SCIENTIFIC MUSEUM.

Process for Testing Iodine.

The following method of testing iodine that has been adulterated with water, is given in the "Industrie Suisse." It is well known that the dearer a chemical becomes the more it is adulterated, and from the increasing rise in the price of iodine, the attempts to adulterate it are becoming more numerous. The greater part of the substances employed for this purpose being neither soluble in alcohol nor susceptible of volatilization by heat, it is easy to discover them and to determine the quantity by the ordinary processes. Adulteration by water is the most frequent, and, at the same time the most difficult to discover with certainty, amounting, according to some writers, to as much as 10 and 12 per cent. Pulverized iodine, in fact, absorbs a large quantity without appearing humid, and the means of determining the proportion in which this substance is adulterated with water are very defective. Although iodine requires a higher temperature than water to reach the boiling point, the latter does not evaporate without drawing off at the same time a noticeable part of iodine, which partakes, with other bodies, in the property of easily evaporating when exposed to the steam of water, although much less volatile. N. A. Chevallier advises placing a certain quantity of iodine that has been previously weighed, between some sheets of blotting paper, to press it firmly, and then weigh it over again. It is clear, without being necessary to make any attempt to prove it, that there must be lost, in this manner, a large quantity of iodine, and that the resulting proportion would not be exact. Another process consists in pulverizing the iodine with a double weight of chloride of calcium, to place the whole in a tubular retort and to heat to 180° (Celsius). The iodine will change to vapor, and the chlorine remain colorless with the water. Only it is very important to take precautions that the water itself should not evaporate, this method has, however, its difficulties, for it requires a long time to loosen the neck of the retort. The following method is short and simple, as well as tolerably exact: Weigh about 1 dwt. of iodine in a small open porcelain vessel, and after having done so, leave it on the scale. Add to this half an ounce of mercury, and afterwards place the pestle of a small agate mortar in like manner in the vessel, and determine the whole weight. Then take it, altogether, off the scale and pound up the iodine and mercury with the pestle; care must be taken to place the vessel on a sheet of white paper and to hold it with the left hand. Pound it up until the odor of the iodine has completely disappeared, the color that the mass assumes at first is a reddish brown, when it suddenly becomes thick, and exactly resembles an amalgam. It appears indispensable to obtain this latter result, that the mixture should be made in such a manner that the mercury be added to the iodine at least in the proportion of 7 to 1. That is to say, that the quantity of mercury should be much greater than in the preparation of yellow mercurialized iodine, where a similar phenomenon is not manifested. When there has been obtained a perfect union of the parts, the vessel is placed on a warm water bath, and after some time weighed again. The operation may be repeated without any evidence of a diminution of weight, especially if care has been taken to leave the vessel in the bath for half an hour before the first weighing. In the course of pounding, the entire mass is somewhat heated, and there results from this the loss of a small quantity of water, whilst the iodine, on the contrary, is very little volatilized by the operation. It is known that after the uniting again of the iodine with the mercury in the water bath, the former is no longer volatile; this fact is, moreover, proved by the piece of sized paper placed over the vessel as a cover. The inventor of the process, Dr. Bolley has made a course of experiments, which do not differ much in the results when the same iodine was used.

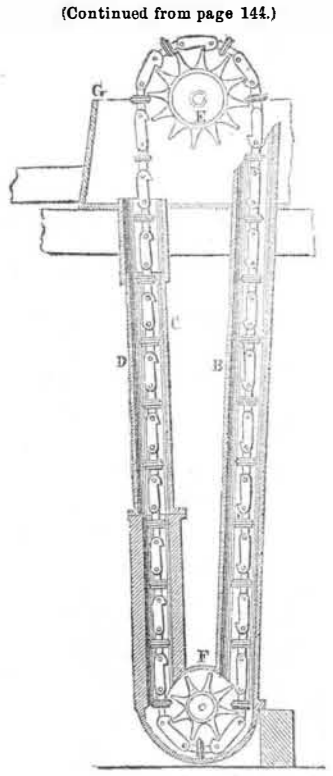
The Founder of Mechanics' Institutes.

The late Dr. Birbeck, the chief founder of the Mechanics' Institutes, and who, at his own cost, both in time and money, largely contributed to the spreading of education amongst English mechanics, died, we regret to say, impoverished, and leaving his widow without provision. A communication of the bereaved lady's position was made to the Prime Minister, and a memorial, most numerously and respectably signed, prayed that some stipend from the Civil List should be allowed to her. In reply to this memorial, an offer was communicated from Lord Derby of a pension (charged on the civil list) of £50 a-year. This pension, however, was by the special advice of Mrs. Birbeck's friends, instantly declined. —[Littell's Living Age.

