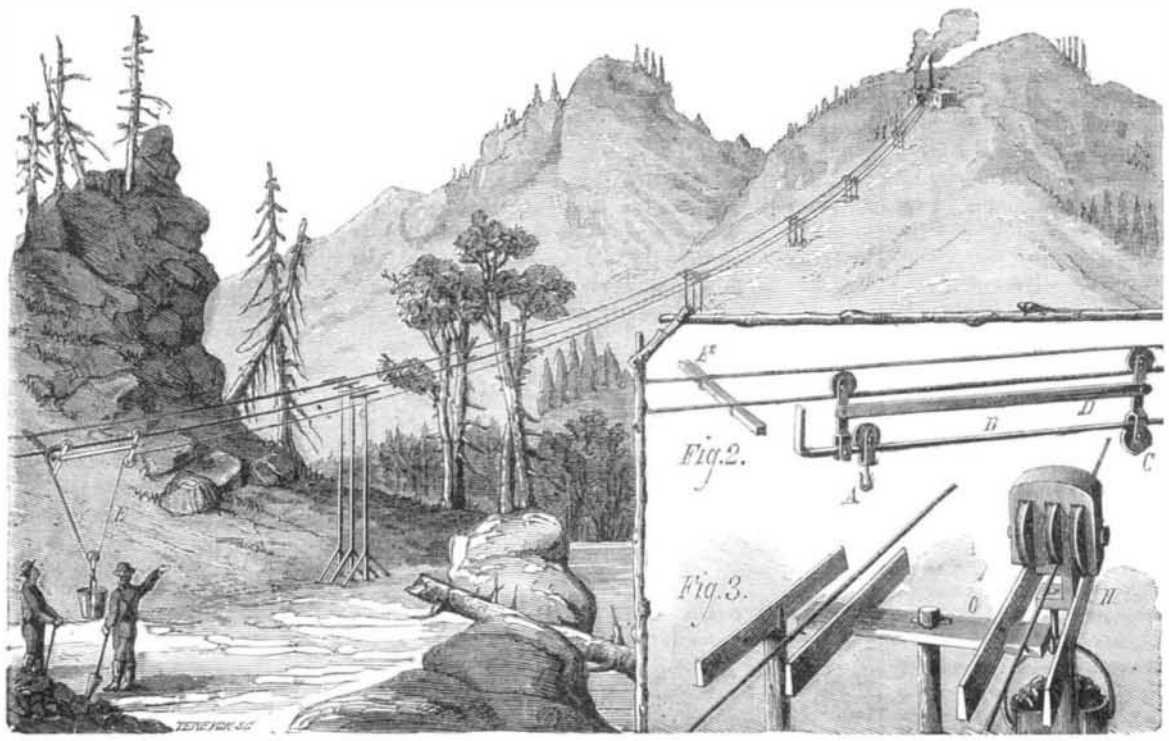
WIRE WAY FOR TRANSPORTING ORES, ETC.

The invention illustrated in the annexed engraving is another of the modern useful arrangements for lowering and raising buckets or cars from or to an elevation, for the purpose of transporting water, minerals, merchandize, etc. The receptacle travels down the way, which may be at any angle to the horizon until it reaches a desired point; there, by mechanism below described, the bucket is caused to descend perpendicularly to a convenient hight from the ground for emptying or filling. On returning, the bucket is first lifted up to the way, and then hauled to the elevated point from which it started. This is all done automatically by a motor stationed on the eminence.



WIRE WAY FOR TRANSPORTING ORES, ETC.

In our engraving is shown a general view of the invention, and in Figs. 2 and 3 the principal portions in detail. The bucket ready to descend is affixed to the hook, A, which is attached to a pulley which slides freely on the rod, B. The forward portion of the latter is hook-shaped, and is pivoted to a suitable support. The rear end rests upon a pulley, C, in a similar arm. Both supporting arms are provided with wheels above to run on the wire, as shown, and are connected by a rod, D, pivoted to both. The lowering and hoisting rope, E, in the large view is, as represented in Fig. 2, attached to the rear end of rod B.

An empty bucket, starting on its downward course, is lowered by the rope, E, until the point at which the filling is to take place is reached. On the way, and directly at such point, is secured a crossbar, F, which the hook end of rod, B, strikes against. The effect of this is to disengage the rear end of rod, B, from the pulley, C, through the action of rod, D, and to allow said extremity to descend. The bucket of course slides down by its own gravity, leaves the rod, and reaches the rope, being finally lowered as represented to the left in the large engraving.

