## ANOTHER NEW MOTOR.

We have to acknowledge the receipt of a pamphlet containing a description of the "Keely Motor," and a report upon the merits thereof, by Charles Haswell, C. E. This report is addressed to Messrs. Israel Corse and F. W. Foote, Jr., of this city, gentlemen of prominence in commercial circles. The new motor has become the subject of lively discussion among certain wealthy people here, by whom its success is considered certain. Every share of the stock has been taken, the offers of money having been greatly in excess of the supply of shares. The proprietors expect to reap a large harvest by the sale of rights when the invention is more fully developed—an event which is soon expected to take place.

The following account of the invention is given in the pamphlet.

### KEELY-MOTOR,

### OR HYDRO-PNEUMATIC-PULSATING-VACUO ENGINE.

"Professor Faraday, of England, asserts that a grain of water contains electrical relations equivalent to a very powerful flash of lightning." Knowing that the equilibrium of these relations is sometimes destroyed in the heavens, merely by a change in conditions, resulting in enormous mechanical work: and, as we are constantly discovering means to change natural conditions: the question arises (which seems a legitimate one) why are not our locomotives and steamships propelled with grains of water, instead of tuns? the only answer that can be given is: We have as yet no knowledge of suitable means to destroy the equilibrium of these relations."

"Mr. John W. Keely, of Philadelphia, has discovered a method of destroying this equilibrium, or something analogous to it, and made it the basis of an invention by which these conditions are changed.

### DESCRIPTION.

"During a period of about two months, several tests have been made of the Keely-Motor power, at Philadelphia, in the presence of many persons, several of whom were among our ablest civil and mechanical engineers and experts; the main facts connected therewith are thus given:

"By a peculiar *mechanical device* hitherto unknown, a force is generated which can readily be applied to driving all kinds of machinery for which steam or other motive power is generated and applied, *without cost other than the mechanical device or generating machine and the necessary wear of machinery.* The generator is simple and comparatively inexpensive, occupying but a small space, and is light compared with the requirements of steam power; and since this power is produced *without heat, electricity, galvanism, magnetism, or chemicals*, it is destined at an early day to revolutionize completely the present motive powers of the world, by reason of the economy of its cost and space.

"The power, so far as at present evolved and tested, has shown a pressure of fully 10,000 pounds per square inch, as the following explanation will show: The principal part of this power generator, now in use, is made of metal, globular in shape, about fifteen inches in diameter, and hollow, having walls about three fourths of an inch thick, a strong iron tube, an inch in diameter, connecting the generator with a cylinder used as a receiver of the power or force from the generator. This cylinder is made of charcoal iron, forty inches in length, four and one half inches internal diameter, with screw-fitted and welded heads, two inches thick, tested to a pressure of 10,000 pounds per square inch; its capacity is about three and one fourth gallons. This receiver was charged from the generator of the power in five seconds, and the power remained therein at least eight days without any addition, and from it a great number of tests were made without any apparent diminution of its energy or force.

"At the end of the charged cylinder is attached a flexible brass conductor of drawn tubing, one fourth inch in diameter, with a bore of one thirty-second of an inch, passing from cylinder to ceiling, and thence to the other side of the room, for a distance of twenty feet to the test apparatus or force register; this apparatus consists of a thick bed plate of iron, to which was bolted and packed a cylinder four inches in diameter, having a plunger or piston, the area of which was a little less than one square inch in surface. Below this piston is a chamber of about two cubic inches, with which the tubing from the charged cylinder is connected. The plunger or piston, acting perpendicularly, was the point at which the power was applied to a compound lever, which, according to Mr. Haswell's measurement, was as one to fifty-two. The end of the short arm was securely bolted and fastened to the iron bed plate of the apparatus; upon the long arm of the compound lever was suspended an iron weight of 200 pounds. On opening the stopcock of the charged cylinder connecting the tubes, the weight of 200 pounds was at once raised to the limit of the upward movement of the lever; thus, with the weight of the lever and its connections, indicating a pressure power of about 10,400 pounds per square inch, as stated before. The power generator and receiver was supposed to be, when constructed, fully adequate in strength to generate and develop the full power of the invention, but it has been found too weak; the force has proved to be so enormous that Mr. Keely has not dared to apply more than half of the power he can attain. An apparatus is now in process of construction which will be able to generate and sustain a pressure greatly in excess of that already shown, without rupture, though Mr. Keely does not expect he will need one of more than 25,000 pounds to fully develop his power. When the full power is measured and balanced, it will then be comparatively easy to construct an apparatus of the requisite capacity and strength for engines of any desired power. When an apparatus of sufficient strength to allow the generation of the complement or maximum of force is constructed, and the vapor generated is applied to the working of an engine, the exhaust vapor is at once resolved into its original elements, and is easily returned to the generator for a "re-expulsion," thus making the action automatic, and requiring no additional element for continuous working of the power.

