For the Scientific American.

The Treatment of Piles on Mechanical Principles and by Self-Management.

That some impediment to the return of blood from the hæmorrhoidal veins is the cause of piles, has been reiterated, in all surgical works, for ages. That the most frequent cause of that impediment, upon the removal of which success in treatment almost entirely depends, should have been constantly overlooked by practical surgeons, a keenly discriminating class, is really extraordinary. Like the rest of the profession, however, I followed the routine practice for more than twenty years; and during that period I suffered from that complaint more than most of my patients. Thrice I submitted to the operation for the removal of such humors; and I was making up my mind to undergo the operation a fourth time, when a very ordinary occcurrence led to a train of reflections, and suggested a remedy—*the* remedy which I am now about to promulgate through your pages.

Horses, cows and other quadrupeds, are seldom ever afflicted with piles. The reader can call to mind whether or not he ever saw a case in a horse or cow, or any other quadruped.—Monkeys and pug-dogs are reported to suffer sometimes from the inward variety; but among those animals it is comparatively of rare occurrence. Among the human race the larger half suffer from piles more or less almost continually. When these facts are contrasted, the first inference is likely to be, that bipeds suffer more than quadrupeds, because their food and mode of living are more stimulating and artificial; but this is not the true explanation. It is the posture constantly assumed by man—the perpendicular attitude—whilst undergoing exertion, that causes his affliction in this way. An amount of intestine larger than is consistent with the healthy function of the part, is forced into the pelvis; and it becomes so wedged within that cavity, by the spasmodic rigidity of the sphineter muscle from below and by the weight of the abdominal viscera added to the action of the abdominal muscles from above, as to hamper, or stifle, or almost strangle the paristaltic action. In proportion as the paristaltic action of the wedged intestine is restrained or oppressed, its action is excited beyond the standard of health, as if the bowel were making a struggle to liberate itself; and this increased action is propagated to the sphineter muscle, causing, in that muscle, constant and undue tension, and all the other morbid appearances of the past.

When only a little more than is proper of intestine is thus wedged within the pelvis, simply standing for any length of time in an erect posture, or delivering an oration, or any act which ever so slightly compresses the whole mass of intestines within the abdominal cavity, will increase the patient's suffering. Lifting heavy weights, coughing, jumping and jolting, straining in any way, tight lacing about the body, and all circumstances that shake down and wedge into the pelvic cavity more intestine, will still more augment the patient's suffering. Also any accumulation of other matters within the pelvic cavity, as fœces within the rectum, flatus, water in the bladder, the gravid uterus, &c. &c., will more and more tighten the wedged condition of the intestine, and, in a corresponding degree, augment the patient's suffering.

That this is a correct view of the case, is manifested by the nearly instantaneous relief which ensues on instituting suitable measures for liberating the half-strangled intestine. A patient may be suffering intense agony in this way, yet as soon as the wedged intestine is liberated by manual aid, and rises above the brim of the pelvis, the relief is complete and almost instantaneous. If there be flatus, the operator will sometimes hear the intestine fall, as it were, over the brim of the pelvis into the cavity of the abdomen. In less than half a minute the patient will sometimes say "I am quite easy;" and at the same time the operator can see the pile, which just before was distended almost apparently to the bursting point, become flaccid, like a grape which has lost its inside.

Some manual dexterity and a sufficient knowledge of the anatomy of the parts, are required to enable a patient to relieve himself and to prevent the self-infliction of additional pain from mis-directed pressure and bungling effort. But every surgeon in daily practice possesses tact and knowledge enough for this purpose; and a patient has only to obtain the assistance of his family "doctor" for once or twice, or till he acquire sufficient dexterity to relieve himself. It is moreover very essential that the patient should acquire this dexterity because he ought to have recourse to it daily, and after every evacuation. My practice is, to place the patient in a proper attitude—that of a quadruped standing—and then instruct him to relax the abdominal muscles and the spheneter ani. I then place his own fingers upon the parts, and place my fingers upon his; and then, as the contents of the pelvic cavity are gently raised, the patient can feel the yielding under his own fingers, and he presently becomes expert enough to operate for himself. I know not how to communicate some other minutiæ—perhaps non-essential—without exposing myself to the imputation of indelicacy; but every practical surgeon, if he will mentally admit the cause, will readily recognize every necessary mode of proceeding, and will be able fully to instruct his patient in his own case.