[We believe Dr. Birbeck commenced his career as a lecturer to mechanics, in Glasgow, Scotland, where the first Mechanics' Institute was erected. He afterwards moved to London, where he died.

Wells, Pumps, &c.

(Continued from page 144.)



Chain Pump.—It is our design to publ sh engravings of some common pumps, so as to enable many to make them who have not had an opportunity of seeing drawings of the same. This engraving is that of the chain pump. It is only an endless chain or belt, A, with a sufficient number of pistons, called buckets, fixed upon the chain at proper distances apart. It passes down through a wooden tube, B, and returns upwards in the same manner in the other tube, D. The chain is extended over two wheels, E, F, one at the top and the other at the bottom. By turning the upper wheel, the chain of buckets is put in motion, and the lower part of the wooden tube in which the chain ascends is made in such a manner that the pistons, as they turn around below will push up the water into the tube, in which they are ascending, and then lift it up as they are moved upwards. The space between each piston or disc is a bucket in the inside of the tube. The pump is worked by a crank in the ordinary way. Many of these pumps are now used, a common chain being employed, with discs of iron galvanized, or an endless chain of gutta percha, with strong discs of india rubber for the pistons. Any person who can make a close tube so as to have the pistons work tight in the tube, can put up one of these pumps easily. A rope, a leather belt, or any endless belt will answer the purpose, but we like the gutta percha endless belt best. The pistons must be allowed to work easily in the tubes.

Hot Water in Paris.—The artesian wells of Grenelle, 600 yards French (nearly 2,000 feet English) in depth, continue to supply water of 30° Centigrade (86° Fah.) throughout the year. It being supposed that a large profit might be derived from a liberal supply of this natural hot water, a company is about being formed for the purpose of boring in each of the forty-eight districts (*quartiers*) of Paris, an Artesian well. These forty-eight wells are each to be one thousand French yards, or 3,300 English feet in depth, and are expected to yield water of a temperature varying from 176 to 212 Fah., the latter being the boiling point. The object in view is to establish hot water baths at 20 centimes (about four cents), public wash-houses or laundries—four in each district—furnish families with hot water, and finally to heat apartments, and buildings, by causing the hot water to circulate in tubes, as in the Palace of Luxembourg.

Patent Principles---Telegraphs.

A very important decision was made in the U. S. Supreme Court at Washington, on Tuesday, the 11th inst. An appeal was carried up by Henry O'Reilly, against a decision of a lower court, which granted an injunction to restrain the use of the Columbian Instrument, as an infringement of the Morse Telegraph Patent. The decision of the lower court was to the effect that "a patent covered an art." This decision has been reversed by the Supreme Court—*its* decision is, "an art is not patentable."

It will be recollected by our constant readers, that on page 61, of our last volume, it was stated that Judge Kane made a decision against the Bain Telegraph, which was in effect that an art is patentable, that Morse's patent covered recorded messages independent of the manner or the principle embraced in the mode of doing the same.

On page 67, of the same volume, we reviewed his decision and pointed out the fallacy of his Honor's reasoning, and the dangerous principle to improvements involved by his fiat —a decision which we deemed unjust and unreasonable. By that decision, the whole of the property of the Bain line was given over to the complainants, and now it turns out the Supreme Court has decided that the decision of Judge Kane was founded upon erroneous principles. Judge Kane's words were:— "Morse's title is founded on two patentable subjects, the one the discovery of *a new art*, the second the means of practising it; *the art* is the recording of languages at telegraphic distances." We refer to his Honor's decision now, and to our criticism of it to notice one peculiar point. We said then, "we could not feel easy in conscience with such a decision, if we were in the complainants' place, to be awarded property which in justice did not belong to us, but it was a question which would be settled before a higher tribunal than that of an earthly court. We have great faith in moral principles, and in no single instance can we recollect of having been deceived in the ultimate results. Herrick Aiken, of Franklin, N. H., thought we were wrong in our conclusions, and we allowed him three whole columns on page 171, Vol. 7, Sci. Am., to prove that an art was patentable. On page 181 we pointed out the exceeding weakness of his reasoning, and want of correct information on the subject, and we concluded with these words: "We believe the *decision* and the compromise which has resulted from it (Judge Kane's decision) have deeply injured the rights of an inventor; it may look all prosperous just now to those who, in their worldly wisdom have planned things for their own success and benefit, but *we* have strong faith in the ultimate triumphs of justice." This faith has just been realized in the Supreme Court of the United States—the highest legal tribunal in our land—declaring the principle upon which Judge Kane based his decision, to be wrong, the decision of the Supreme Court is in accordance with the views expressed by us at the time, and on the page referred to above.

