NEW YORK, JANUARY 29, 1848.

Education---What is it ?

The value of all knowledge should be estimated by its relation to the common affairs of life. No one we trust will dispute this sentiment. For this reason then, every young person should be educated in those branches of knowledge which relate distinctly to the profession he intends to pursue. The youth destined to be a clergyman, should make himself familiar with the ancient languages, but the young man who is destined to be a merchant should rather make himself familiar with the languages of the living, than seek to become acquainted with the thoughts of the dead by the language in which those thoughts were uttered. The education of the mechanic and agriculturist should be practical, derived from accumulated experience and certainly the elementary branches of our common educational system is the basis on which the superstructure is to be raised. The first branches to be learned and learned thoroughly then, should be reading, writing and arithmetic. Without these, no further advances should be made in any other branch—these first, then as many afterwards as possible. After this should come Natural Philosophy, and here let us say, this truly is real knowledge—real education. We do not mean to be understood as setting aside moral ethics, for we consider that virtuous and religious sentiments should be supplied to every person from the very moment the child begins to recognise the mother that presses it to her bosom from the stranger that may enter her door. But what we mean by Natural *Philosophy* is, that it embraces all the varied kinds of knowledge whereby a man can become truly great as a scientific man and a practical man too. The mechanic who understands his own branch of business thoroughly, is a natural philosopher, so far as that branch of business is concerned, and if he is a millwright and can make and calculate the power and effect of a water wheel, and explain the natural principles of its operations, he certainly is a better educated man, and possesses more knowledge than the linguist who can merely name the wheel in five or more languages. We do not undervalue a knowledge of languages, but we say again, first master the elementary branches thoroughly, then natural philosophy, and afterwards as much information as possible.

We have been led to make these remarks from perceiving a great absence among our mechanics of the certain kind of knowledge which every man ought to possess in the business which he is following, and we sincerely exhort them to reflect calmly on the famous adage, "knowledge is power." We think that we have pointed out clearly what true knowledge is, and every man knows how he can gain it if he has the time to apply himself and the means. Many have not the time or means, especially our mechanics who have families, but for our young men, there is no excuse. Throughout all the Mechanics Associations in our land, we should like to see a system of conversational instruction adopted, a familiar questioning and answering. Education by no means consists in merely reading, writing, arithmetic, or an acquaintance minute though it may be, with the natural sciences. After having acquired all these, we can exclaim with Newton, that we have only gathered up a few pebbles on the shore of the ocean of knowledge, but certainly if we gather not up a single pebble at all, we must be unprofitable to ourselves and recreant to the duties we owe to our God, our country and our fellow men.

Science is but an arrangement of facts—experiments—and certainly our working men have the best opportunities to acquire the most correct knowledge—to be most scientific—each in his own branch of business. This is education, and it is such an education that a lifetime is not too long to acquire thoroughly. Let every working man be guided by these sentiments and in a short time we shall behold every mechanic walking with a front more erect and a mind more elevated. Poverty is no excuse in America for a man not being a gentleman, and riches no badge for a man to be proud and lordly. Any man of an honest heart and a noble and cultivated mind, is fit company for senators or princes. "Tis worth that makes the man."

Clairvoyant Miners.

A company is now formed at Jackson, Michigan, called the "Clairvoyant Exploring Company of Michigan," for the object expressly stated "of examining different sections of the country for coal, iron and other treasures which are hid from natural vision, and to direct the enterprising in their labors, to prevent constant losses by digging in vain, and also to direct improvements in machinery and applying them aright."

This company is undoubtedly the greatest invention of the age and it is a great pity that it had not been organized before the expensive Geological Survey of this State was made. What a saving it would have been, but then those were days when such etherial light had not penetrated into our bedarkened country.

The clairvoyants of Michigan have taken a great deal of trouble out of the hands of our inventors, and as they are to preside over improvements in machinery, we suppose that the Patent Office will be laid upon the shelf as a relic of the dark ages. Our machinists and millwrights and engineers should lay down their squares and compasses, and refer the whole subject of machine manufacture and engine and railroad construction to the *seers* of Michigan. Mr. Ellet, who is to construct the Niagara Falls Suspension Bridge might find it to his advantage to refer his stupendous undertaking to such gifted clairvoyants. He might wake up some morning and "like the baseless fabric of a vision," behold his bridge spanning the chasm of the Niagara beautiful as the rainbow at the Falls, as firm and as *durable*. What lucky fellows these clairvoyants are. They can know every thing. We have often tried a magnetic flight but have never yet got above our chair and have always been proof against such spiritual locomotion. No wonder we have heard of gold mines being discovered in Michigan lately.

Revolving Shuttle Box.

Mr. E. Burt, of Manchester, Conn., informs us that the first plaid, or gingham power loom that was put in operation in this country, was made with a revolving box fitted on the periphery of a wheel about eight inches in diameter. This was twenty years ago, and it was patented in 1828. Shuttle boxes were used on both ends of the lay at the same time but laid aside as of no advantage.

The revolving box is therefore not such a novelty as many have supposed. Mr. Burt is the well known inventor and patentee of a Check Loom patented in 1837, and a *stop* motion patented in 1845. He is, therefore, minutely acquainted with the progress of the check loom in America. If we mistake not, the first power check loom was put up in this State in 1839 by John Allan, who introduced it in Troy, Rennselaer Co., from Glasgow, Scotland. It was then thought to be a perfectly new invention. This was two years after Mr. Burt had taken out a patent. This simple fact should be enough to convince every patentee, that the true way to let their inventions be known to the world, is to publish the same in the Scientific American. Here the manufacturer looks for such information, and had the Scientific American been in existence in 1837 Mr. Burt's loom would have been introduced into this State at an earlier date than Mr. Allan's, and the just reward would have been his.