That which has been already advanced simply affords immediate ease—by-the-bye, no inconsiderable blessing to whomsoever is writhing with the bull-dog like grip which results from an inflamed humour being within the pinch of a spasmodic sphineter. The next consideration is to effect what may be called the cure, or to prevent the intestine from becoming again wedged within the cavity of the pelvis. This is liable to recur from any of the causes which originally produced it, as a slight strain, a jolt, pressure on the abdomen, a cough or sneeze, increased paristaltic action from physic, the mere movement of flatus, &c., whilst in an upright posture; and it will require to be again and again relieved, as above specified. To effect a cure the irritability and rigidity of the sphineter ani must be relieved by a medicated stump or short rectum longie, used *secundem artem;* and by diligently keeping the intestine from remaining lodged in the pelvis. I assume that a cushion of fat will soon form in the omentum, so as to prevent the too easy descent of the intestine into its confined situation, if it be diligently kept from remaining wedged within the pelvis; whereas, if it be suffered to remain wedged, absorption of fat from mere pressure will keep open the aperture so large that semi-strangulation will be almost continual, and its consequences will torment the sufferer for years.

Before I had ascertained the true rationale of such cases, besides submitting thrice over to the operation for their removal, I tried every usual remedy—of which several are not quite so innocent as being simply useless; topical astringents, for instance, increase the rigidity of parts which actually require relaxation. In all cases not complicated with other other disease,—that is, when there is neither ragades, abscess, fistula, stricture of the rectum, nor any other complication, I would recommend the patient to rely upon manual aid, and throw 'physic to the dogs.' The removal of piles with the knife, the scissors and the ligature, their puncture, and even the application of leeches to them, are all more or less painful, not altogether free from danger, generally unnecessary, as the piles can very effectually be removed as above, and nearly useless, as the piles will grow again, like a bunch of grapes, if the wedged condition of the intestine remain or be re-produced.

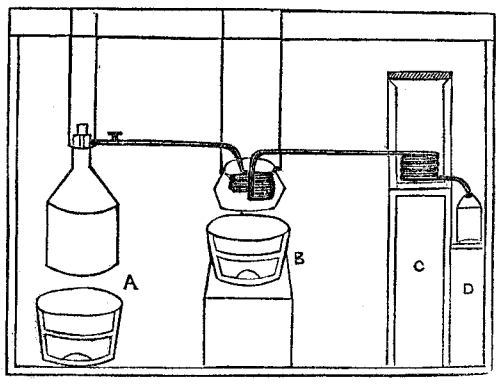
If any of my own countrymen are now suffering from piles, and are too poor to employ "a doctor," I will attend them, without charge, if they will call at 348 Race street, Philadelphia, before I leave, which will be early in March. EDWARD KING.

Race street, Philadelphia.

Newly Discovered Properties of Heat in Combination with Steam.

Concluded from page 179.)

Having seen the thermometrical degrees at at which steam, apart from water, is expanded by heat into larger volumes, it becomes important to learn the actual quantity of heat required for each degree of expansion, and the apparatus represented by the following diagram will show, first, how small is the quantity of heat required for doubling a volume of steam apart from water, when compared with the quantity of heat required for forming a second volume of steam of the same tension—and, secondly, shows that heat in combining with steam is subject to, and controlled, by peculiar laws, perfectly distinct from those which obtain when heat combines with water for the



formation of steam, which requires equal increments of heat for equal increments of volume, while on the contrary, when steam apart from water is expanded by heat, it is not only doubled in volume by a comparative trivial quantity of heat; but every additional increase of volume, is obtained by still smaller and rapidly decreasing increment of heat, so that the greater the increase of volume the smaller will be the quantity of heat required for that latest volume, and although this is so contrary to the general laws of heat, and therefore so adverse to common apprehension, the diagram and table will not only show it to be a chemical fact, but will furnish the easy means for any competent person to verify the fact, which must be acknowledged to be of the first importance, for, were these facts understood, the present cost and weight of apparatus, and of fuel for the production of motive force, would both appear so extravagant, unscientific, and wasteful, as was the use of steam for motive force, before the days of Watt; yet, at that period, as at present, engineers conceited they fully understood the subject, "oft attempted—never reached."