As soon as the receptacle is filled, the motor commences to pull on the rope, and in so doing would naturally drag the car along the ground. This tendency, however, is immediately prevented by resistance of the hook end of rod, B, which, having caught over the crossbar, F, as the opposite extremity descended, retains its hold until the ascending bucket has reached the rod, B. The gravity of the receptacle causing it to descend to the hook end of rod, B, its weight disengages the hook from the crossbar, leaving the car free to be pulled up the incline.

In Fig. 3 is shown the mode of holding up the wire, G being the support. Adjacent to this, in order to allow of the passage of the car, is a short railway, on which the outer wheels of the traveling pulleys, which are threefold, revolve. These being a trifle larger than the middle wheel, the wire will be relieved of the weight of the buckets while the same are passing the supports, and the opening, H, permits the parts which form it to pass with their pendent burden.

The apparatus is adaptable to various uses, and may, it is suggested, be profitably employed when obstacles of any kind exist between localities from one to the other of which the transportation of materials is necessary.

Patented June 24, 1873. For further particulars address J. Whitson Rogers, manufacturer and proprietor, Peekskill, N. Y. [See advertisement on another page.]

A WIRE CLOTH BOOT.

Quite a novel form of shoe or boot has been patented through the Scientific American Patent Agency, by Mr. Robert Sommerville, of Sandusky, Ohio.

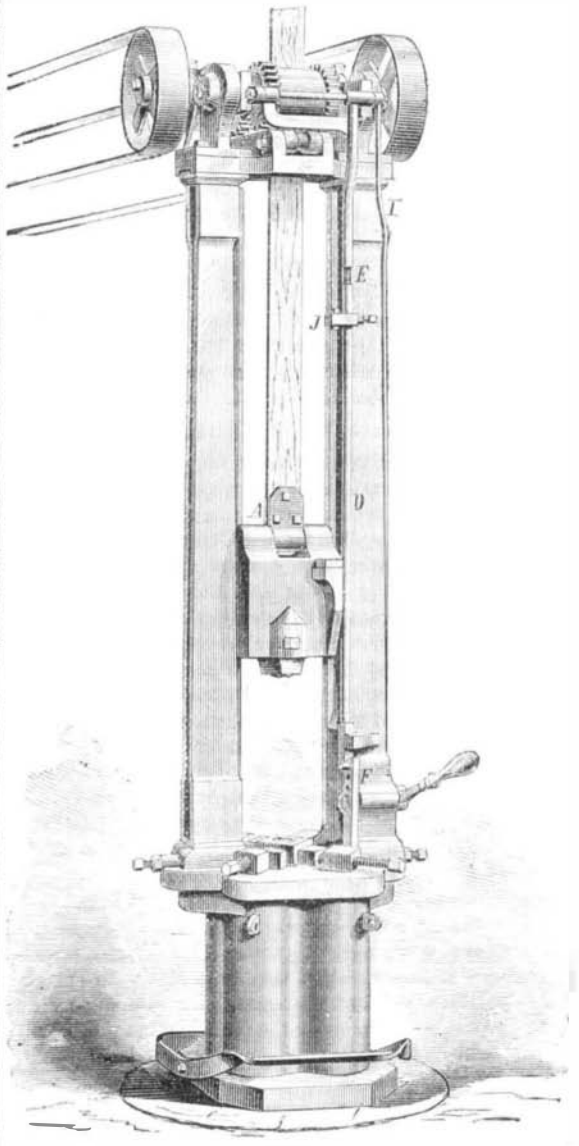
Instead of making the whole covering of leather or other material in common use, the inventor proposes to employ wire cloth or gauze for the upper. The sole and heel are of course of leather, and the wire portion is secured to the former by means of a strip of thin metal fastened to the top of the sole by screws, and to which the upper is soldered. The principal advantage claimed is that the shoe thus constructed gives the foot free ventilation, while the pliability of the material is such as not to interfere with the free action of the member. We presume that the inventor designs it specially for Southern latitudes or for summer wear.

Iceberg Alarm.

