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Respiration--Ventilation.

Having been unfortunate enough, a short time ago, to experience the most disagreeable sensation, in a densely crowded, ill-ventilated room, we think that a few practical remarks on the subject, will not be out of place at this time, as we perceive that, for all we and others have said and written, it has been, to some people, like "water spilt upon the flinty rock."

It cannot now be denied, that the heat of the human body is kept up by a process of slow combustion, like that of fire in our stoves :—the body is supplied with carbon in the shape of food, and the slow combustion of it producing heat, consists in its combination with oxygen, supplied by respiration. The heat of the human body, by a law of the great Creator, is the same in all countries, viz., 99°; and whether man be a dweller on the snow-capped cliffs of the Andes, or basks under the red brazen sky of the tropics, the heat of his body, if tested by a thermometer, is the same to a degree. The combustion of carbon, then, being the means of animal heat, every man requires a supply of oxygen for the lungs; in proportion to the carbon (fat) consumed in food. In warm countries less carbon is required, because internal combustion need not be so rapid. This is the reason why vegetable and lean food is most healthy in warm climates, and why the people at the Northern and Southern poles can devour, without hurt, tallow and oil. In the combustion of our food, or act of respiration, our lungs absorb oxygen and give out carbonic acid gas, and water. It is therefore positively necessary to inhale pure oxygen, and drive away the carbonic acid as fast as possible, out of the room in which people are assembled for any purpose—either in public or private dwellings. Each grown up person takes about twenty respirations in one minute, or 28,800 in twenty-four hours. Sir Humphrey Davy estimated the emission of carbonic acid gas from the lungs every minute to be about 26½ cubic inches. We can, therefore, very easily judge how soon the atmosphere of a crowded room becomes vitiated; and this accounts for the faintings and sick headaches, so common to many people in such cases. When the same air is breathed over and over again, about ten times, respiration becomes oppressive, and insensibility takes place. Such air, when submitted to chemical tests, is found to contain 79 parts of nitrogen, 10 of carbonic acid, 4 of oxygen, and 7 of a peculiar oxide of carbon. How necessary, then, to health, is a good and plentiful supply of fresh air for ventilation. In crowded meetings, where the apartment is illy ventilated, no person can find enjoyment, for the lungs soon become oppressed, and the unoxygenized blood knocks with terrific blows upon the brain, as a warning of danger. Carbonic acid gas produces suffocation, hence the oppression on the chest, and pressure on the brain, in close apartments. Nitrogen gas is also the occasion of death, by producing deleterious effects upon the blood. Surely, then, it is essentially necessary that every house and hall, where there are living beings, should be well supplied with fresh air. Yet in this nineteenth century, in this enlightened land, and in the great city of New York—the more than London of the New World—the laws of ventilation seem to be less understood by many than by the wild Indian that roams with bow and spear on our Western wilds.

It is well known that one individual, constitutionally as well as by the nature of his occupation, requires more atmospheric air than another. Those who labor hard require more than those engaged in sedentary occupations. Those employers who neglect good ventilation, are ignorant of that philosophy which leads to the greatest amount of product. During our winter seasons, it would greatly promote the health of our women folks, if they depended more for heat on warm clothes and exercise than close apartments and red hot stoves. We commend this subject to their attention, with the positive assurance, (if they obey its teachings) of a perfect preventative for many headaches and other maladies—of mind as well as body.

A Caveat.

"Does, or does not, a Caveat give any sort of protection after one year? If A should enter a Caveat for an invention, but should find himself unprepared to attend to it, would the Patent Office grant B a patent for the same thing, if he should apply two years after A put in his Caveat? I am aware that A would be entitled to a notice during the first year, but would he not be entitled to a patent at any time, and would not others be prevented?"