Though it requires four times the force for double speed, it is evident were the present enormous rate of fuel cosumed in steamers judiciously applied, it would furnish abundant power for propelling them at much more than double speed, while the consumption of fuel for the voyage would, of course, be reduced to much less than one half.

A is a furnace and steam boiler suspended over it. B is a furnace and suspended steambeater for containing fluids, boiling at stationary temperatures, and hollow worm, connected by a pipe and stopcock with steam boiler A, and by a pipe with worm in C, a covered wood cistern, containing half a cubic foot of cold water and hollow worm therein.

When a volume of steam from A was passed through the hollow worm in heater B, (filled with water boiling at 212°), and into the hollow worm in C, until the condensed water therefrom exactly filled a glass measure containing nearly twenty ounces of water. The heat seperated from that definite volume of atmospheric steam heated the water in C 38°.

When similar volumes of steam from A were passed through the worm heater B, while the contained fluid was heated to the more elevated temperature in table, the excess of heat in each case above 38° showed the decreasing quantities of heat required for increasing the original volume of steam to the magnitude stated in table.

Temperature of poiler A.	Temperature of boiler B.	Volumes of steam and stame produced at those heats shown in former experiments.	Temperature of water in C, showing the quantity of heat in different volumes of equal tension.	Comparative quantity of heat required for equal volumes of steam of equal tension.
212 deg.	212 deg.	1	38 deg.	38 deg.
212 "	216 "	2	42 "	76 "
212 "	228 "	3	43 "	114 "
212 "	550 "	8	46 "	304 "

This increasing force obtained from decreasing quantities of heat applied to steam apart from water, not only proves the prodigous economy of this means of obtaining motive force, but points out the physical cause of the superlative explosive force, attendant on greatly and suddenly heated elastic fluids.

Many other and valuable advantages incidently occured during our experiments, which are omitted, because enough is given to stimulate the most torpid. We will therefore only add—

The advantages stated have been frequently verified by several of the most eminent engineers and learned and competent men of New York, and other places, by a condensing engine and apparatus so constructed, when actuated alternately by common steam, and by moderately heated steam, and so that the comparative quantities of heat and of water actually employed for motive force in each separate experiment, could be accurately measured as well as the power exerted by the engine.

NOTE.—With the article in the Scientific American two weeks ago, and the above, our readers will get a clear idea of the nature of Mr. Frost's discovery. The principle of it is to heat steam separated from water, whereby the results mentioned are to be obtained. We witnessed an experiment with the instrument described in our former number, but have not personally performed it for our own satisfaction—a thing which we always do, before stating our opinion. Those who desire to prove the correctness of Mr. Frost's experiments, can now do so for themselves—a course which we recommend every person to pursue in testing *new* discoveries.—[ED.

Agricultural Discovery.

Comstock's alleged discovery in Agriculture, which the N. Y. Legislature proposes to test, professes to be a botanical one, which is of such a nature, that it cannot be made the subject of a patent. It is claimed that it will keep in health and fertility that sickliest and most difficult of trees to manage in this country, the peach, that it will ensure the thriftiness of any plant to which it may be applied, and make the raising of good crops a far more certain thing than it now is.

The discovery consists in avoiding certain errors in cultivation which are most likely to be prejudicial in the best soils, and often produce disappointment to the farmer who has taken the most pains. It is our opinion however that there can be no certain nor infallible application of any one substance nor one process, that will suit every plant, and answer in every soil and climate—it is impossible.

A Great Suspension Bridge.

The cost of the great suspension bridge over the Dniper, at Kleff, in Russia, recently completed, was two millions of dollars. The model, and three thousand tons of iron used in the bridge, were furnished them from England. It took two years to complete the model and stand, of which the cost was thirty thousand dollars. The passage over which the bridge is thrown is half an English mile.

Failure of Iron Steamboats.

Four of the iron steamboats employed on the transportation line between this city and Philadelphia, have failed by corrosion, although protected by paint. They are now unsafe, and are to be planked by screwing planking to their iron hulls. The best substance to protect the iron is red lead. These vessels have only been in use five years, and the iron is so oxidized that it scales off to half the thickness of the plates.