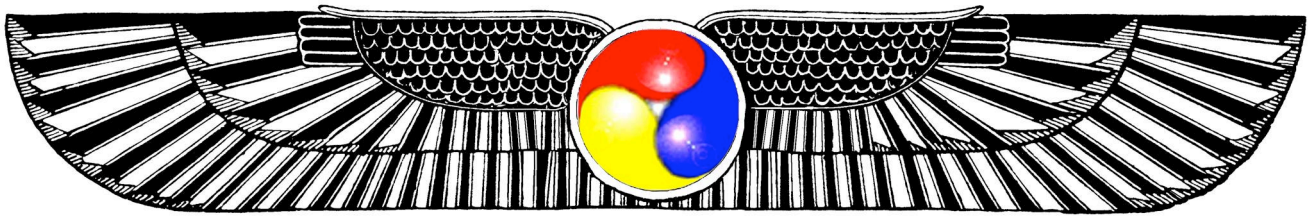

Sympathetic Vibratory Physics

Apergy
Power Without Cost

Charles Morris

"My system, in every part and detail, both in the developing of this power and in every branch of its utilization, is based and founded on *sympathetic vibration*. In no other way would it be possible to awaken or develop this force, and equally impossible would it be to operate my engine upon any other principle."

John Keely, 1888

Delta Spectrum Research.

"APERGY:"* POWER WITHOUT COST.

BY CHARLES MORRIS.
New Science Review, vol. II, October, 1895

Considerable attention has been given in previous numbers of the NEW SCIENCE REVIEW to the researches, discoveries, and theoretical conclusions of John Ernst Worrell Keely, the inventor of the notable "Keely Motor;" quite sufficient, it may be, in the opinion of many readers, in view of the technical language employed, and the fact that the utility of these inventions has not been demonstrated to the satisfaction of the general public. Yet the publishers of the REVIEW have excellent reason to believe that the results of Mr. Keely's researches are all that have been claimed for them, and that this fact will soon be publicly demonstrated. They desire, therefore, to offer to their readers a plain, matter-of-fact, businesslike statement of what Mr. Keely has actually accomplished; and the writer of the present paper has been requested to visit the workshop and investigate the apparatus of the famous inventor, and to state plainly and simply the results of his investigation.

Before making this statement, however, some preliminary remarks are necessary. For many years past the Keely Motor has weighed upon the consciences of Philadelphians as something they ought, in duty bound, to father, as a sui generis product of the Quaker City, but of which they grew more and more distrustful as years of promise and nonperformance passed by, until they ceased to be in a waiting mood, and fell into one of cynical disbelief. It must be acknowledged that there was warrant for this. It has been at various times announced that Mr. Keely had overcome the difficulties that environed him, had perfected his machinery, and was prepared to demonstrate its workable powers. Yet this promise, on each occasion, failed to be fulfilled; the outcome being that doubt grew general, and many people came to look upon Mr. Keely as a shrewd adventurer, and his motor a skillfully devised fraud. It is true that this opinion is confined to people who have no personal acquaintance with Mr. Keely's achievements. It is not entertained by those who have had the opportunity to form a well-founded opinion; the capitalists who have supplied Mr. Keely with the funds for his experiments, and the scientists and mechanicians who have seen and studied the workings of his apparatus. But these are the few and the non- insistent. They are satisfied with their own knowledge, and do not trouble themselves to pose as missionaries. The public has been permitted to hold what opinion it pleased, Mr. Keely's supporters being content to wait until they could offer that most convincing of arguments, a practical demonstration of the working-power of the much-discussed Keely motor.

This is the state of the case as it now stands, with the important exception that the parties directly concerned express themselves as satisfied that the period of probation has at length passed, that the Keely motor is now a practical reality, and that the problem of producing power without cost is solved. For this statement, however, Mr. Keely is not personally responsible. He claims to have overcome all the major difficulties, but states that he has certain minor steps of application yet to make.

