the Annual Soiree, a pretty general view of the affairs of the Institute was given, but the Report of the Council, submitted on the night of the Annual Meeting, went a little more into detail. The Report stated that at the commencement of the year the number of members was 330, during the year 76 new members were admitted, which made a total of 50; but during the same time 63 had been removed from the Institute by death or withdrawal, or departure from the city, which left the present list of members as:—

Honorary Members,	- - - - -	32
Life Do.,	- - - - -	10
Ordinary Do.,	- - - - -	235
Juvenile Do.,	- - - - -	66
		343

being a net increase of 13 members during the year.

THE LIBRARY.

One hundred and twenty-five volumes had been added to the Library during the year; 120 of the books had been purchased by the committee and 5 had been presented. The total number of volumes at present is 1544.

THE READING ROOM.

Thirty-four periodicals comprising the standard Reviews, Magazines, and British, American and Canadian Newspapers are regularly received at the Reading Room, several of these are presented to the Institute by the proprietors.

CLASSES.

The Council regretted that owing to the want of accommodation in the building they had not been able to form so many classes as they had intended. They had, however, during the year, formed a class for Ornamental Drawing with twenty pupils, under the able superintendence of Mr. E. C. Bull. The progress in this class has been very encouraging. Two prizes awarded as a stimulus to this class were won, the first by Henry Martin, the second by Thomas H. Lee and William Rogers.

THE EXHIBITION.

The Council were very much disappointed in consequence of the appearence of last Exhibition. They did not consider that they got that amount of encouragement from the members, to which they were entitled, and they therefore, in their report refused to recommend an Exhibition during this year, as they did not wish to impose any such burden upon their successors in office, unless there was some prospect that the desire to do something towards the carrying out of the measure might be more general.

ACCOUNTS,

The receipts for the past year amount to	- - - - -	£226	1 1
Expenditure	- - - - -	224	14 1
Balance	- - - - -	£1	7 0

The Report shows the Institution to be in a very favourable condition. There are few if any, such Institutions in Britain at the present time able to meet their expenses, and although the balance is small in this case, it is still on the right side. With regard to the Exhibition we had almost taken exception to the desponding tone of the Council. We looked upon the Exhibition as a very gratifying affair, and highly creditable to the City. It is true the mechanical workssent in by members were nothing like so numerous as they might have been; but was there another Exhibition, we would have the competition of the Canadian Institute to stir up the members of the Mechanics' Institute to something like an honourable rivalry, and between the two the display would be somewhat striking. The Annual Provincial Exhibition will, however, this year absorb all the interest, and in such a case it may be prudent in the Mechanics Institute, to pass over this year, as their whole force will be expected, to give an eclat to this Provincial Fair such as has not been witnessed in Canada.

Agriculture.

AGRICULTURAL SCIENCE.—BENEFITS OF DRAINING.

Prof. Norton thus describes the benefit of draining wet lands, an operation too much neglected among us: "When a drain is made and covered, (for I always mean here covered drains,) the water which falls upon the ground does not remain to stagnate, and does not run away over the surface, washing off the best of the soil, but sinks gradually down, yielding to the plants any fertilizing matter which it may contain, and often washing out some hurtful substances; as it descends, air, and consequently warmth follow it. Under these new influences the proper decompositions and preparation of compounds fit for the sustenance of plants go on, the soil is warm and sufficiently dry, and plants flourish which formerly never would grow on it to perfection, if at all. It is a curious fact, too, that such soils resist drought better than before.—The reason is that the plants are able to send their roots much further down then in search of food, without ever finding anything hurtful. Every part being penetrated with air, and consequently dryer and lighter, these soils do not bake in summer, but remain mellow and porous.—Such effects cannot, in their full extent, be looked for in a stiff clay, during the first season; the change must be gradual, but it is sure."

HOW TO CULTIVATE BEANS."

Beans for early table use should be planted as soon as there is security from the frost. Make large hills—say two feet over and one deep, and fill in with good manure to within three inches of the top—stamping in the manure as compactly as possible, and cover the whole with loam. Around the edge of the hill insert your beans, by making holes with a dibble, and cover them carefully. The beans should be within four inches of each other, and occupy the circumference of the circle formed by the edge of the hill. Immediately in contact with each bean insert a rod six feet long. Crowd it firmly into the soil, and bring the bushy tops of all the sticks together at a point exactly over the centre of the hill, and secure them closely with a stout string. If you prefer it, the hill may be made larger, indeed of any dimensions from two to six feet, if you can afford manure and room. When large hills are made they have a very pleasing effect, and appear like cones of verdure rising from the soil—*Ohio Farmer*,

CURRANTS AND GOOSEBERRIES.

In speaking of the cultivation of currants and gooseberries the Vermont Chronicle says, cultivators who understand the subject never allow the root more than one stock. To do this you must take the sprouts of last year's growth and cut out all the eyes or buds in the wood, leaving only two or three at the top, then push about half the length of the cutting into mellow ground, where they will root and run up a single stock, forming a beautiful symmetrical head. If you wish it higher, cut the eyes out again the second year. This places your fruit out of the way of hens, and prevents the gooseberries from mildewing, which often happens when the fruit lies on or near the ground and is shaded by a superabundance of leaves and sprouts. It changes an unsightly bush, which cumbers and disfigures your garden, into an ornamental dwarf tree.

Arts and Manufactures.

HOW TO CUT AND GRIND GLASS.

The art of cutting glass is much more modern than that of painting and staining it. At present the richnes and brilliancy of our vessels of glass, which contribute so much to the ornament of our tables and saloons, are owing, in a great degree, to the elaborate manner in which they are cut. The cutting is effected by wheels driven by considerable power, the glass being held to the wheels. The first cutting is with wheels of stone, then with iron wheels covered with sharp sand or emery; it is then polished in the same manner by putty, or oxide of tin. To prevent too much heat being excited by the friction, a small stream of water is kept constantly running on the glass. In large manufactories the wheels are urged by a steam engine. Glass may be ground by hand on any corse-grained sand stone, or with sand, or with emery and water. Panes, or flat pieces of glass may be divided, when a glazier's diamond is not at hand, by making a notch with a file and carrying a piece of hot charcoal in a line in which it is wished the fracture should proceed. The charcoal must be kept alive with the breath. A red hot iron will also do. The art of casting in glass has lately arrived at such perfection that many articles, such as small plates, salt-cellars &c., now almost rival, at first sight, those that are cut; and glass casting has one advantage over glass cutting, that certain ornaments can be