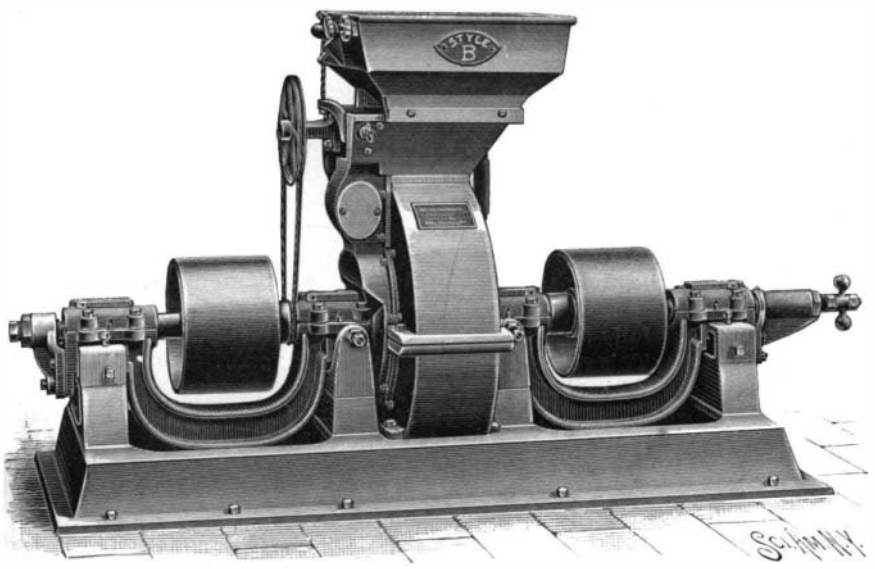
THE ROBINSON CORN AND FEED MILL.

The feeder consists of an iron hopper, shoe and shoe case. The shoe is located underneath the hopper, inside the shoe case, as shown in cut, and is operated by means of an eccentric revolving against a leather cushion, behind which a coil spring is attached, making the shoe noiseless in its operation and maintaining a uniform and positive feed, the eccentric being driven from the shaft of mill by grooved pulley as shown in cut.

To regulate the shake of the shoe and make the motion uniform or steady, a rubber cushion is attached to the side of the shoe case, this rubber cushion being adjustable by means of a thumb screw and nut and any wear on the leather cushion can be taken up.

The back end of the shoe is suspended on an upright spindle which prevents the shoe from rolling and at the same time allows it to be raised and lowered by means of a cord attached to the mouth or the feed opening of the shoe. This cord passes over a knob at the top of the hopper and thence to an adjusting screw and nut, as shown in cut. To further control the feed a slide is placed in the hopper which can be raised or lowered; this slide, together with the adjustable and vibrating shoe, enables the operator to feed heavy or light, as the kind of grain may demand. The feeder, once set for a certain kind of grain, requires no further attention.

This mill is manufactured by Messrs. Munson Brothers, Utica, N. Y.



THE ROBINSON CORN AND FEED MILL.

A DYNAMOGRAPH.

