

HOW TO OVERCOME GRAVITY BY HERTZIAN AIR WAVES

New York Engineer and Inventor Thinks He Has Discovered a Secret of Science on Which He Began Work at West Point Nearly 40 Years Ago.

EDWARD S. FARROW, a New York engineer and inventor, suspended a book from a pair of scales in his laboratory in this city a few days ago and weighed it. The volume tipped the scales at twelve ounces. To the book he attached a mechanical device which he described as a "condensing dynamo." Power carried by wire from a neighboring electric switch set the wheels in this dynamo whirling. Slowly the arrow of the scales receded until the book apparently weighed only ten ounces. One-sixth of the power of gravitation between the book and the earth had been overcome. A law of nature had to all appearances been nullified.

On such a discovery, of course, the criticisms of the skeptical are at once focused. So the idea behind the device should be summarized at the outset. The invention is based on the intensification of Hertzian waves. It has been learned that by doing this, a parallel and corresponding intensification occurs with the vertical force which controls gravitation. Thus buoyancy is added to an object held to earth or propelled toward it by gravity.

Discovered by Mr. Farrow and sponsored by himself and Gen. George O. Eaton, the device might be called the apex of a pyramid that has been building slowly for twenty-five years. In its completion, scientific subjects such as wave motion, aeronautics, wireless telegraphy, and the discovery of Hertzian waves have all played a part. Elements of romance and the mysteries of mental telepathy color the story.

Nor was the discovery made by a purely scientific theorist. Rather is Mr. Farrow a practical man, a native of Maryland just turned his fifty-sixth year, a graduate of Baltimore City College and West Point, for eight years Chief of Scouts on the Northwestern frontier and a consulting engineer, inventor, and author. The bent of his mind is indicated by such inventions as his combination shelter tent,