M. Michel lately presented a paper before the Academy of Sciences, Paris, describing as new an apparatus for vessels to be used for giving notice of the proximity of icebergs. It consists of a metallic thermometer placed outside the vessel. The moment the vessel enters water that is below a certain limit of heat, an alarm is sounded. This alleged French improvement is set forth as one of importance, and as having originated with the gentleman referred to. But the device is of American origin, well known here. It is the invention of Mr. Charles Dion of this city, was described in the SCIENTIFIC AMERICAN, April 23, 1870, and was published in various papers throughout the country about that time. This is only one of many examples in which descriptions of new American inventions are translated from our papers by foreigners, presented and read to some continental society, and credit for the origination claimed on behalf of the translator.

THE HOTCHKISS OR FRICTION ROLL DROP HAMMER.

As we have already directed our readers' attention at some length to the value of the drop hammer as a means of forging small articles in dies, it is hardly necessary to enumerate the capabilities of this class of tool, and the advantages



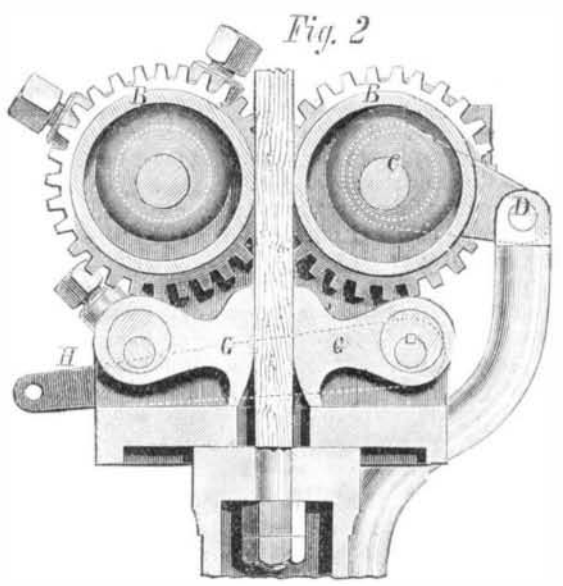
which it offers to the machinist. It possesses an accuracy and rapidity in operation hardly attainable by other means, and in its special work is, in many respects, more desirable, especially in point of economy, than the forms of hammer operated by the direct action of steam.

The machine represented in our engravings possesses certain improvements, covered by the patents of Messrs. Hotchkiss & Stiles, which are claimed to add materially to its efficiency. It will be noted that the devic belongs to the class of tools in which the hammer is raisd by a stiff belt or board passing up between two friction rolls. The hammer, instead of being attached to the board by a rigid connection, has an elastic or flexible one, as shown at A, the object being to prevent the sudden jar and probable destruction of the same, owing to the repeated shocks.

Referring to the sectional view, Fig. 2, motion is communicated between the rolls, B, by means of the two cog wheels shown. The teeth of this gearing are always engaged, and hence the revolution is constant; but in order to cause a griping of the board, the shaft of one wheel, and consequently the roll, which also works thereon, is moved up closer to the other. The teeth of the cogs are of sufficient length to allow of this movement, which need be but very slight. The sliding motion of the movable roll is effected by an eccentric, C, connected with a lever and rod, D, the action of which is clear from our illustration. The rod, D, which by the screw connection at E, Fig. 1, is adjustable as to length, is shown in Fig. 1 at the right, and its lower extremity rests upon the top of a vibrating arm, F, which is pivoted, as shown, to the frame. On the hammer, at the same side, will be noticed a wedge-shaped projection and on the vibrating piece, a short pin, which may be located in either of the holes shown.

Referring again to Fig. 2, G G are two clamps, up through which the board passes, and which are so arranged that as the hammer ascends they will freely open of themselves, but on descending they will close and hold the hammer; how this is done is obvious from their shape. Connected with one of the clamps is a lever, H, which, passing to the rear of the machine, is attached to a rod and thus communicates with the treadle. It will be readily understood that, by pressing down the latter, the operator raises the lever, H, and hence the clamps, holding the same in such position as long as he chooses and thus either freeing the board from their gripe or preventing the pair of clamps acting for any desired time. To the right of the machine (Fig. 1) is shown a handle connecting with and moving a rod, I. This acts in addition to the rod, D, to open or close the rolls at will. The lower end of rod, I, has a slot, so that the action of the hammer will not disturb the hand lever, thereby preventing the hand being injured as otherwise might be the case.

