

And our earnest must not slacken
Into play.
Men of thought, and men of action
CLEAR THE WAY!

Lo! a cloud's about to vanish
From the day;
And a brazen wrong to crumble
Into clay,
Lo! the right's about to conquer.
CLEAR THE WAY!

With that right shall many more
Enter smiling at the door;
With the giant wrong shall fall
Many others, great and small,
That for ages long have held us
For their prey;
Men of thought, and men of action,
CLEAR THE WAY!

As a further proof of the progress of correct and enlightened judgment and feeling on this important subject, we will close our remarks with the following quotation from the pen of an eloquent writer of the present day:—We are accustomed to admire those heroes who have waded to their conquests through seas of blood—we are wont to recognise in the merely political reformer a benefactor of mankind. But there are heroes nobler still, whose aim is not to destroy the life of any, but to promote the happiness of all—there are benefactors of the human race, whose efforts are calculated to win them more enduring laurels than those of the mere political economist. We refer to those who seek to effect a radical change in the social habits of the millions—who desire to lift them up from the depths of what is virtually a voluntary and degrading bondage to the heights of a virtuous and enlightened freedom. The work is progressing; it may be slowly, but it undoubtedly is surely. Let all who can, aid it on. Let those who seek to uphold the true interests of civilization judge dispassionately. Let them range themselves in the ranks of mind in this warfare against matter, with their motto, 'mental and moral, as well as physical reform.' The glorious epoch in our national history is approaching which shall exhibit a thorough revolution in our social habits. We can see it through the dim and shadowy vista of coming years, dispelling, as it advances, the gloom which had been thickening around, and exhibiting the variegated surface of society, now only a highway for the triumphal car of sensualism, gemmed with the virtues of a newer and a better, because a more educated and enlightened age. A nation's gratitude shall then encircle a nation's real benefactors, and the genius of love, radiant with celestial dignity and grace, shall herald in the reign of 'Peace on earth and good will towards men.'

Scientific Extracts.

From the Halifax Novascotian, November 25.

THE STUDY OF THE SCIENCES.

A few remarks under this head may not be inapt or misplaced as introductory to the notices of scientific lectures, to be delivered at our Mechanics' Institute during the present session.

It is study that leads to those acquisitions which ennoble the man and exalt him far above all other created beings. The knowledge of the foundation and leading principles of any single science may distinguish the student, mark him as remarkable for his proficiency, and be the happy cause of making his acquirements a benefit to the world. When, however, we look around at the whole cycle of the sciences, and select that which may appear the most insignificant and useless, and regard him who is the grand maestro in any one particular department—we see that even he has not been able to comprehend its grandest heights and depths, thus making acquisition almost a hopeless and thankless task. Although the fact may be well supported that there are minds capable of grasping any amount of intelligence upon any one single subject when attention is fully given to it, yet the consideration of another fact; that almost daily, discoveries of the most important and progressive character are being made, and these likely in different parts of the world, we see the utter impossibility of any one being the complete master. This statement, however, should not deter from the study, but should encourage to loftier aims, and the acquisition, if time and opportunity allow, of the groundwork of them all. This may be a task of years, but how extensive the benefits!—how noble the achievement! It will lead to the understanding of nature—the principles of being—the cause and effect of everything occurring around us—knowledge of human character—expansion of the intellect—and love of the Creator of all.

The beautiful and the simple, the sublime and the grand, are all comprehended within this sphere, and few, if any, are capable of appreciating fully any one definite characteristic; but on the other hand, all who have in any wise tutored the mind, are able to comprehend the working out first principles.

All science, like man's happiness, is as yet in its embryo—the knowledge now accumulated is but as the minutest particle compared with that which is ultimately to be demonstrated: therefore every scrap of information arising from study, or experiment, added to the grand focus will increase its glory and importance. There is no mind but may claim productions of something new, and there is no student but can accidentally, or as the fruit of effort, bring to bear some addition to one of the many imperfect sciences. This is an

argument for study and also for the encouragement of those who attempt the benefit of their fellow creatures by imparting acquired information.

Having these views, we have invariably done our utmost to extend the advantages and influence over our Mechanics' Institute, considering that by such an act we did good service to the whole community. Here we cannot err.—Miscellaneous knowledge must be valuable, and the truly popular mode in which various subjects are brought to the public attention by the lecturers of our Mechanics' Institute, must create a thirst for an accumulation of that of which they only there enjoy a taste. The survey of any subject or science by any lecturer can be but superficial and it is only intended that this, a minor insight into great principles, should create a taste for further investigations.

The pleasure and the benefits are divers—the expenditure of thought and time bringing its own reward.—Mental improvements must always be attended by moral advancements and elevation, and for this reason, the young especially, should be encouraged to give their minds to the study of some particular science and to attain the first principles of many. This done, the achievement of mighty good will be effected—the mind well tutored—the phenomena of nature understood—the admiration of the sublime and the beautiful created, and therefore man made better capable to act with a view to find results, than being ignorant of all those matters.