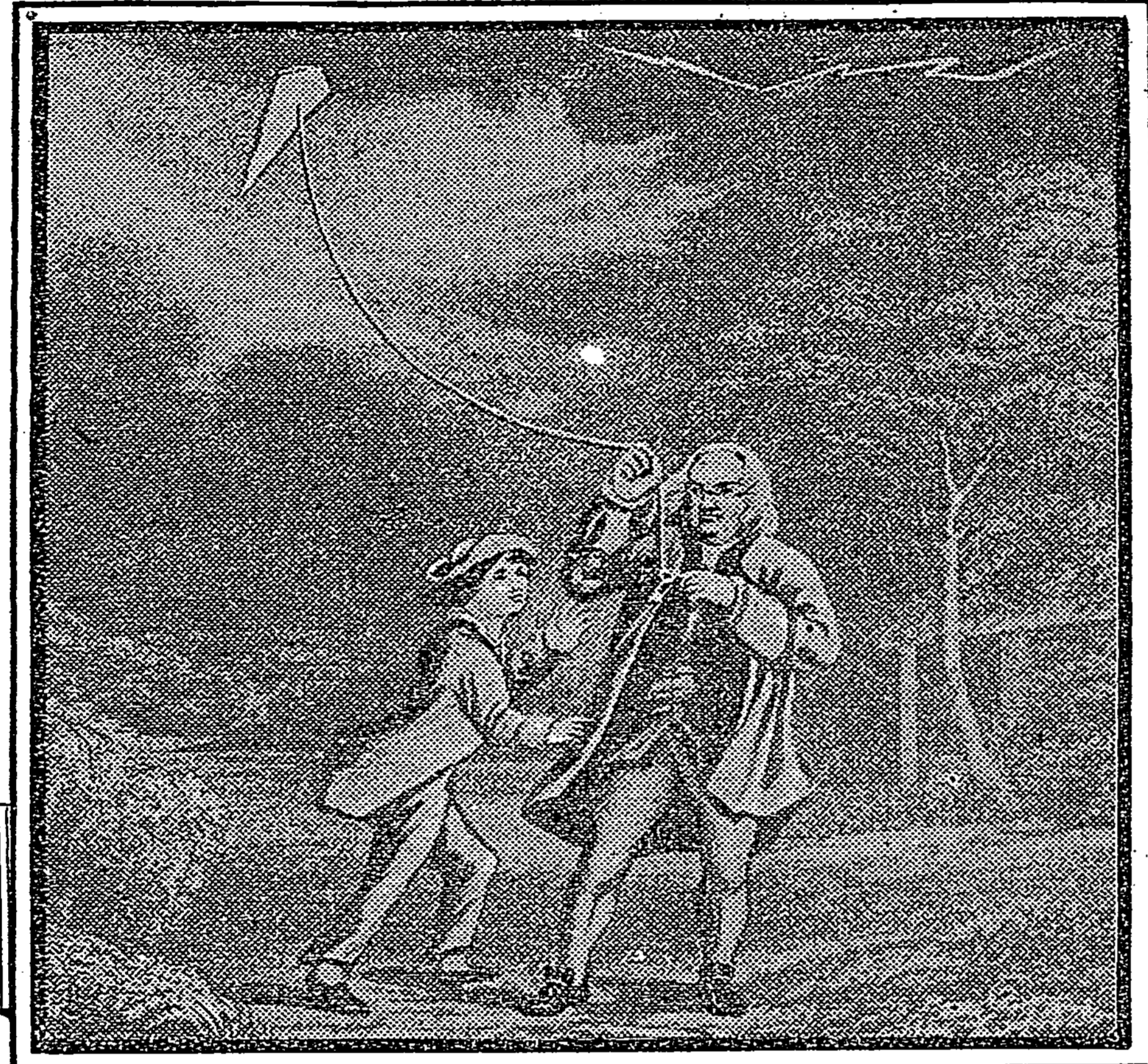
has since developed into the new invention. In those days the planchette was a novel plaything and a source of wonder at Fort Vancouver. This pear-shaped slab of wood supported on short uprights and moved with a pressure of the hands upon it is too familiar to need description. Besides Lieut. Farrow, the party at Fort Vancouver in 1879 comprised Gen. Alfred Sully, Henry D. Morrow, an old Indian fighter, and James A. Haughey. They extended their experiments from the planchette to tables, reproducing the familiar levitation tricks. These finally reached a point where one of the ladies at the table, placing her fingers on the table, moved it while three men were seated upon it.

"Spiritism"—that was one explanation.

the "sheep eater" campaign in the Bad Lands of Idaho in 1879. The army scouts and Indian guides were athirst in the desert with no water in sight. In their extremity "Wah-low-kow," chief medicine man of the Umatillas, had worked himself into a frenzy and by "divination," in the form of a message from his forefathers, indicated the way to a spring of running water, hitherto unknown, in a land visited by all for the first time. Still the young lieutenant told himself that whatever there might be in the theory of psychic force, there was still the law of gravitation to be explained away before a woman's fingers could move a table with three men upon it. This law of gravity in the text books was rigid and absolute. Gravity was "weight as contradistinguished from

conquered the air, the eagle's defiance of gravity remained as much of a mystery to Farrow as ever. He was one of those who were skeptical as to man's ability to fly. Even after this became an accomplished fact one crucial difference still remained between the soaring eagle and the aeroplane. When the motive power of the heavier-than-air machine ceases while the aeroplane is in the air, the planes coast downward, gliding to the earth. The eagle, its motive power at rest, still soars.