We can now, before proceeding with further detail, follow the operation of the working parts. The hammer, we will suppose, as represented in our Fig. 1, is in the act of rising. This it will continue to do until it strikes an adjustable collar, J, on the rod, D, raising the latter up. As soon as its lower end is lifted above the vibratory arm, F, a spring on the latter pulls it under, and thus the rod, D, is supported in the position to which it is lifted. The consequence of raising the rod, D, however, as we have above shown, is to open the rolls; hence the hammer falls, to be caught, however, instantly by the clamps, G. These are held open by the pressure of the foot of the operator on the treadle, and therefore the hammer is free to deliver its blow. This it does, but on doing so its wedge-shaped projection strikes the pin on arm, F, and pushes the latter out from under the rod, D. The rod falling again, by its own weight, closes the rolls, and the hammer is once more lifted. This operation is repeated just as long as the clamps are held open by the treadle, by releasing which, at any moment, it will be noted, the clamps will be thrown in action, and hence the hammer arrested at any point on its down stroke. It will be clear, from the above, that a continuous series of blows may be maintained by simply keeping the treadle down; and the force of these strokes



depending upon the fall of the hammer, is regulated by adjusting the collar, J, to cause the opening of the rolls sooner or later. For governing the motion of the head more accurately, delivering longer or shorter blows or drops of varying hight, the hand lever provides a simple means. By this the rolls can be brought together or separated at any moment. The hammer can be held up at any point below the collar by simply bringing the lever into action when the head attains the desired hight, so that the next blow can be given from a state of rest of less hight than that for which the collar is set. A gentle pressure upon the treadle, slightly relaxing the grip of the clamps, will allow the hammer to descend slowly; and by removing the pressure, an instant stoppage and suspension of the head is effected. The clamps, in holding up the hammer, keep the board from touching either roll, and prevent the same from being worn. By means of the set screws, shown on the back roll and on the clamp in Fig. 2, these portions are made nicely adjustable to different thicknesses of board or belt.

The machine, we learn from parties using it, is reliable and efficient in practical operation, and its construction, while simple, is of durable and strong material. It needs no explanation to show that the entire apparatus is completely under the control of the operator, as much so, in fact, as the steam hammer, and hence the blows may be graduated in force and rapidity, to an extent, it is claimed, unattainable by other devices. It is manufactured only by the Stiles and Parker Press Company, of Middletown, Conn., to whom letters for further information may be addressed.

Coffee as a Disinfectant.

Roasted coffee, says the *Homœopathic World*, is one of the most powerful means, not only of rendering animal and vege table effluvia innocuous, but of actually destroying them. In proof of this, the statement is made that a room, in which meat in an advanced degree of decomposition had been kept for some time, was instantly deprived of all smell on an open coffee roaster being carried through it, containing one pound of newly roasted coffee; and in another room, the effluvium occasioned by the cleaning out of a cesspool, so that sulphureted hydrogen and ammonia could be clearly detected, was entirely removed on the employment of three ounces of freshly burnt coffee. Refrigerators sometimes get musty from flesh, fowl, or fish, kept too long in them. No remedy for purifying such receptacles, so simple as burnt coffee, can be employed.

THE TODD AND RAFFERTY HOISTING ENGINE.

The above named machine is so plainly represented in the annexed illustration that but few words are needed supplementary thereto. It is, in brief, a double reversible hoisting engine with drum attachments, the two drums, winding and unwinding at the same time, being geared to the actuating mechanism by spur wheels. The engines are of a well known type, and are constructed, as is the entire apparatus, with a view to economy, simplicity, and durability. Self-packing pistons are employed, the link motion is used for reversing, and every device which experience can suggest has been added in order to produce a strong and reliable machine.

The manufacturers are the Todd & Rafferty Machine Company, of Paterson, N. J. They inform us that since its introduction the hoister has met with a wide appreciation, and a sale in numbers counted by hundreds. It is largely employed in the mines, mills, and furnace establishments of Pennsylvania, and no less than sixty machines are in constant use by the great Thomas Iron Company. We need hardly add that the reputation of the manufacturers is the best guarantee for the excellence of their work, and hence further recommendation at our hands is unnecessary. The reader interested can obtain further information by addressing the Todd & Rafferty Company, as above, or at their warerooms, 10 Barclay street, New York city.

THE CORAL ÆCHMEA.

