SCIENTIFIC MUSEUM.

Elementary Mechanics.

Acoustics—The intensity of sound, like that of attraction, diminishes in the inverse ratio of the squares of the distances of the sounding body, when opposing currents of air or other obstacles do not interfere.

According to experiments made by the French Academicians, the velocity of sound at a temperature of 55° Fahr., is ascertained to be 1,044 feet per second; but it has been variously given by different philosophers. According to Flamstead and Halley, it is 1,142; according to recent experiments in Holland, its mean velocity is 1,120 feet per second.

A whisper, so far as it goes, travels as fast as the report of a cannon: it also describes equal spaces in equal times. The strength of sound is greatest in cold and dense air, and least in that which is warm and rarified. During Captain Parry's first voyage, in lat. 74° 30′ N., people might be heard conversing distinctly, in a common tone of voice, at a distance of one mile.

Sound travels through different media with various velocities.—Through air at 1,130 feet per second; water, 4,900; cast-iron, 11,090 steel, 17,000; glass, 18,000; wood, 4,636 to 17,000.

Two sets of sonorous vibrations of equal intensity, and encountering each other in opposite phases of vibrations, will interfere and become mutually checked; and thus silence be produced by the conflict of two sounds. Sonorous vibrations, on impinging on a plain surface, are reflected from it in such a manner that the angles of incidence and reflection are equal.

A perfect echo ensues after the lapse of 0·1 second.

Sound is reflected by curved surfaces in the same manner as light and heat.

Method of Computing Distances by Sound.—Assuming that sound passes through the air, uniformly, at the rate of 1,142 feet in a second, or through a mile in about 4 2-3 seconds; any distance may be readily found, in feet, by multiplying the time, in seconds, which the sound takes to arrive at the ear, by 1,142; or in miles, by multiplying the same by 3·14.

Note—the time taken for the passage of sound, in the interval between seeing a flash of lightning, or that of a gun, and hearing the report, may be observed by a watch or a second's pendulum; or it may be determined by the beats of the pulse, counting, on an average, about 70 to a minute, for persons in moderate health, or 5½ pulsations for a mile.

Example.—After observing a flash of lightning, it was 12 seconds before I heard the thunder; required the distance of the cloud from which it came—

$$\frac{12\times3}{14}=2\ 4\text{-}7 \text{ miles, Ans.}$$

Light comes from the sun in about 8 minutes; hence light travels at the rate of 200,000 miles per second; or, according to Sir J. Herschel, at the rate of 192,500 miles in a second.

Tartar Emetic.

This is one of most deadly poisons used in medicine. This is admitted by all schools of medicine, and when it is known to all that so many thousands of human beings have been killed from its use, even under the most careful administration and attention, we cannot understand why any man in the profession will continue to use it. It caused the death of one of the most lovely children in this city a short time since. It was given in small doses and continued too long. At last it produced its characteristic effect, and the child died before its parents supposed it to be dangerously ill.

We saw another child a few days since, in a state of perfect insensibility and prostration, from the administration of half a tea-spoonful of Cox's Hive Syrup. This is a very common remedy. It has killed hundreds, and should never be used, for it contains a large quantity of this most deadly poison.

Dr. Boling is now condemning this drug, and the same is endorsed by the editor of the American Journal of Medical Science. We will venture the opinion that tartar emetic will be stricken from the Materia Medica of the Old School, as it always has been of the Eclectic, in less than two years.—[Eclectic Medical (Cin.) Journal.

Patent Double-Acting Doors.

The accompanying engravings are views of an improvement in "Double Acting Doors," invented by William Rippon, of Providence, R. I., and for which a patent was granted on the 6th of last month.

Fig. 1.