Mr. Farrow subsequently left the army to become an inventor and consulting engineer. Yet his theorizing on gravity and

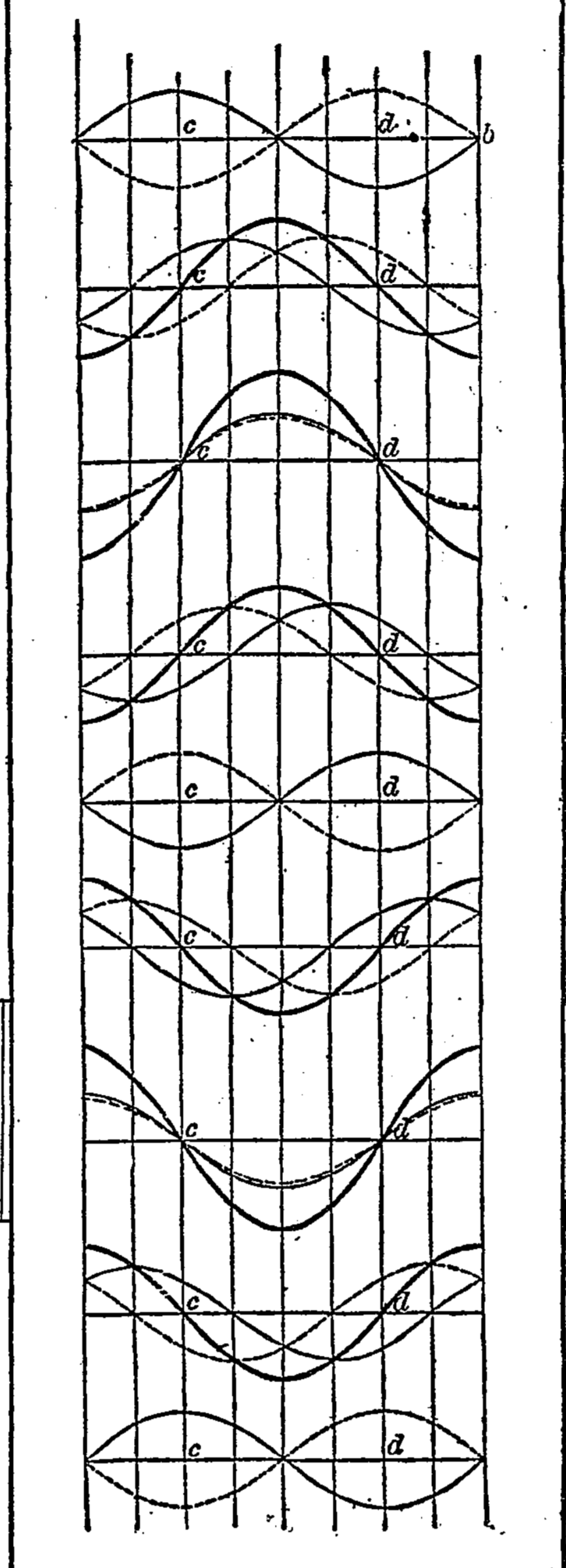


FRANKLIN HARNESSING ELECTRICITY

Lieut. Farrow discarded it at once. The concentration in the mind of the operator of some unknown natural force was another theory that was at least open to argument. Could the human body become a "concentration dynamo" for such a force? The soldiers of the post had seen some inexplicable cases of this neutral power among the Indian medicine men around Fort Vancouver. The scouts believed in and respected the psychic powers of these tribal functionaries. Lieut. Farrow had himself been puzzled during