This plant (*æchmea fulgens*) is extremely elegant in habit, requires but little attention to grow it in perfection, and forms a very decorative plant for the greenhouse, stove, or drawing room. Some of the species are hardy in constitution, and remarkably tenacious of life; indeed, they may be grown with less trouble than any other class of plants, if we except succulents. The plant illustrated, says *The Garden*, to which we are indebted for the engraving, forms a striking object in a conservatory or drawing room vase, especially when bearing clusters of coral-colored, purple-tipped flowers. The leaves are bright green, robust in character, and graceful

fully recurved. Its flower spikes continue in perfection for several weeks at a time, and form conspicuous objects. Nearly all the species grow vigorously in good sandy loam, to which a little leaf mold may be added, and they should be liberally supplied, when growing, with water at the roots. A little clear manure water, too, strengthens them in a marked degree, and assists them in producing strong flower spikes. They are easily propagated by taking the offsets produced by the old flowering plants, and potting them at once in small pots, which may be plunged in a gentle bottom heat until well rooted, after which they may be encouraged to make good growth, and will generally produce flowers the second year; but, for decorative purposes, this plant is always handsome either in or out of bloom.

New Researches in Wines and their Colors.

M. Duclaux, has recently submitted to the French Academy of Sciences, two notes, in which he gives the results of recent investigations into the nature of the coloring matter and volatile acids of wines. Some interesting facts regarding the effect of the latter constituents are given, as well as in relation to the peculiar substance to which is due the rosy hue. The latter is a transparent mass having the color and consistence of currant jelly. It is soluble in water and in alcohol, to which it gives a violet reddish tinge which quickly turns to bright red on the addition of a trace of acid. Left for some time to the influence of the air, and especially in a heated place, the substance absorbs oxygen, darkens in color, and becomes more and more soluble in water. It finally is deposited in pellicales, which, when the solution is completely evaporated, remain in the form of a coherent paste, quite opaque, and finally hardening and becoming detached in scales after cooling. In this condition, the substance is not soluble in water, but remains so in alcohol, which it colors a fine purple even in the absence of acids.

This is Nature's coloring, but art frequently adds other materials to darken the hue, or to mask the fraudulent additions of water. The commonest substances used are mauve, phytolacca decandra, and cochineal. These can be distinguished, M. Duclaux tells us, as follows: For mauve, the coloring material under the action of oxygen acts in reverse manner to the true substance, that is, instead of becoming insoluble, it becomes more soluble in water. Cochineal may be detected by the characteristic absorption bands in the spectroscope, which are essentially different from those of wines. Lastly, phytolacca is found by means of the nascent hydrogen, which causes it to discolor quickly, while it does not alter the tinge of pure wine except very slowly.

With reference to the volatile acids in wines, M. Duclaux states that, when the latter are healthful, they contain acetic acid in very slight proportion, mixed with from one twelfth to one fifteenth butyric acid. He notes the existence of valerianic acid, of which the quantity does not exceed 0·1 grain per quart, and also, in proportions almost infinitesimal, a superior fatty acid, of which he is as yet unable to ascertain the nature. The various causes of deterioration in wine carry to the composition of this mixture of acids various modifications. Thus when the liquor is turned, nearly equal quantities of acetic and melacetic acids are formed. Bitterness develops acetic acid, butyric acid, and the fatty acid above referred to.