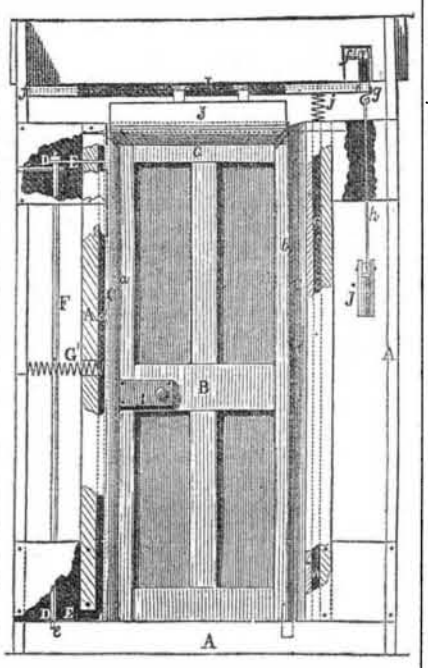
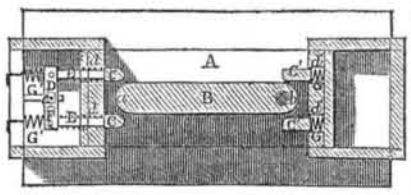


Fig. 1 is a front elevation of a door-frame and door, having some of its parts broken off and sectioned, so as to show how the improvement is attached, and how the door operates when opened, also how the springs act upon the slats after the door has been thrown wide open or closed tight. Fig. 2 is a horizontal section, taken through the top border of the door. The same letters refer to like parts.

A is the frame of the door; B is the door, which may be hung in any suitable way. The front, top, and back edges, *a c b*, of the door, are of a round form, as shown in fig. 2. C C, C′ C′ are vertical adjusting slats, there are four of them, one on each side, front and back edges; these slats work in vertical elongated grooves, *d d*. The front slats (one on each side) are connected to horizontal levers, D D, by means of the links, E E; these levers are connected and sustained by a rod, F, and they turn on fulcrum pins, *e*, one being secured in the top and the other in the bottom of the door frame; G G G′ G′ are spiral springs attached to the slats and to the frame, A. The form of the slats is shown in fig. 2; when the door is shut or opened, in or out, they are moved horizontally back and forth in the grooves, *d*, and thus they allow the door to be opened

Fig. 2.



in either direction. The levers, D, and springs, G are so arranged that, when the door is being opened, the friction of the front edge of the door on the round edges of the slats, has a tendency to operate the levers and contract the springs, and thereby cause the slats to be operated as described; and when the door is being closed, these springs and levers are operated in a similar manner, but after the door has been closed tight, or thrown wide open, these springs allow of the slats assuming their original positions. When the door is closed, it is kept perfectly tight around the edges, therefore the entrance of dust and wind are prevented. These springs and levers keep the door snugly in its proper place, until a sufficient force is applied to it (the door) to contract the springs and operate the levers. There is a vibrating cross-piece, I, at the top; it turns on a rod, *f*, which is secured in the frame. There is a hinged slat, J J, on each side of the top of the door; to these slats the rocking cross-piece, I, is also secured. A chain or cord, *h*, is attached to the end, *g*, of the arm, I′; it has a weight attached to it. When the door is being opened against the top slats, J J, the weight on the chord acts upon the cross-piece, I, and causes it to vibrate. When the door is thrown open, the weight, *j*, and spring, *j*, pull the slats to their proper position over the door, and also allow of their being moved in any way, when operated upon by the door. The claim is for arranging the horizontal slats, J J, and vertical slats, C C′, along the front, back, and top edges of the door, for the purpose of allowing the door to be opened in either direction—in or out—as has been described, viz., by the levers, D, springs, G, and arm, chain, and weight, I′, *h*, *j*. The door is self-acting, both ways, and the slats perform the office of weather strips to keep out dust, wind, &c., from passing through between the top and sides.

More information may be obtained by letter addressed to Mr. Rippon, at Providence.

(For the Scientific American.)

Science and Arts.