As regards my personal knowledge of the question under consideration, I can only state that hitherto I have belonged to the party of distrust. Knowing nothing from personal experience of the matter, and merely aware of the long drawn-out agony of promise and nonperformance, I have, like the rest of the brotherhood of ignorance, looked on the affair with incredulity, though not without a mental reservation that there might be some fire below all this smoke, and that the men of affairs who have stood behind Mr. Keely's experiments for so many years were not just the sort of persons likely to be taken in by a cunning schemer, or to accept plausible statements without supplementing them with a careful investigation.

It must be evident, from what is here said, that a certain amount of preliminary explanation is

necessary before any statement of the present status of affairs can be made. The Keely motor has its history, and a relation of that history must precede description. Mr. Keely is today a man of about seventy years of age, a seemingly robust, well-preserved person, who may have many years of life still before him. For nearly a quarter of a century part all his time and attention have been given to the study and development of the power he had previously discovered, and to whose application he devoted himself with that untiring energy which has marked inventors in all time, and through which so many of them have overcome discouraging obstacles and achieved success. The pathway of the present inventor has not been made as smooth as many imagine. He has encountered poverty, and been saved from having the roof sold over his head only by the aid of a faithful friend. In this respect his history accords closely with that of many famous inventors in the past.

During his earlier career Mr. Keely was engaged in various pursuits. He was employed, from time to time, as a physician, a pharmacist, and in other occupations. But since he was ten years of age he has been interested in the study of tones and resonances; of those rapid and incessant vibrations which underlie all we see in the world around us, and to which all the energies of the acting universe are primarily due. It is this study which he still continues,and the power which he has developed is claimed to come from a control of these vibrations.

Man has long used those vibrations as producers of power. In fact, there is no other source of energy -- unless gravity has a different origin. His own body owes to them its powers of movement and sensation. The steam- power which he employs is but a utilization of the heat vibrations of the molecules of matter. The electric energy which he is now coming to employ is a vibration of the ether a subtler form of substance. Light and radiant heat, which also yield energy, are other modes of vibration of ether. Magnetism, - in its turn, has to do with vibratory motion. As regards the practical application of electricity, strenuous efforts are now being made to use the electric vibrations immediately, instead of through the intermedium of chemical action or mechanical friction, drawing these energies directly from nature and employing them without the need of intermediate agencies. The energies named -- lights heat, electricity, etc. -- do not exhaust the vibratory activities of nature. There are vast ranges of vibration which lie between these, and others finer and subtler than any of them; and man has yet tapped but a minor portion of the vast energies of the universe, the bulk of which are not to be reached by the gross methods hitherto employed. The energies manifested in the visible activities of nature are therefore but a fraction of those which are active in the movements of material and etherial particles, but which take no part in the movements of masses. How these deep lying energies can be directly withdrawn from their secret lurking places, and made to move masses of matter, is a problem to which the attention of many is now being given, and to the elucidation of which Mr. Keely has for many years devoted himself, with a seeming success which places his researches far beyond those of his recent competitors.

In short, Mr. Keely claims to have successfully handled the problem above named, that of drawing energy directly from the elements of nature. The mysterious process by which he is enabled to avail himself of these potent energies is his secret. He has kept it sedulously to himself, making his patrons familiar only with the results; in which, indeed, they are chiefly interested. It is to these results, therefore, that our inquiry must be confined. As regards these there is a double story to tell, Mr. Keely's researches having led him to two different series of achievements. For many years he had at his command an enormous pressure, which he vainly sought to make useful in the movement of machinery. But for a number of years past his researches have led him in a different direction, and a far more promising one so far as practical results are concerned.