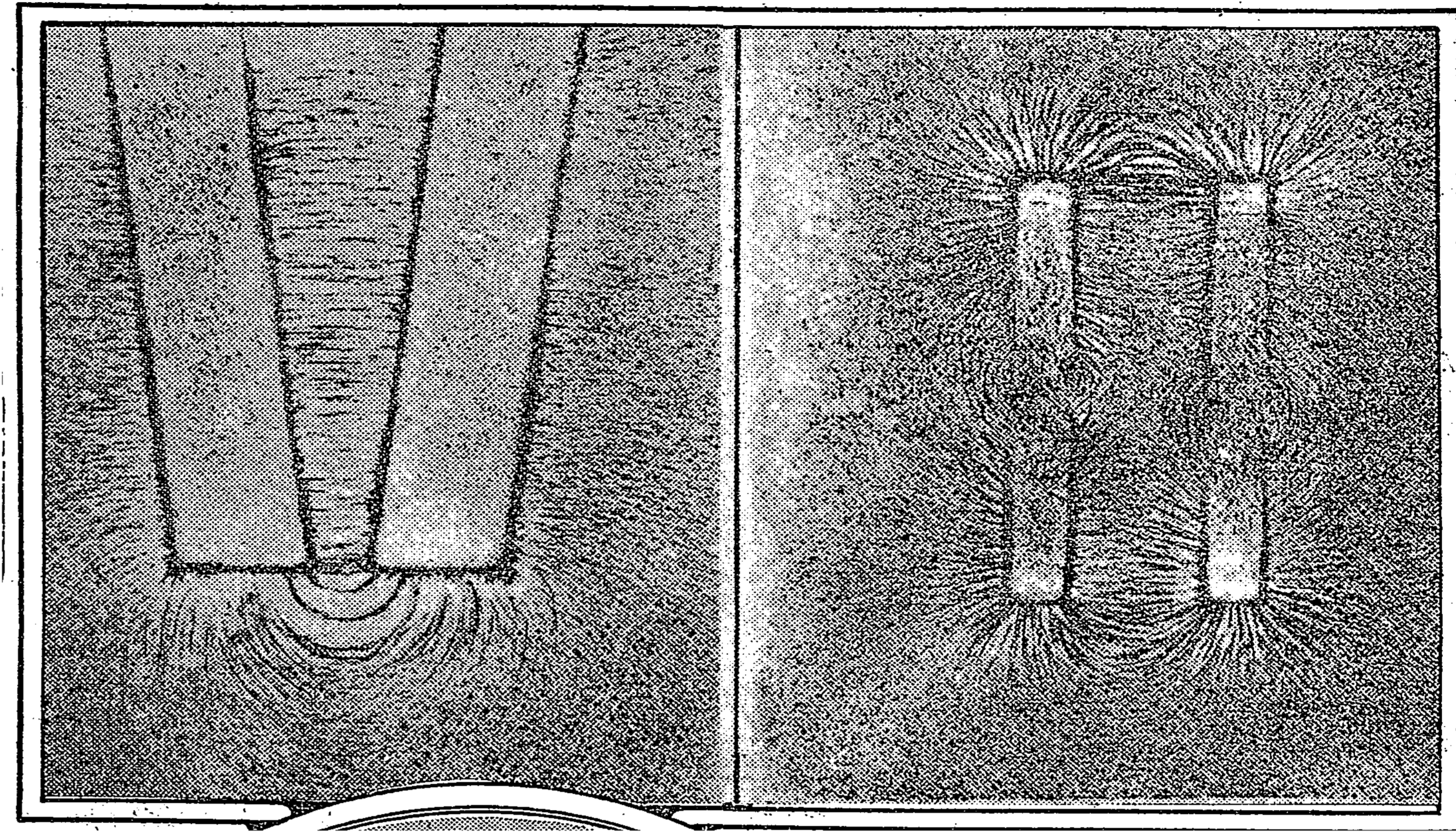
mass; precisely, the downward acceleration of terrestrial bodies due to the gravitation of the earth modified by the centrifugal force due to its gravitation on its axis.

The young lieutenant found more to wonder at in the apparent defiance of this law by the eagles soaring, immovable, over the desert. They hung high in air, apparently motionless, unaffected by the wave motion of the ether or the laws of gravitation. This was before the days of aeroplanes. Yet, even after man had



SOME OF THE VARIATIONS OF WAVE MOTION IN THE SURROUNDING ETHER

wave motion, the experiments with the planchette and levitating tables, and the memory of the eagle, were to turn his



LINE OF FORCE ILLUSTRATED WITH MAGNETS



EDWARD S. FARROW

mind into new channels when, in 1887, the principle of the Hertzian wave was announced.