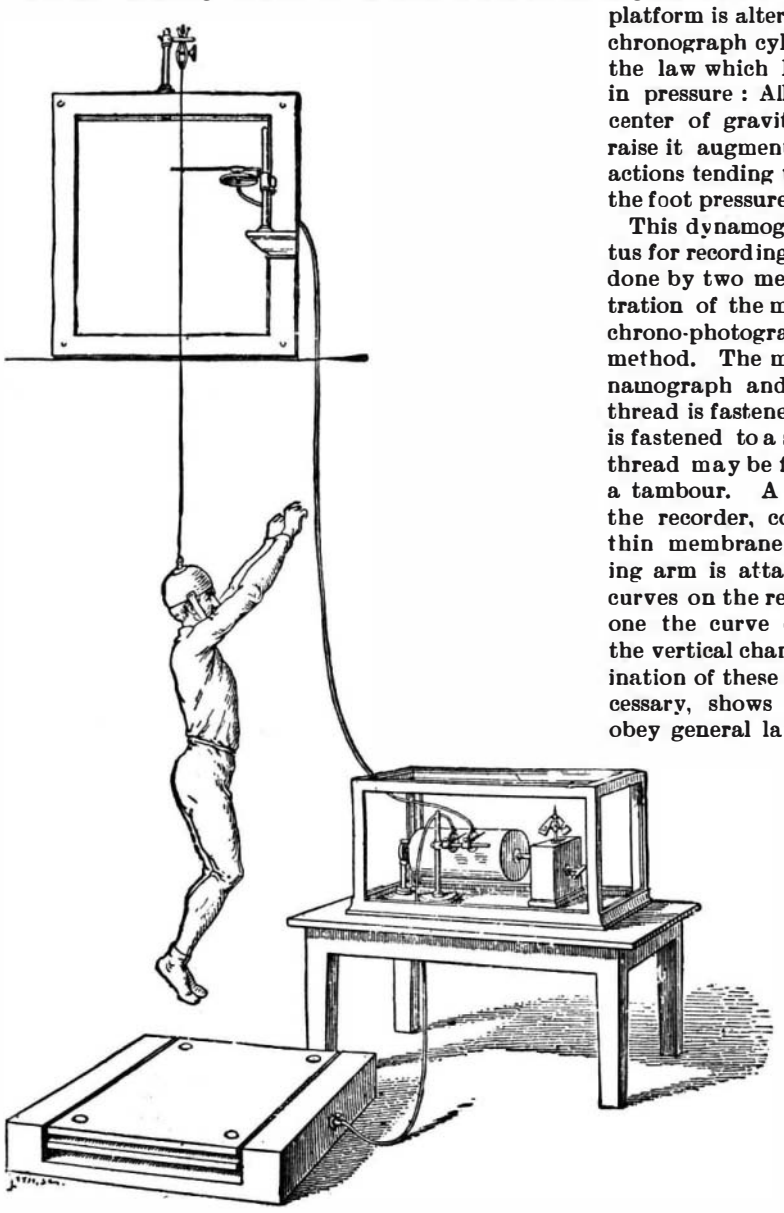
The use of instruments of measurement and verification marks the origin of nearly all of the progress in many branches of science and industry. Physiologists particularly have need of accurate instruments when they study the different forms of motion in the functions of life, the velocity of blood in blood vessels, etc. The graphic expression of motion is obtained with facility by using the instruments with which the best physiological laboratories are now equipped. Motion is the most apparent manifestation of life, and besides the internal or organic movements, sometimes so slight that our senses cannot perceive them, there are other external movements the study of which has proved of the greatest value.

Modern physiologists have devised all kinds of instruments and artifices to render these movements visible and to determine their character. To the ordinary inscribing or registering apparatus has been added the photographic methods of Mr. Muybridge and M. Marey. The important researches of M. Marey have already been published in SUPPLEMENTS 336, 408, 414, 579, 580, and 749.

We now present an illustration of another interesting piece of apparatus which is used by him in his experiments. It consists of a dynamographic platform for giving a curve of foot pressure on the ground at the same time in which a mechanical record of the movement is obtained. The dynamograph shown in the engraving consists of coils of India rubber tubing which are more or less compressed according to the external force applied. In consequence of this pressure, the contained air is more or less squeezed out into a chamber connected with the recording instrument. This portion of the apparatus is called a "spiral dynamometer." In the complete apparatus a series of spirals are arranged on an oak platform. All the tubes which lead from the spirals unite in a common collecting tube, which communicates with the chamber of the recording tambour. A plate held in position by clips accurately covers all these spirals. When a man mounts this platform, the registering lever is raised to a variable height and remains in the same position as long as he does not move. If, however, he moves slightly, the amount of vertical foot pressure on the platform is altered in amount and is recorded on the chronograph cylinder. The following is found to be the law which M. Marey finds governs the variations in pressure: All muscular actions which alter the center of gravity of the body in such a manner as to raise it augment the foot pressure on the ground. All actions tending to lower the center of gravity diminish the foot pressure.

This dynamograph may be combined with apparatus for recording the actual movement. This may be done by two methods, either by the mechanical registration of the movement or by the now well known chrono-photography. The engraving shows the former method. The man stands on the platform of the dynamograph and wears a tight-fitting cap; an elastic thread is fastened at one end of the cap, the other end is fastened to a solid support by means of a clip. This thread may be fixed near its upper end to a lever of a tambour. A tambour is the actuative portion of the recorder, consisting of a drum or cup with a thin membrane stretched over it, to which a recording arm is attached. Two tambours produce two curves on the revolving cylinder of the chronograph, one the curve of foot pressure and the other that of the vertical change of position of the head. An examination of these curves, which may be enlarged if necessary, shows that the laws of animal movements obey general laws—in this case, the laws of ballistics.