The earlier method, that of gaseous pressure, first calls for consideration. Mr. Keely still retains, though he no longer uses, the apparatus in which this pressure was developed and manifested. This consists of a small but strong cylindrical receiver, a lever whose long arm is weighted with

an iron ball said to weigh five hundred and fifty pounds,and a lifting arrangement near the fulcrum of this lever and connected by a tube with the gas cylinder. The only material employed in this apparatus is said to have been a few drops of water, introduced into the cylinder. These Mr. Keely claims to be able to decompose by vibratory influences, and further to decompose the resulting hydrogen into its elements, the result being a gas or gases of extraordinary expansive power. For this explanation of the result we have Mr. Keely's theory only. For the pressure developed we have a well-established fact. This is that the gas confined within the cylinder and connecting tube is capable of lifting the weighted lever, though the adjustment of the arms is such that this performance requires a pressure of over seventeen thousand pounds to the square inch. The actual pressure,indeed, seems to be much greater than this, if, as some observers state, a man weighing over two hundred pounds has added his weight to that of the iron ball without bringing down the lever. Mr. Keely states that in some of his experiments a much greater pressure than here named has been shown, amounting in one instance to the enormous force of one hundred and ten thousand pounds to the square inch.

That such an effect can be produced by the disintegration of a few drops of water seems inconceivable. Yet the gaseous pressure here employed is perhaps much less than that which is readily obtained in the case of high explosives. The immense rending power of dynamite and other recent explosives is due to the great expansion of the gas arising from their sudden conversion into vapor. Could this gas be confined, its pressure might prove to be much greater than that above named. Its energy, however, has hitherto proved beyond the restraining powers of any material, while the gas employed by Mr. Keely appears to be within his control. The mystery is that it is produced from water, and that no other investigator has ever separated water into such highly expansive gases. The charge has been made that Mr. Keely employed some secret reservoir of condensed gas, or other hidden source of power, but of the hundreds of intelligent persons who have seen the experiment in question no one has been able to discover anything of the kind, though full opportunity for investigation has been offered. Two able mechanicians, Mr. Barnet Le Van, a well-known expert in machinery, and Mr. Linville, a skilled electrician, have taken the apparatus apart and examined it thoroughly. Such men were not likely to be easily deceived, and had any secret attachment been present it would scarcely have escaped their vigilant eyes. Yet they found everything as represented, and have given a written statement to that effect. Mr. Keely has also filled the receiver with water in the presence of investigators, emptied it before their eyes, and immediately afterward produced the results above described. In truth, one needs but to see the apparatus to be satisfied that the theory of a concealed reservoir of gas is without foundation.

What followed the discovery of this vigorous power? To demonstrate its lifting energy was one thing, to apply it for the movement of machinery proved to be quite another. For many years Mr. Keely sought to accomplish this desideratum, and for as many years failed. He devised and constructed engine after engine, different in form and principle, but each proved alike useless for the purpose in view. The hidden giant steadily refused to be put to work. Over one hundred and twenty of these machines were built, each new one designed to overcome some former difficulty; again and again it was announced that the force was in harness; and again and again disappointment followed. Yet the imprisoned gas was quite ready to manifest its power. Holders of great strength exploded, wrecking the shop and injuring the inventor. Thick walled tubes, specially designed for their resisting power, were split asunder as if they had been made of paper. Despite every effort the imprisoned power refused to be held in leash.

Mr. Keely states that one skilled machinist, a Mr. McPherson, expressly prepared a tube which he defied him to rend by gas pressure. This tube was nearly six feet long, and three inches in internal diameter, while its walls were three inches thick, the external diameter being nine inches. Its resisting force was sixty-two thousand pounds to the square inch. Yet it was rent asunder by the expansive gas produced by the inventor, the thick iron being split open for a length of eighteen inches.

The difficulty in the practical application of this power seems to have been, as Mr. Keely states, the impossibility of confining the gas in any workable machine. It was so rarified that no joint could contain it, and the instant it was admitted to an engine it totally escaped, leaving a vacuum in its place. For years the inventor sought to construct an engine that would prevent this escape; many times he believed he had succeeded, yet disappointment steadily followed, and the public incredulity steadily increased. This indefatigable effort to overcome an unyielding obstacle continued for nearly twenty years. It was a bitter fight against fate and circumstance. The inventor, feeling that he had within his reach a giant power, strove unrestingly to set at work his powerful slave. It was in vain. He was dealing with an element that refused to be confined in any apparatus not solid and immovable. All acting machinery must have separate parts, moving upon or within each other, and the necessary joints or crevices proved fatal to his hopes. The instant the gas was admitted it slipped through these and was gone.