Religion will be the source of happiness—the works of nature will instruct, and please, and benefit, and science is the handmaid by which these are recognized and the medium through which they produce the desired results.

ROAD MAKING.

There is scarcely anything, next to the direct improvement of the farm, that is of more importance to the farmer, than good roads. He must necessarily spend a considerable portion of his time in travelling either short or long distances. The conveyance of produce to market, is alone a very considerable item of cost and labour. Many farmers are compelled to spend at least one day in seven, on an average, in driving on the road. It therefore becomes a matter of really serious importance, whether his horses accomplish this work with difficulty or with ease.

There are two or three points, which, if sufficiently attended to by all road makers, would, with no additional cost, work a revolution in our roads—say, more, would actually advance the price of land, in many well settled districts, to an aggregate amount of hundreds of thousands of dollars. The Erie canal added to the wealth of the country hundreds of millions; fine and easy roads, by virtually diminishing distances all through the country, would be of the highest benefit.

One of the most important points, is to preserve a level, as nearly as possible. This importance is strikingly exhibited by the computations and experiments for engines on railroads, the same principles applying in less degree, to common roads. It was found that an 18 ton engine.

On a level, would draw,	700 tons.
“ grade 10 ft. per mile,	452 “
“ “ 20 “ “	332 “
“ “ 30 “ “	263 “
“ “ 50 “ “	155 “

That is, if a horse could draw seven tons on a railroad, or on a level, he could not draw two tons up a slope of only one foot in a hundred. But a slope of only one foot in a hundred on a common road would be regarded by every one as about the same as a dead level;—what then must be sought of such ascents as are continually occurring, of one foot in three or four! The loss of power here must be enormous. But enormous as it is, and straining to a horse's every muscle and joint, it is in most cases entirely unnecessary. Many parts of the country are more or less broken into irregular hills. But with most singular stupidity, the roads instead of being laid judiciously round them, by slight curves, pass directly over them. Sir Joshua Reynolds said that if he ever went to paint Folly, he would represent a boy climbing over a high and difficult fence, with an open gate close beside him. He could have done it much better by exhibiting a road, for the accommodation of, say fifty teams a day, year in and year out ascending a sharp hill and then down again, with a fine natural valley or level for the road twenty five rods distant.

Every common road to be perfect, should be laid out with some kind of levelling instrument, and where ascents must be made, proper curves should make them as easy as possible. Narrow and small gorges should be crossed by bridges or embankments. Let not the narrow policy that this or that man's fields are cut into an inconvenient shape ever prevail. It is better for every farmer to have a three cornered field, if he can only have level roads, on which his horses may draw double loads with ease.

2. The material for the construction of roads is very essential, and often entirely neglected. The surface of the earth is in many cases rich black mould or muck, very fine for the growth of potatoes and corn, but making horrible waggon tracks. It is however usually scraped into the highway for the very simple and cogent reason that it is scraped easily, being so much softer than the hardpan below, which though hard to work, would nevertheless be equally hard to get muddy. Sometimes, like the politician, who 'steered between right and wrong,' a midway course is taken, or rather both plans are adopted; that is, the muck is first scraped up into a high turn-

pike, and then a coat of hardpan covers the top—which does well for light waggons, but heavy ones cut through the crust into the manure below. One of the hardest and smoothest road we ever saw, was the wide shallow ditch made by scraping the muck out, to form the turnpike, and thus leaving the clean hardpan surface. What fine hard roads might be made in many places, by merely removing the black upper soil to enrich the adjacent fields.

3. A third important item, is the removal of loose stones. The law of the state of New York requires that all road-overscers should cause these to be thrown from the road once a month, but it is rarely observed. It is believed that if this were strictly attended to, and our roads kept smooth, waggons and carriages would last double the time they now do, to say nothing of the discomfort of being jarred a thousand times a day, and the rack to horses, harness, and merchandize. A single stone, against which every passing vehicle thumps like a sledge, may alone cost a hundred dollars a year by broken or shattered waggons.

The property invested in waggons in the state of New York alone, is probably not less than ten million dollars. If by keeping the roads smooth, by the removal of stones, this enormous sum would need renewing only once in twenty five years, instead of once in twelve years as now, would it not be an economical operation.

If a hundred thousand farmers in the state do fifty dollars worth of teaming on the road, each, per annum, the yearly aggregate would be five millions. If their loads could be doubled, by making all the roads nearly level, would not the clipping off of a few farmers' fields for the passage of the road, be a matter of strict economy to individuals, as well as a great public benefit?

If besides by all these improvements bringing farms virtually nearer market and all other places of business, the price of land should rise, as it certainly would, at least to some extent, who would be the losers?

Communications.

FAREWELL.

This word, how it breathes the lone breath of departure,

From friends that are link'd in memory's chain;
The pleasures of friendship how exquisite to nurture,

But alas! "the farewell" occasions a pain.

The friends of our boyhood, where are they removed to,

Where are the sweet hours we enjoyed in our youth;

They've gone! but they've left a sweet soothing pleasure,

Like the last beams of sunset thrown o'er the dark earth.