Hertz demonstrated that a very rapid oscillating discharge of electricity, such as that which may be established between two knobs, produces a disturbance in the surrounding ether, which takes the form of electric waves penetrating space with the velocity of light. These waves, in Hertz's experiments, were found to have a length of nearly a meter. They

were reflected from the surface of an electric conductor and could be transmitted by a non-conductor, such as pitch, or a similar substance. He also found that they could be brought to a focus. They could be made to interfere, then form model points. Or, by forcing them through a grating with parallel wires, they could be polarized. These electric waves, now bearing Hertz's name, were like light waves. They differ from the latter in their relatively enormous length

and the corresponding slowness of the oscillations.

The importance of the discovery is historic. Scientists had known of electric currents passing from point to point through the air without a visible conductor, such as the lightning or the sparks between the poles of a battery. But the Hertzian theory and its mechanical application led to the perfection of wireless telegraphy and its elaboration in multiple wireless currents, such as those of Major Squires's invention.

Mr. Farrow, like others, saw in this theory a new field for the investigation of mental forces, such as he had noted in the levitating table and the Indian medicine men. He left this an open question, however, and concentrated his experiments on the application of the Hertzian wave to the law of gravitation.

His investigations were based on a fundamental idea of creation expressed in a well-known algebraic equation. Translated into its simplest terms, the formula means that action and reaction are equal, simultaneous, and contrarily opposed. Thus, while pushing a book across a table, there is resistance from the book as well as from the opposing hand.

To this he added other recognized theories regarding electricity and gravitation. Following Kepler's laws of gravitation the mechanical devices for controlling electricity have been found to apply to gravity, regulating or intensifying the force of this attraction of foreign objects to the earth. By intensifying the motion of the electrical waves through suppositions other there will develop complements in all directions. The force, or motion, acting vertically, will, by the law of reaction, diminish a force such as gravitation, acting downward toward the earth.

This force, when acting upward, has been called a "vertical component." For want of a better name, it anticipated the recognition of this component and electricity as distinct forces. In other words, as electricity is regarded as an element, or one great force in nature, so gravitation is likewise regarded as another and distinct element in this universal force.

The experiments continued on the basis of this "vertical component," related to, though differentiated from the Hertzian wave. The connecting link was the discovery by Mr. Farrow that an intensification of the Hertzian wave caused a corresponding intensification of the "vertical component." Thus, if the force of a Hertzian wave was 30,000, and it could be increased to 60,000, or even 120,000, the force of the "vertical component," which resisted gravitation, would be correspondingly increased.

The mechanical device which Mr. Farrow has just perfected increases the force of the Hertzian wave. This increased power is transmitted to the "vertical component." The latter, thus intensified, offers a proportionate resistance to gravitation. The force of the latter is reduced, as has been demonstrated in the relative buoyancy of the book already mentioned.

The discovery of a mechanical means to suppress gravitation is, of course, of the first importance. It is revolutionary, even sensational—to be compared with the formulation of the law of gravitation itself, as Sir Isaac Newton saw an apple fall from a tree and he and his successors reasoned out the why and wherefore of it, or with Benjamin Franklin transmitting and storing electricity in a jar with his kite, cord, and key. The first question to be asked after this demonstration, however, was how the new mechanism could be put to practical uses. Here are some of the ways:

If a 12-ton girder was to be raised to the top of a skyscraper with a derrick of 10 tons capacity, the mechanism would obliterate the two tons of weight.

The element of gravitation in any object being overcome to the extent of one-sixth or a greater degree, it would be possible to make the human body as "light" that it could be propelled with a very small fraction of present effort.

Steamships could ride more lightly on the sea in the same way. The speed of railroad trains could be increased by the contrivance reducing the friction of the wheels on the tracks.

An aeroplane caught high in air with a broken engine could be made to float there indefinitely by turning a button and starting the "concentrating dynamo."