The above are a few queries of a correspondent, who adds, "the public want some light on this point of the Patent Laws." The Law should be rendered more plain; but after the first year from the filing of a caveat, the Patent Office must issue a patent to another person for the same thing, if applied for. No defence against granting a patent can be set up for a caveat, when another is not entitled by law to a notice of three months. Our Patent Laws, however, are very defective in drawing clear lines of distinction between the time when an inventor forfeits all title to receive a patent. According to the present law, the Caveat should cover a period of two years instead of one, for it is specifically provided in Sec. 7, Act of Aug., 1842, that a machine may be in use for two years before applying for a patent, without invalidating the inventor's right. Any person can, at any time, contest the right of a patentee to priority of invention by a Bill in Equity. See Sec. 16, Act. 1836. If a person files a Caveat, and allows it to expire (one year), and another secures a patent afterwards for the same invention, the only remedy is to apply for a patent, when he will be rejected, provisionally. He then must request the Commissioner of Patents to "declare an intereference, and allow evidence to be submitted to prove priority of invention. The Caveat is then of benefit. The Commissioner will appoint a day for the hearing of evidence, and make his decision on the facts of the same. If either of the parties are displeased, an appeal can be taken to the Chief Justice of the District of Columbia. Interfering applications are decided only upon evidence—the first inventor has the right by law to the patent, but by the strict construction of law, no patent of a machine would be valid, if in public use more than two years, before application was made for a patent. The secret use of a machine, cannot be offered in evidence to establish prior right. Any judicial Court, however, has the power to annul a patent—to declare it void, in whole or in part.

Cheap Postage.

The New York Cheap Postage Association has expressly stated that one of its original and fundamental objects, is to effect a postal reform by which pre-paid letters, under half an ounce, shall be carried to any part of the United States for two cents. We hope that Congress will pass such a Bill this Session. We have no fears of a decrease in the revenue—not the shadow of a fear.

We also advocate an ocean two cents postage law for the whole world. We heartily concur in the views of Elihu Burritt, in regard to the limits of such a system. A letter from New York to Liverpool costs 24 cents—nearly as much for carriage as a barrel of flour. In the name of common sense, how is it that a letter becomes so heavy on sea beside what it is on land? In England, a letter of half an ounce will be carried for one penny from Dover to John O'Groats, but whenever it gets on board an ocean steamship, somehow or other it gets very heavy all at once—passing into the scale at half an ounce, and out on the other side six times heavier. It is a strange process, that of postal transformation. Chemistry has its wonders, and so has Geology, but none to equal this. It surely must be built on that scientific deduction, ascribed to Faraday, that "a drop of water contains as much electricity as would sink a ship."

There were 3114 admitted into the Bellevue Hospital last year :—Irish, 2,050; Americans, 616; Germans, 193; English, 138; Scotch, 63, other countries 50.

Works on Science and Art.

MANUFACTURE OF IRON.

By Frederick Overman, published by Henry C. Baird, successor to E. L. Carey, corner of Market and Fifth streets, Philadelphia.

This Book stands alone in its peculiar field. The author is a Mining Engineer, and the publisher deserves great praise for the neat and beautiful manner in which it is executed. It is a complete octavo volume of 500 pages, illustrated with 150 excellent wood engravings. It treats of the manufacture of iron in all its various branches; and the aim and spirit of the author, was to make it a work of practical utility, and he has succeeded. The first part of it is a chemical classification of the Iron Ores, describing their nature, locations; their behavior before the blow pipe, when treated with alkalies and acids: also the theory of reducing the ores to metals—embracing the roasting of them, cleansing of the roasted ores, &c., and has a very excellent section devoted to the art of mining; concluding with instructions for assaying the ores. Of this no man, who has charge of a mining establishment, or a blast furnace, should be ignorant.

The next chapter is a treatise on Fuel—the manner of mining coal, charring it, and wood also. This section is beautifully illustrated with engravings of all the various kilns and modes of charring.

The next section is on the Reviving of Iron, or Smelting the Ores. All the various kinds of furnaces are shown and described. The best kind of fluxes for the different ores set forth, and the fuel best adapted for each, considered. This is a part of the iron manufacture, which is of the utmost consequence to be well informed upon. On the skillful management of the smelting, the success or failure of every *iron* manufacturing enterprise depends. We are sure that something new will be found in this section, for the most experienced.

The next section treats of the manufacture of iron—making wrought iron. The different kinds of forges are illustrated—American, English and German, and the various modes of operation described. This embraces the puddling furnaces, both for anthracite and charcoal, and the different processes of manufacturing the various kinds of iron. This is an exceedingly valuable section. The next treats of the forging and rolling, illustrating the subject with cuts of the different machines.

The next five sections treat of Blast Machines, Hot and Cold Blast, Waste Heat and Gas, Fire Brick and Refractory Stones, and Motive Power, and concludes with a splendid and practical treatise on the Manufacture of Steel—Damascus, German, Blistered, and Cast.

We have been thus particular with this book because we have had many enquiries made asking "Whether there was a good American work on the subject or not." This is the *work*. The price is $5.