So stood matters with Mr. Keely until a few years ago, when, fortunately for his hopes of success, a new conception came to him by accident, as he asserts; one of those happy accidents, it would appear, which only men of the unusual capacity called genius are ready to take advantage of. Just what this conception was, Mr. Keely, with business-like caution, keeps to himself. The public, for the present at least, must be content with its visible results; but these are sufficiently noteworthy to amply repay consideration. They indicate two things: First, that Mr. Keely is no longer dealing with a power arising from gaseous pressure; and, second, that he has made this power capable of producing rotation, levitation, and other effects of mechanical energy. What he claims, in regard to the source of his new system of power, is that he is able to draw vibratory energy directly from space by the aid of special resonating expedients, and that this energy can be made to yield powerful attractive and repulsive force and be converted into vigorous rotary motion through the use of certain apparatus. The power obtained, he asserts, is duplex, or has two opposed conditions, like the positive and negative states of electricity. Mr. Keely denominates these conditions positive and negative, though with the reservation that these terms do not imply excess and deficiency, but simply opposite conditions of energy. He is able, he declares, to disturb the equilibrium of these opposed states of vibratory activity as they exist in the elements of nature, to draw them separately into his apparatus, and to produce mechanical motion as a result of the effort of nature to restore the disturbed equilibrium.

This sounds like the language employed in electrical theory; and, indeed, aside from the fact that no evident source of electricity is present, there are close analogies between the action of electromagnetism and that of the energy active in the Keely apparatus. Yet there is a complete absence of the usual mechanical or chemical agencies for the evolution of electrical energy. The only operative appliances to be seen are certain resonating arrangements, and the mystery remains deep how these can yield force. These consist of an arrangement of slender rods or tongues of metal, which successively decrease in length, and which evidently are set to sound different notes of the scale, and of a spirally-curved bugle-shaped appliance. In addition to these a tuning-fork is employed by Mr. Keely when ready to set his machinery in motion. Thus, so far as is visible, the inventor's apparatus are in accordance with his theory of utilizing the vibratory energies of nature.

The question next in order is, what has Mr. Keely to show in support of his claim that he is able to control a supply of costless energy and employ it in the movement of machinery ? The proofs of this which were shown to me are two in number; others were described, but I can only speak personally of what I saw. The first of these indicates but a minute employment of force, yet it is significant of strange influences. It consists in the motion of a magnetic needle, pivoted in a small paper bow, and placed on a cylindrical stand which was filled with small tubes. At a distance stood a globular apparatus hereafter to be described, and the globe and the upright stand were connected by a length of slender platinum wire. Mr. Keely stood beside the globe, striking his tuning fork and applying it to the tongues of metal surrounding the base of the globe. After a

few minutes the magnetic needle suddenly quivered, moved backward and forward as if in response to the notes employed, and in the end began to rotate. This movement continued for a considerable time, the needle spinning rapidly around on its center, and only ceasing when Mr. Keely removed the box from the stand.

This may seem a trifling experiment; it is, on the contrary, a significant and unusual one. The movements of the needle, in response to the notes sounded, indicated that the power came from the globe, by the channel of the platinum wire, and not from any apparatus concealed in the stand. It is not the function of a magnet to rotate. No method is known by which such rotation can be produced in the absence of mechanical connection. No such connection existed in this instance. The only influence which could proceed from the stand, through the paper-box, to the needle, must have been one of attraction or repulsion; and science at present knows no method of making a needle rotate under such circumstances as are here described. Nor does it appear that ordinary magnetic attraction is at work, for the same rotation was produced when a splinter of wood-- the stem of a match-- replaced the needle, with no trace of metal except a coating of bronze-colored substance at the ends. This was made to rotate so rapidly as to become invisible, and continued without cessation until the needle- box was removed, when rotation could not be restored without a renewal of the original process. Keely states that on one occasion the rotation continued for forty days.