Old Apple Tree.

There is a bearing apple tree in Connecticut, alive and flourishing, at the advanced age of two hundred and fourteen years. It is of the English Pairmain variety, and was imported in 1638, by Governor George Wylley, and bore good fruit this season, on the "Charter Oak Place,'. now owned by Hon. T. W. Stuart, Hartford. Some of the fruit of this venerable tree was presented to the Connecticut Horticultural Society in October last.

The Iron Trade in England.

At a meeting of the So. Staffordshire, Worcestersire and Shropshire, held at Dunly on the 30th ult., it was resolved to advance prices 20s. per ton for the ensuing quarter.

In England they have a way of carbonizing gutta percha, and applying it to razor strops.

LITERARY NOTICES.

American Polytechnic Journal—This is the title of a new monthly magazine devoted to Science, Mechanic Arts, and Agriculture, conducted by Prof. Charles G. Page, J. J. Greenough, and C. L. Fleischmann. It is published in this city and Washington, at $3 per annum. We like this number well—it is edited with great ability. Prof. Page has an excellent and profound article on the "Acarus Crossi," in which he expresses views in accordance with our own respecting the superficial experiments and absurd conclusions of Reichenback. We wish our new cotemporary success.

Guide to Knowledge—By Eliza Robbins; 1 vol. 12mo.; price 62 1-2 cents. Appleton & Co., New York. This little work, in the form of question and answer, is a useful addition to our elementary school books. The present rising generation are more fortunate in this respect than their forefathers, for while, now, books suited to every capacity of learners can be counted by scores, there was a time when all elementary knowledge was supposed to be comprehended in the "Latin Grammar." The modern progress in the course of education, we look upon as the greatest event of our times, and the class of books that it has given rise to are often of a superior character. The above, however, is merely elementary for young persons, but although small it is encyclopediac, and contains much useful knowledge for children.

Hunt's Merchants' Magazine—Vol. 28, No. 1. Hunt's Merchants' Magazine has now entered on its 28th volume, and judging from the number just issued, the present volume, when finished, will not fail to be equal to its predecessors. As a periodical publication this magazine contains a vast amount of statistical information and excellent articles on the business topics of the times. To our commercial men we would particularly recommend the work as well suited to their pursuits and calling; in like manner the general reader will find much to amuse and interest him in its pages. The current number is illustrated with a portrait of Gen. Dearborn.

Shipbuilders' Manual—This is the title of a new work by John W. Griffiths, of this city, Marine Architect and Practical Shipbuilder, and author of the "Theory and Practice of Ship Building." This new work will embrace all that is new and interesting in the art of ship-building. Within the past three years, since the discovery of California, the building of fast-sailing or clipper ships has progressed with as great a rapidity as the peopling of California itself. A new book on ship-building is absolutely necessary now, and Mr. Griffiths has braced himself to the task of producing it. The price of each number is 25 cents. Sold by G. W. Stevenson, 333 Broadway, N. Y.

Ornamental Drawings for Painters and Sculptors—We have received the two first numbers of a new work by Weik & Wieck, Chestnut st., Philadelphia, which we consider of the utmost importance to a very large number of our readers. It comprises a number of sheets published monthly, at 50 cents each set, consisting of four beautifully executed ornaments, drawn by good artists. Ornamental Painters, please pay attention.

Littell's Living Age—This is really the best weekly magazine in the world: It contains a reprint of the best essays and tales of the foreign magazines; they are selected with admirable tact and taste—the very cream of foreign literature. The present number for this week (453) is one of the best we have ever read. It is published in Boston, and is for sale in this city by Dewitt & Davenport.

"Dickens' Household Words and United States Register," Vol. 1, new series. The American reprint of this entertaining journal is now conducted by McElrath & Lord, 17 Spruce st. Ten numbers have been issued of this volume. Terms $2,50 per annum.

The Baptist Preacher—This able monthly periodical, H. Keeling, editor, published at Richmond, Va., contains one of the ablest sermons we ever read on "The Force of Habit," by W. Hooper, D. D,. of North Carolina.