One great evidence of progress in our age is the increase of harmony between the man of science and the manufacturer. The wall of separation, so long existent between theory and practice, is being thrown down. Science is becoming the handmaid of the arts. In this information, the Press is the main engine of development—the great element of reconciliation of the world to the fact, that art is applied science.

Experience should never be at war with abstract principles, because she does not foresee their immediate utility, nor should science despise facts. Principles will not acquire correctness and consistency until the artist and man of science mutually inform one another. A liberal and candid communication of individual observation would ultimately tend to the benefit of each manufacturer, by promoting the common interest in the increased improvement and perfection of instruments and methods; for the welfare of a particular art depends more upon the general pre-eminence of a national product, than that of one man's article over another's—which superiority is connected with industry, ingenuity, and intellect in the aggregate. Much mischief arises from fallacious principles being advanced by scientific men because they want that practical knowledge which can be acquired only by long personal acquaintance with processes in the large way. This shackles the manufacturer with prejudice and suspicion, and leads him to exclude science from his shop, and to despise the accurate results of the laboratory as undeserving of experiment on an extended scale. Neither will make advancement with such feelings; they must be united to stand. It is only by numerous experiments and liberal discussions that improvements are to be obtained, and that the value of principles are to be established on the surest foundation. In our investigations we should not be purely scientific nor wholly mechanical. The philosopher's stone will be found only in combining them. To this end there should be a dissemination of the principles and operations which experience has determined to be the best. And here the press comes to our aid. Silliman's Journal, with its satellites, is the organ of science; while several periodicals are devoted wholly to the interests of the mechanic arts. And we imagine that the Scientific American favors the connecting link between the two. The man of science is here brought in close proximity to the manufacturer; the former compelled to acknowledge his need of experience, and the latter to feel his indebtedness to principles. And we believe that the rapid progress of both, in late years, is chiefly owing to this union; it is a triumph over error—a triumph over prejudice, and is destined to prove the harbinger of a glorious era to America. It is her revolution in this respect that has raised her in the scale of nations. And it is the duty of Americans to cherish that union, for it is the palladium of liberty, and the vanguard of civilization.—"Where Science and the Arts are stagnant, purblind Bigotry guards the doors of churches, and jaundiced Superstition sits enshrined within." J. O. .

We are indebted to the courtesy of Hons. J. H. Boyd, of New York, and D. K. Cartter, of Ohio, for Congressional favors.

LITERARY NOTICES.

Meyer's Universum—Part III., of Vol. 1, is before us. This elegant illustrated serial sustains a high reputation abroad, and is rapidly gaining favor in this country. This number contains an engraving of "Walhalla," in Bavaria; "A Walk in Richmond Park;" "The Temple of the Sun at Balbec," and "Street Scenery in Constantinople." Each engraving is well described. Price 25 cents per number; Herrman J. Meyer, 164 William street, publisher.

National Portrait Gallery of Distinguished Americans—with Biographical Sketches—This is the title of a new publication, truly American in its character, just commenced by R. E. Peterson & Co., Philadelphia. It is to be completed in 40 numbers, each containing three plates; price 25 cents per number. It gives us pleasure to recommend this enterprize to the patronage of our readers: it will not only embrace our Revolutionary Patriots, but many of the most prominent statesmen of our day and generation. The portraits will be finely engraved, and the finest paper employed. The subscription price is $10; sent by mail free of postage Wm. Terry, No. 13 Nassau street, is agent for this city.

Biblical Repertory—Princeton Review—This very able Review, published by Wm. H. Mitchell, Philadelphia, for this Quarter, contains an exceedingly interesting review of the Collections of the New Jersey Historical Society, and the Papers of Governor Morris, of the old Province; also an able review of Humboldt's "Cosmos," one on the origin of language, another on Austria, and the Proceedings of the last General Assembly at Charleston. This Review is Presbyterian, connected with the O. S. It has a high character for learning and ability.