For our engraving we are indebted to M. Marey's late work "Movement," published by D. Appleton & Company, New York City.



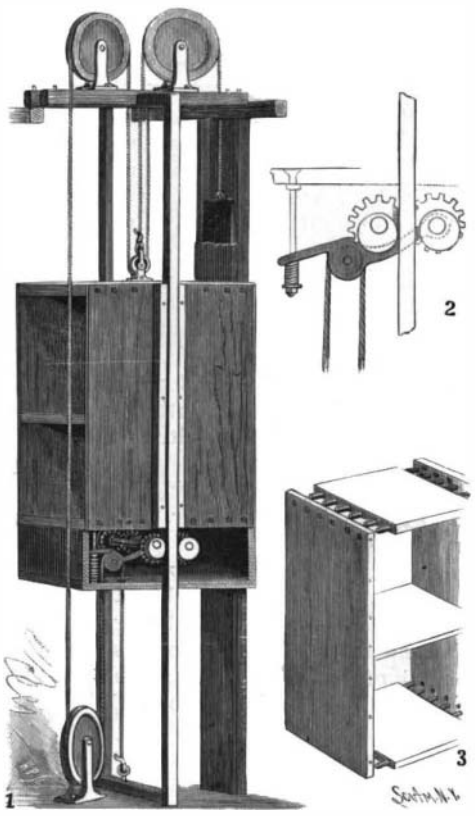
METHOD OF RECORDING FOOT PRESSURE AND CHANGES OF ELEVATION DURING A JUMP.

Transplanting Large Trees.

The editor of the New York Sun, Charles A. Dana, has a comfortable house with quite extensive grounds in the near neighborhood of New York City, where he has for some years paid particular attention to the care and cultivation of many rare and beautiful plants and trees. On the transplanting of large trees, therefore, as on so many other subjects, he speaks as a high authority, in the following answer to a correspondent: "The transplanting of large trees has been tried very extensively in different countries, and the testimony of all experts is that, while it is sometimes successful, it is yet a very costly and unsatisfactory transaction. In our own experience, out of perhaps thirty large trees of different kinds with which the experiment was tried some twenty years ago, with most abundant care and a liberal disregard of expense, one only is now living, and that not in a very flourishing condition. Take a young tree of a suitable size for transplanting, say five years of age or thereabout, and at the end of twenty years you will have a better result with it than you can have with an old tree, and the young tree will perhaps cost five dollars when planted, where the old one will cost five hundred."

AN IMPROVED DUMB WAITER.

The illustration represents an improvement in the construction of dumb waiters whereby the cage, with its load, will be securely held at any point when the operator releases the rope, the wear on the hoisting rope being reduced and the car relieved of any strain and the cage being also safely held in the shaft without dropping, should the ropes break. The improvement forms the latest of several inventions relating to dumb waiters patented by Mr. Anton Larsen, of 413 and 415 East One Hundred and Twenty-fourth Street, New York City. As may be seen in Fig. 1, the cage is counterbalanced, and the hoisting rope, secured at one end to the upper part of the well, passes under a pulley on the top of the cage, then over a pulley at the top of the well, and extends downward in front of the cage, under a pulley at the bottom of the well, thence upward over a pulley journaled in an arm secured on a transverse shaft in the lower part of the cage. This arm has its free end forked to engage a rod depending from the bottom of the cage, as shown in Fig. 2, a spring on the rod tending to press the arm upward. The shaft carrying the arm is connected by gear wheels with an opposite shaft, and on the outer ends of both shafts are brake shoes in the form of eccentric disks, adapted to engage opposite sides of the guide posts in the well. The cage is moved upward in the well by pulling on the front run of rope, the brake shoes then permitting a free upward movement of the cage, as they are only held in frictional contact with the guide posts by the action of the spring on the arm, but when the pull on the rope is released the spring causes the shoes to bind with sufficient force to hold the cage in position, the pressure of the load also drawing the shoes in more firm contact with the guide posts. The rear run of rope, under the cage, is pulled upon to lower it, causing the arm to swing downward and the turning of the transverse shafts disengaging the shoes from the guide posts, the spring again applying the shoes when the pull ceases. The entire arrangement is completely noiseless, and the operator can conveniently raise and lower the cage and hold it at any desired point. As may be seen in Fig. 3, the frame of the waiter is held together with dowel pins, top and bottom—a mode of construction which renders the car very strong.



LARSEN'S DUMB WAITER.

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