One feature of aerial warfare would be removed from the field of uncertainty and danger to positive safety and mechanical efficiency. For example: If a war balloon were suspended over New York, becalmed and 500 feet in the air, the new aerial guns would probably make its destruction and the death of its occupants a certainty. Owing to lack of wind, insufficient ballast or depleted gas supply, it could not be moved from its dangerous position. But with a "concentrating dynamo" attached, the balloon could be shot upward beyond the range of the aerial guns and the spies would float away on an upper air current to safety.

It is this possible development which has attracted the attention of the United States Government. Though Mr. Farrow and Gen. Eaton have filed their application for a patent for the "condensing dynamo" at Washington, the mechanical details of the contrivance will not be announced until the Government engineers complete their experiments with it and determine its value to the army and navy in aerial warfare.

SIR ISAAC NEWTON WHO DISCOVERED THE LAW OF GRAVITATION

in use by the army and serving as both a shelter and a cover for a soldier's kit and military small arms combining the Springfield and the Blake mechanisms and the subject of some twenty patents. His writings are also on such practical topics as camping on frontier trails, West Point, and American small arms, and the compilation of a military encyclopedia.

The story of the discovery begins at the West Point Military Academy nearly forty years ago. Mr. Farrow was a cadet in the class of '70, Gen. Eaton in that of '74. Like Major George O. Squire, who recently patented the "wireless wired" telephone device and presented his discovery to the public, the three formed a congenial group in the West Point course in physics and developed their ideas while in army life. The personification of their theories at West Point was Col. W. H. C. Bartlett—fondly "Old Bartlett"—instructor in physics and well known as an author of textbooks.

The cadets, Farrow and Eaton, fell into the way of arguing with Col. Bartlett on wave motion. This complex phase of physics enters into the explanation of many of the forces of earth and air, especially those listed among the more recent discoveries. Wave motion, as the dictionary has it, is "motion in curves alternately concave and convex, like that of waves of the sea." Its principles play their part, for instance, in the sunlight, traveling 92,000,000 miles from the sun to the earth in eight minutes by wave disturbances of the intervening ether. Maxwell proposed the electro-magnetic theory of light when he defined it (radiant energy) as an electro-magnetic disturbance propagated by vibrations at right angles to the direction of the ray and taking place in the ether. Wave motion enters into sound waves spreading out and dying away in the distance while agitating the molecules of the air with a uniform speed. Every moving object calls for knowledge of this force, as the waves are opposed to two resistances—collision with the molecules of the air and the attraction of gravitation.

Charles R. Gibson, in his recent work on modern scientific ideas makes this parallel while describing wave motion: "Picture an ordinary jelly such as is served for dinner or supper, but we shall suppose the cook has made us a very large and firm jelly for experimental purposes. If we stick two long pins—such as hat pins—into the jelly, placing one pin at some distance from the other we find that any vibratory motion given to the one pin is imitated by the second pin. The jelly conveys the energy from the one pin to the other; we have set up wave motion within the jelly. It is immaterial whether the motion is up-and-down or from right to left—indeed it may be at any angle whatever."

Herein was the seed planted in the minds of the West Point cadets to be developed later under unexpected circumstances.

A National tragedy turned their thoughts from scientific abstractions. The Class of '76 was graduated on June 25 of that year. On the same day, Gen. George A. Custer and his command of 277 troopers were surrounded by Sioux on the Little Big Horn, Montana, overwhelmed and slain. A number of the West Point graduates, young Farrow among them, were rushed west to take the places of some of the slain. Farrow helped to bury the dead in the Custer massacre, and get at the truth of the mistake in judgment which led their commander into the trap set by his enemies.

During the next eight years, Farrow commanded the Indian scouts in the Northwest. The tedium of post life, journeys through the surrounding wilderness and a growing intimacy with the Indians started the train of thought which