THE SEVEN LAMPS OF ARCHITECTURE.—This is a work published by John Wiley, Broadway, New York. It is a remarkable book, quite original; in fact it is unique in itself. The author of it is John Ruskin, author of Modern Painters. It is divided into seven sections :—1st. The Lamp of Sacrifice; 2. The Lamp of Truth; 3. The Lamp of Power; 4. Lamp of Beauty; 5. Lamp of Life; 6. Lamp of Memory; 7. Lamp of Obedience. The object of the author is to elevate the mind of the architect with a sense of "the sublime and beautiful," as connected with his profession, to lift him up to study other objects than the mere mechanical and mathematical details of it. He makes a grand distinction between Architecture and Building, and views the former, as "the Art which disposes and adorns the edifices raised by man, for whatever uses, that the sight of them contribute to his mental health, power and pleasure," while building is but "to put together and adjust the several pieces of any edifice." The nature of the different styles of architecture is admirably treated, and no man who looks above the mere drudgery of his profession, can fail to acquire many new, excellent and original ideas from it. The price is $1,25.

DICTIONARY OE MECHANICS, ENGINE WORK AND ENGINEERING.—No. 2 of this excellent work, by D. Appleton & Co., New York, is a very beautiful and good number. It finishes the article on the Croton Acqueduct. It has engravings of the Archimedian Screw Propeller, Machinery for Boring Artesian Wells, with all the appropriate tools, and has some excellent cuts and descriptions of engines, among which are Richard Coffin's and Wm. Ash's, which appeared in our last volume. There are also good engravings of the axles for turning narrow curves, invented by Messrs. Morse & Mansfield of Canton, Mass., described in our Vol. 4. These inventions, selected from the Scientific American—the American Repertory of Inventions, shows that the work is edited with judgment and ability. It will no doubt have a very extensive circulation and it deserves it.

New York Institute of Civil Engineers.

This Institute, which was organized January, 1840, as noticed by us in our last volume, has furnished a set of rooms in the City of Albany, and laid the foundation of a large and valuable collection of books, maps, models and geological specimens. Its members are men of no common stamp, both for scientific attainments and respectability of character. We are informed by our friend Mr. Saml. McElroy, C. E., Albany, that "of some 300 engineers in the State, the Institution now numbers about one-third." Our President, he says, "is a gentleman who never deserves an enemy nor loses a friend."

The officers for the ensuing year are : President, Richard V. De Witt, Esq.; Vice Presidents, E. W. Serrell, C. W. Wentz, G. W. Carpenter, and C. R. Babbitt; Actuary, Wm. Pitt.

We believe that this institution will yet be eminently useful, and confer honor upon the Empire State. The President is a Civil Engineer of great experience, and is a son of old Simeon De Witt, whose name and fame gilds the pages of our nation's history.

New York State Agricultural Society Prizes.

At the recent meeting of the State Agricultural Society, a Report was presented and read by Mr. Delafield, (Vice President,) on essays, experiments and works for schools. Mr. Delafield remarked that the science of Force and Motion was essential and important to the perfection of the farmer's work—that some knowledge of practical mechanics was necessary to a right understanding of the tools used in cultivating the earth, their uses, strength and proper construction : that the forces of fluids as well as solids, were useful and needed his study, as facilitating operations in draining, in irrigation and protecting his soil from injury by running streams :—that the common occupation of loading wagons and other farm operations, evidence the need of knowledge of the laws of gravity; with these impressions, it was urged that a premium be offered for the best essay on Mechanics, on the science of Force and Motion, to be divested as far as practicable of technicalities, and illustrating the importance of this branch of science, in prosecuting successfully the ordinary pursuits of agriculture.

We learn that the society determined, at a subsequent meeting, to offer a premium as recommended.

A good Water Wheel

There is in the village of Walden, Orange Co., N. Y., an over-shot wheel, of 16 feet diameter, 12 feet buckets, (30 horse power) which was built in 1822, at a cost of $600, and has only cost $50 for repairs in 27 years. It is completely protected from ice. The whole cost of the wheel, dam and repairs, has not exceeded $150 per annum.

The Telegraph Controversy.

We have received a printed circular defending the Morse's Lines of Telegraphs, and which is somewhat severe on the House and Bain's Lines. We are sorry to see so much controversy and ill-feeling existing between the different lines. The question is, "who began the war?" We know something about it. We do not know who the author of this circular is, —it is signed L. G., and we had to pay the postage.