"The following named gentlemen have witnessed the exhibition of the above tests, and may be referred to for the correctness of this statement: Charles H. Haswell, civil and marine engineer, New York city, and formerly Engineer-in-Chief, U. S. N.; William W. W. Wood, Chief of Bureau of Steam Engineering, U. S. N., Washington, D. C.; S. Parrish, gas engineer, Jersey City, N. J.; Joseph Patten, engineer, Elizabeth, N. J.; F. Glocker, machinist, Philadelphia, Pa.; William Boeckel, machinist, Philadelphia, Pa."

In connection with the foregoing statement, a professional report is given in the pamphlet, by Mr. Haswell. one of the referees mentioned above. He certifies, as the results of two actual working trials of the invention, as follows:

"Mr. Keely developed a cold vapor of a density that enabled it, when admitted to a cylinder having a piston $1\frac{1}{16}$ inches in diameter, to raise a weight of 150 lbs. suspended from a compound lever, connected as 1 to 42, which, with the weight of the lever and the friction due to the absence of a knife edge or rotating joint, was fully equal to an energy of 7,800 lbs. per square inch."

"That the vapor under the piston had expansive energy. That the temperature of the vapor reservoir and of the vapor itself did not exceed that of the surrounding air. That to operate a 45 horse power engine, a supply of the vapor of 793⅛ cubic feet per minute, at 7,680 lbs. per square inch, would be required. That the inventor alleges that, by the introduction within the apparatus of a very small volume of water, he can generate a vapor having an expansive energy of from 1 to 20,000 lbs. per square inch in the brief period of a few seconds; the only obstacle to the generation of this vapor in great volume being the capacity of materials to retain it without rupture. That it is proposed to reduce the great pressure above mentioned by allowing the vapor to expand into an intermediate chamber, from which pipes will lead the vapor, which may then be employed in lieu of steam in ordinary steam engines, the use of steam boilers and the consumption of fuel being no longer necessary."

We consider it very kind in Chief Engineer Wood, Mr. Haswell, Mr. Parrish, and their associate mechanicians, to serve as referees for this peculiar invention. In the absence of such capable referees, the public in general, and perhaps the investing capitalists in particular, might have looked upon the scheme in the manner we do, namely, as an arrant humbug from beginning to end.

Jugglery has a bewitching influence upon some minds. The learned Dr. William Crookes, of London, certified that the lever of his weighing machine was raised when the spiritual medium, Home, simply pointed his finger at it. [See engraving, SCIENTIFIC AMERICAN, 1871.] Several of the Doctor's associates, eminent people, corroborated the story. Mr. Haswell certifies that it was cold vapor, having a pressure of 7,860 lbs. to the inch, developed by Keely, that lifted his (Haswell's) lever. Home's trick being simpler we consider it the better of the two.

Among Mr. Keely's most recent predecessors in the "new motor" line was Paine, with his electric engine of 1871–2. Faraday said, you know, that every drop of water contains force elements equal to a streak of lightning. Paine developed this force by means of water, adding, however, a little acid and zinc. With a two quart cup, Paine claimed to be able to generate power enough to drive vessels of the largest class across the ocean at the highest velocity. But he required a brand new engine in every case, whereas Keely will use the existing steam engines.

We have before us the claims of still another aspirant for "new motor" fame. He is an unsophisticated genius from Virginia. He, too, has read about the Faradaic drop of water, and, like Keely, brings out the power by means of a mechanical device—a pendulum. A child may swing a pendulum of great weight. The pendulum works an air pump which compresses air to twenty thousand pounds per square inch if need be. Thereafter a small portion of the air or vapor is used to maintain the swinging of the pendulum, while the remainder of the gigantic power is to be used to drive an engine on the Keely plan.

It is barely possible that the capitalists who have been disappointed in obtaining shares in the "Keely Motor" might meet with better success in applying for the Pendulum stock. But should this likewise prove to be all taken, we are confident that Mr. Paine will be able to supply them. The reason we think so is because he is so kind-hearted, finding it less difficult to make new shares than to refuse to sell those on hand.