How oft in the woods calm solitude courted,
Enjoying the sweets of nature's rough form;
By the rippling river have pleasantly sported,
Or on its smooth surface been silently borne.

Gone! gone! are those hours, gone! gone! are those moments,

Forgotten almost 'cept in fancy's light train;
Where Remembrance mused, till Forgetfulness closes,

And prevents with its darkness a chance to complain.

But still in contentment consolation we gather,
And guarded by virtue from vice's fearful spell;
Then the halo of hope around us will hover,
Breathing consolingly all, all is well.

PROBUS.

Chatham, December 8, 1846.

MENTAL PHILOSOPHY AS ILLUSTRATED BY THE SCIENCE OF PHRENOLOGY.

"Man! know thyself! all wonder centres there;

To none man seems ignoble but to man;
Angels that grandeur, men o'erlook, admire:
How long shall human nature be their book,
Degenerate mortal! and unread by thee?
The beam dim Reason sheds, shows wonders there,

What high contents! illustrious faculties."

Young.

In this argument the religious constantly forget, that the same Omnipotent hand made the brain which created the mind, and the universe itself; and that in the dedication of every cerebral convulsion to its object, be they thinking or any other process, the Divine Wisdom is as certainly exercised, as in impressing motion on the planets, or infusing light and heat into the sun.

The ideas many individuals have on this subject, tend to shew to what an extent prejudice in favor of any received theory will predispose mens' minds to misconstrue statements and arguments in favor of another which disagrees with it, even though, as in this instance, supported by incontrovertible facts.

There are two great questions connected

with Mental Philosophy, very different in themselves, but which are often confounded. The one is, "On what is the mind dependent for existence?" the other, "On what is it dependent for the manifesting itself in this life?" Phrenologists declare themselves unable to decide upon the first; they do not pretend to know, much less to assume, the origin, essence, or nature, of either mind or matter; whether they are one or distinct is known only to the God who made them. This is their answer to the unproved and unwarrantable assumptions of Materialism in connection with the Science. With reference to the second, they maintain that facts demonstrate it to depend on the organization of the brain. A few remarks will place this doctrine in its proper light.

In the first place, we are not conscious of the existence and functions of the organs by which the mind operates in this life; and in consequence many acts appear to us to be purely mental, which experiment and observation, prove incontestably to depend on corporeal organs. For example, in stretching out or withdrawing the arm, we are conscious of an act of the will, and of the consequent movement of the arm, but not of the existence of the apparatus by means of which our volition is carried into execution. Experiment and observation, however, demonstrate the existence of bones of the arm, curiously articulated and adapted to motion, of muscles endowed with the power of contraction, and of three sets of nervous fibres all running in one sheath, one communicating feeling; a second exciting motion, and a third conveying to the mind information of the state of the muscles, when in action: all which organs, with the exception of the nerve of feeling, must combine and act harmoniously before the arm can be moved and regulated by the will. All that a person unacquainted in anatomy knows is, that he wills the motion, and that it takes place; the whole act appears to him to be purely mental, and only the arm or thing moved is conceived to be corporeal. Nevertheless, it is positively established by anatomical and physiological research, that the conclusion is erroneous, that the act is not purely mental, but is accompanied by the instrumentality of the various organs here enumerated. In like manner every act of vision involves a certain state of the optic nerve, every act of hearing a certain state of the tympanum. Yet of the existence and functions of these organs, the eye and ear, we obtain by means of consciousness no knowledge whatever. "Now I go one step further in the same path and state, that every act of the will, every flight of the imagination, every glow of affection, and every effort of the understanding, is performed by means of cerebral organs unknown to us through consciousness, but the existence of which is capable of being demonstrated by experiment and observation; in other words, the brain is the organ of the mind, the medium without which no mental act is possible in this world." The greatest physiologists admit this proposition without hesitation. The celebrated Dr. Cullen, of Edinburgh, states, "that we cannot doubt that the operations of our intellect always depend on certain motions taking place in the brain." The late Dr. James Gregory, when speaking of Memory, Imagination, and Judgment, observes that—"although at first sight these faculties appear to be so purely mental as to have no connection with the body, yet certain diseases which obstruct them, prove that a certain state of the brain is necessary to their proper exercise, and the brain is the primary organ of the mental powers." The great physiologist of Germany, Blumenbach, says, "that the mind is closely connected with the brain, as the material condition of mental phenomena is demonstrated by experiment, and by the mental disturbance which ensue upon affection of the brain." According to Magendie "the brain is the instrument or medium of thought; this is proved by a multitude of experiments and facts." Dr. Niel Arnott, in his Elements of Physics, writes thus—"the laws of mind which man can discover by reason, are not laws of independent mind, but of mind in connection with the body, and influenced by the bodily condition." Again—"Fever, or a blow on the head, may change the most gifted individual into a raving maniac; causing the lips of virgin innocence to utter the most revolting obscenity, and those of pure religion to speak the most horrible blasphemy; and most causes of madness and eccentricity can now be traced to the brain." To all sane manifestations of mind, healthy action of the brain is necessary. In sleep, fainting and