The other experiment shown me was one much more likely to attract the attention of practical men, as indicating a much greater supply of energy. It is not easy to explain without a diagram, and I may not succeed in making it clear. It employs, as its apparent source of power, the globe of which I have spoken, which is externally of brass, and of some eight or ten inches diameter. This is placed on a simple stand and surrounded at bottom with the arrangement of vibrating tongues mentioned, while near its apex is a small bugle-like appendix, curved in a spiral, with the mouth of the bugle opening outward.

Some ten or fifteen feet distant from this sphere stood another and more complicated apparatus. This was in two parts. One was an upright brass circle of three feet diameter, the face of the circle being several inches in width. Through this, at intervals, were inserted metallic disks or short cylinders of peculiar formation, which passed through the thickness of the brass, and protruded from its outer and inner surfaces. These--seventeen in number--were connected by wires around the inner circle of the ring

Within this brass circle, but having no connection with it, was a wheel, or rather a hub, with a series of radiating spokes reaching within two-and- a-half inches of the inner surface of the ring, but nowhere coming in contact with it. This apparatus turns freely on a fixed axle. It is thus completely isolated, both from the surrounding ring and from any force that might be brought to bear on a movable axle. It is apparently incapable of motion except through a propelling force applied directly to the spokes or the hub. The spokes terminated near the disks, but as they were one less in number than the latter, no more than one could, at any time, stand directly under a disk.

Such is, briefly described, the arrangement: the brass circle with its disks; the rimless inner wheel which hung loose on a fixed axle; and the distant brass globe, with its resonating appliances. A length of platinum wire, of about the thickness of a knitting needle, passed from the globe to the ring, where it was connected with one of the disks. Such was the apparatus, which stood motionless during the first hour of my visit.

Mr. Keely now approached the globe, took up the tuning fork, and manipulated, in various ways, the fork, the vibrating tongues, and the globe. After some minutes had passed in these processes the wheel suddenly started, moved slightly, and immediately afterward began to rotate. No further manipulation seemed necessary. The wheel, once started, continued to rotate steadily during

many minutes that followed. With just what force it moved I am unable to state from personal observation, having made no test. The natural impression would be, from its comparatively slow motion, and the ease of rotation of a wheel turning on a loose sleeve, that the force was slight. Mr. Keely, however, declares that this is an error, that the wheel exerts the same force whether moving fast or slow, and that when making but one revolution in five minutes it has broken ropes whose power of resistance was two and-a-half tons, and has continued to revolve deliberately as though it had encountered no opposition. Concerning this test, all I can say is that I did not see it, though the inventor declares that it has frequently been shown to others. The mode of stopping the machine was as curious as its starting. Mr. Keely simply pulled a piece of wire of a few inches in length from an aperture in one of the disks, and the wheel instantly ceased turning, though no hand had touched it.

How is this phenomenon to be explained? Pressure was out of the question, since the revolving wheel was absolutely isolated, except from the axle. But no power applied to the axle could have affected it, since the latter was firmly fixed, and the wheel hung free, turning on a loose sleeve that was slipped freely on the axle. The explanation, therefore, of hidden springs, skillfully devised systems of wires under the floor, moved by the inventor's foot, concealed machinery etc., fails to meet the requirements of this problem, since the movement was an isolated one, and no such mechanical force could have been brought to bear on the loosely hung wheel. That electricity was not the power employed was shown by a sensitive galvanometer, connected with the wheel, and remaining unaffected by its motion.