The Light of Knowledge on Mount Lebanon.

A seminary has been opened at Abeih, on Mount Lebanon, to be under the superintendence of Mr. Calhoun, who is now on a visit to this country. There are 18 common schools besides, containing more than five hundred pupils. The press there has sent forth about four hundred thousand Arabic pages, and the mission is about commencing a new translation of the Scriptures into the Arabic tongue.

For the Scientific American.

Reaction Water Wheels.

While conversing with Millwrights I have frequently noticed the want of accurate information respecting the principles of Reaction water wheels, yet I think these may be explained upon the simple principles of natural philosophy. Let us suppose an upright pinstock to be filled with water. Its pressure is equal on all sides, but if we make an aperture on one side, it relieves that side of an amount of pressure according to the size of the opening (so much to an inch, which is easy to ascertain,) while the pressure on the other side is the same as before. By this principle it is seen that if we place a tub or cylinder, filled with water on wheels to give it easy play backwards and forwards, and make a hole on one side, the effect will be, that the carriage will move in an opposite direction from the issue, just as a gun recoils opposite to the point where the shot has found vent.

There is another principle, however, connected with reaction wheels, which must not be overlooked, and it is one which gives the only importance to reaction water wheels as prime mover of great utility and economy, I mean the centrifugal force generated by the rotary motion, a principle which many eminent scientific men have completely overlooked

I once saw an accomplished millwright at work constructing a reaction water wheel upon a vertical shaft. It was for a saw mill having a fall of seven feet and he made the heads of his wheel about three feet. I asked if his wheel was not too large for the fall, when he observed that "from much experience he had discovered that the motion was not according to the size, that a wheel of a certain diameter would revolve about as fast as one of a less diameter," a fact which I have since discovered to be the result of centifrugal force of the wheel, and which will be made more plain by the following cut.

BARKER'S MILL.

This is a cut of Barker's Mill, a very worthy though not a new invention. The shaft is euclosed in a hollow cylinder and by the water falling into this and its pressure kept continually up and being allowed to escape at the extremities of four lower arms placed as displayed in the cut, a circular motion of the shaft will be the result from the reaction of the water escaping. But supposing that we closed up all the apertures but one, and found that it still revolved, nearly as fast as when the four were open, what would we say ? We must conclude that centrifugal force had something to do with it—that the velocity given to the surface was caused by a centrifugal force which increases upon the principle of the *parabola*, as the water is thrown from the centre.

As the principle of all reaction water wheels are the same, the above is a fair representation of the principle, however different may be the various modes of construction, and no doubt there is a great difference in the economy of power, by the superior construction of some in comparison with others. D. T.

South Rutland, N. Y.

[We have in our possession the accounts of some very minute experiments with the results of power according to the quantity of discharge, presented to us by Mr. Parker, the first patentee of a reaction water wheel in the United States.—Ed.

The French Steamers.

The losses of this line, up to the present time, are said to amount to two millions of francs, or about $375,000. The company are about asking the government to make up this loss. For the present the four ships are to cease running, in order to be refitted and provided with new furnaces, increasing the power of the engines. They will resume their trips in March or April.

Manufactures of the South.

A report has been laid before the legislature of Georgia on this subject, from which it appears that there are 32 cotton factories in operation or in progress of construction in that state. Thereare invested in the building and working of the 32 factories, two millions of dollars.—The number of hands engaged in them now is near three thousand, and of persons directly receiving their support from them, six thousand. The consumption of provisions and agricultural products other than cotton, is three hundred thousand dollars per annum, at present prices. The consumption of cotton annually reaches 18000 to 20,000 bags, and the manufactured goods turned out by them last year was about one and a half millions of dollars. One third of these manufactured goods were sold out of the state mostly in the northern markets and partly in the valley of the Mississippi—that illimitable field of consumption. The coarser goods manufactured in Georgia says the report, stand high in the northern markets and command a preference over all others of the same styles. This is owing to the fact that they are made of better cotton. In one instance a shipment of fifty bales of Georgia yarns, by one of the companies to China, was well received, and gave satisfaction in the market.

The report does not state what the profit is on the capital invested is. It is stated however, to run from twenty to forty per cent.

A friend of ours from Savannah while on a visit to this City last summer, informed us that he had no idea of the activity which prevailed in that City nor of the enterprise manifested generally throughout the State. In regard to all natural advantages which can make a prosperous commonwealth, Georgia is perhaps more richly endowed by nature than any other state in the Union.

Copper.

Crocker, Brothers & Co., of Norton, Mass., are melting from fifteen to eighten hundred tons of ore per annum. This is converted into sheathing copper, tubes, nails and the cents for the U. S. Mint, prepared ready for stamping, averaging about sixty tons a year.

One rolling mill in Taunton, Mass., turns out about 1500 tons of copper in sheets, bars, bolts, &c. per annum; and at another establishment one hundred tons of copper rollers for calico printers are manufactured.

American Navy.

According to the official reports we now have 5 ships of the line, 1 razee, four frigates 13 sloops, 5 brigs, 11 schooners, 4 bomb gun vessels, 1 ordnance transport, 12 steamers, 6 store ships—total 62. Vessels in ordinary, Nov. 1847—1 ship of the line, 8 frigates, ten sloops of war, 2 steamers,—total 21. The official estimates of the naval service the comming year amount to over ten millions of dollars, besides six millions of dollars for the marine corps.

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