## THE CREMATION QUESTION.

The question of the disposition of the dead by burning the bodies, after the manner of the ancients, is a subject which has for some years past been under discussion in the scientific circles of Europe. Various processes have been devised as substitutes for inhumation, among others petrifaction and preserving in antiseptic solutions; but in the end, it appears that the total disaggregation of the body by cremation has been considered and announced by many of the ablest foreign savants as the proper and indeed only way of avoiding the noxious effects resulting from the natural changes in the thousands of human remains buried in the neighborhood of thickly populated localities. Taking its origin in Europe, the movement during the last few months has, under the influence of Sir Henry Thompson and other eminent scientific authorities, who have strongly advocated its principles, taken a new life and has rapidly spread over the continent. The people of Switzerland, and Germany especially, have accepted it to no small extent. At Zurich recently, 2,000 persons subscribed to an association having the burning of the dead as its sole object. At Basle, the orthodox clergymen publicly announced their approval of the movement, and in Germany a new apparatus for carrying out the operation of incineration has been invented and advertised. More important than this to us is the wide spread discussion which the subject has evoked at the present time also in this country. A society has already been formed in New York city, including among its members Mr. Henry Bergh, Drs. Sexton, Lorilliard, and J. W. S. Arnold, with many other well known citizens, for the purposes of promoting cremation and securing its practical application, and columns of the daily journals are given up to correspondence and the views of the people upon the advantages and disadvantages of the system.

The reader unversed in the process, which it is proposed to substitute for slow moldering in the grave, will naturally think of the ancient pyre and probably suppose that it is the intention of the advocates of the plan to burn the bodies upon huge piles of variously scented wood, after the Greek or Roman fashion. Little would be gained in an æsthetic or even a sanitary point of view if such were the system, for the gases and fumes evolved would be far from healthy. The body of the poet Shelley was thus destroyed, and his biographer tells us that, so far from being the beautiful and poetic rite intended, the process was a very disagreeable and nauseous operation. Science provides a better plan for reducing "ashes to ashes" in the apparatus especially devised by Professor Brunetti for the purpose, and by that inventor recently described in the French *Revue Scientifique.* After having made several experiments on the human subject, in which the bodies were burned in the retorts of gas manufactories, in closed receptacles, and with free access of air, Professor Brunetti finds that an oblong furnace of fireproof brick is required, having 10 holes below, by means of which the intensity of the fire can be regulated. The upper part of this is hollowed to receive the coffin, over which a domed cover is placed, by which the flames as in a reverbatory furnace, may be directed upon the body. Within the cofin is a metal support or table on which the body rests, fixed by thick iron wire. The operation embraces three periods: the heating of the body, the spontaneous combustion, and the calcination of the bones. During the first period, and about half an hour after the pile of wood in the furnace has been lighted, the combustion of the body commences. If the wood has been well arranged, two hours suffice to produce complete carbonization. During the third period, the air holes being opened, the carbonized mass is collected and placed upon a fresh plate and the heat is urged to the utmost, a fresh supply of wood being inserted. By means of this arrangement, at the expense of about 150 pounds of wood, complete incremation may be effected in two hours. When the furnace has cooled, the cinders and bones are collected and deposited in a funeral urn.

So far as sanitary benefit to the people is concerned, we cannot but think the arguments of the advocates of cremation are cogent and forcible. It is well known that numbers have been rendered ill by water from springs and wells which have become contaminated by the near proximity of graveyards, and it is also a fact that there is a miasm arising from these receptacles which, as is universally recognized, renders their presence in crowded localities dangerous to health. We do not see the ground of the assertion that by burial the fertilizing properties of the bodies are lost to the earth, for it seems to us that they are in as good a condition for absorption as if sprinkled in the form of ashes over the surface. Neither can we incline to the belief, that by adopting cremation, a point of economy will be gained, in avoiding the expensive paraphernalia of modern funerals, since the latter are governed purely by the dictates of fashion, and that fickle individual would speedily make the jeweled urn as costly an affair as the sculptured stone.

Anything which seeks to subvert a settled popular custom strengthened not only by long usage but by a prejudice growing out of a religious feeling, presents, however, at best a doubtful prospect of success. There is not a person, we may safely say, who, when the horrors of possible living burial, the slow decomposition, and the changes of the form of a loved one to a loathsome thing, to poison the health of the living, are laid before him, will not admit that the closed furnace, the pure fire flame, and the final handful of dry clean changeless ashes are much the better of the two means of disposition; but his admission in the end will be found to apply to everybody in the world except himself and his family. It is a question of the heart in the end, not of the mind. Science, cold and passionless, may point out the better way; but if its adoption is to tear wider the wounds caused by separation from those we love, no amount of reasoning will induce us to follow it. A husband may give his wife, a mother her child, into the embraces of the earth, and endure the keenest sufferings as the dirt and stone rattle on the coffin lid; but this act, revolting as it may be, is connected in the imagination with the highest and holiest of thoughts—the hereafter. We may bury those nearest to us in our own bit of ground; we may imagine that their forms remain where we put them, and we may tend the flowers which bloom over their resting places as messengers from them to us. All this we can do: but there are few, we think, who would have the heart to hand his dead child or wife to a public official to be burned, or would care to see the ashes of his ancestors scattered over the earth as manure.

POSTAL CARDS are so extremely popular in this country that, although it is not long since they were introduced, the enormous number of one hundred millions have been printed and issued.