Mr. Keely explains the phenomenon as follows. He claims that the motion is due to attraction and propulsion (or repulsion) exerted by the disks on the spokes of the rotating ring. He says that these disks are "sensitized," or rendered alternately attractive and repulsive by energy drawn from the ether of surrounding space by means under his control, and conveyed from the globe along the wire to the disks. Of the seventeen disks, nine, he says, are polar in their action, eight depolar. The action of the polar disks on the spokes is attractive; that of the depolar disks, propulsive (or repulsive). There being but sixteen spokes, only one can be at any time directly under a disk, and the result of the differential action of the attractive and propulsive disks, due to their difference in number, is a steady and continuous rotation. This rotation, according to Mr. Keely, can be sustained indefinitely without cost or need of further attention after the conditions are once produced; is powerful enough to do work needing great energy; and is so simple in its management that no special intelligence is required to handle it. It can be used for any kind of work, as for a street car motor; is devoid of danger; and cannot get out of order.

I desire the reader to bear in mind that much of what is above said is given on the authority of Mr. Keely's statement. I have stated on my own authority only what I actually saw. This much may truly be said, however, that during the many years of Mr. Keely's experiments his workshop has been visited by a multitude of experienced mechanics and others, to whom the experiments above described and many others have been shown, and there is no testimony extant that any one of them has discovered evidence of fraudulent operations.

The "sensitized" disks employed by Mr. Keely in the method jest described, can, as he states, be used to produce many striking instances of levitation. One of these experiments is the following: A cylindrical glass vessel, forty-two inches high, containing a number of iron weights of several pounds each, is filled with water, and covered with an iron lid. On this is placed a small metallic disk, "sensitized," while a platinum wire connects the cover with the force-producing apparatus. The attraction exerted by the disk causes the weights to rise in the water, some of them resting midway, others apparently floating on the top, at the will of the operator. As regards this experiment, all I saw was a series of photographs showing the weights at various heights in the jar. Yet it appears to have been frequently witnessed. On two occasions, as Mr. Keely states, an observer removed the disk from the top of the jar, when the suspended weights instantly fell, crash-

ing through the bottom of the glass cylinder. He claims to be able to make the weight move at his will, stopping at any height in the water he pleases, and passing each other as they move up and down through the water. In other words, he states that he can produce special action in the case of each separate weight, and control its movements in the water.

The inventor claims to be able to perform surprising feats of levitation by the aid of these sensitized disks, such as lifting objects of great weight from the floor to any desired height without contact. He is also able, he says, by sounding certain combinations of notes on a sort of mouth instrument, to affect the molecular vibrations in a thick piece of plate glass in such a manner as to destroy its cohesion and shiver it to impalpable dust. A friend tells me that he saw a supported globe made to revolve by the same means, it responding in curious sympathy to the notes as they varied in pitch and combination.

Mr. Keely is at present particularly engaged on a large and complicated piece of machinery which he calls the propellor of an air-ship, and whose purpose is sufficiently indicated by its name. It is supplied with three "resonators," or broad sheets of thin metal, each set to a particular pitch, and each playing some part in the mysterious process of "drawing power from space." In addition are sundry disk-shaped and other apparatus, the whole arrangement being highly complex. The inventor does not claim that this machine is yet in working order. He declares that, if his remaining experiments prove satisfactory, he will be able to make it float in the air, at any desired height, and with sufficient lifting power to carry a large number of people, and convey them any required distance. To the eye of the layman, however, there is nothing but the inert machine. A demonstration of its powers and possibilities must wait on the completion of the inventor's studies and experiments. The world at large, with creditable caution, will not be ready to believe it can float until they actually see it floating.

Such is, brief stated, what I have seen and have been told of the famous Keely motor. Mr. Keely does not claim to be at the end of his researches, though he does claim the ability to do mechanical work with the rotating apparatus I have described, there only remaining the minor task of attaching a pulley to it, and thereby conveying its force to machinery. He explains his present status to be the following. During the past years he has issued stock and other obligations to numerous persons who have aided him in his researches. Before taking any steps to make his inventions public he wishes to know just how he stands in regard to these obligations. He has, therefore, issued a request that all holders of stock shall register their claims in a selected trust company, and would like, if available, to replace these varied obligations with a single series of new obligations. Not until this business difficultly is in some way overcome does he propose to do anything toward putting his inventions in practical operation.

* The reverse counterpart of gravitation; see Review of "A Journey in Other Worlds," by John Jacob Astor.