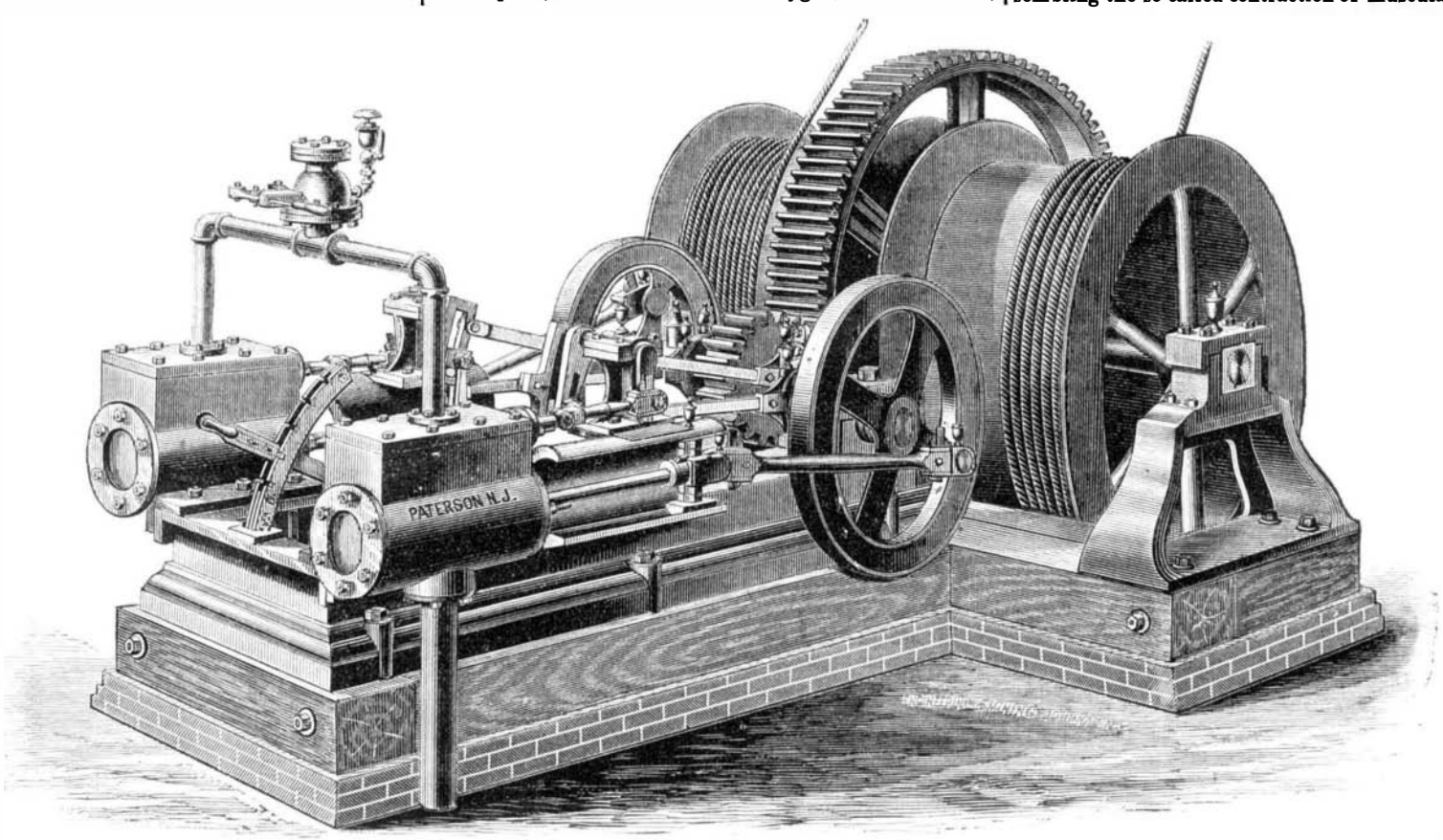
An Amusing Chemical Experiment.

Place five glasses in a row, then pour into the first a solution of potassium, the second a solution of corrosive sublimate, the third a small quantity of iodide of potassium and some oxalate of ammonium, the fourth a solution of chloride of calcium, and the fifth some sulphide of ammonium. Now pour part of the contents of the first glass to the second, and a scarlet color will be obtained; next pour the second into the third, and the mixture will be colorless; again, pour the third into the fourth, and the contents will be white; finally, pour the fourth into the fifth, and the mass will be a dense black. Then you will have had two glasses colorless, one scarlet, one white, and one black.

Refraction of Compressed Water.

M. Mascart followed M. Jamin's method, sending light through two tubes filled with water, and counting the interferential fringes which passed a point of the spectrum when a difference of pressure was produced. A change of pressure of 1 meter mercury caused the displacement of about seventy fringes; and as the tenth of a fringe could be measured, there was much precision in the arrangement. The number of fringes displaced by corresponding variation of pressure is not constant but increases with the pressure. The author deduces from his experiments the coefficient of compressibility, and the liberation of heat produced by compression of water.

AT a recent soirée of the Royal Society, Dr. R. Norris, of Birmingham, exhibited experiments to illustrate a form of contractive energy which displays itself in various substances. Among other things the doctor showed that the statement that india rubber contracts by heat is incorrect; this substance, it is true, contracts in the direction of its length, but it expands in breadth at the same time, thus resembling the so-called contraction of muscular fiber.



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