

PHENOMENA IN NATURE.

SOME EFFECTS IN MECHANICS DUE TO CAUSES AS YET UNKNOWN.

Newton's Laws of Motion May Be Upset. While Much That Passes for Eternal Truth Is Under Suspicion—Cause of Gravity Beyond Human Conception.

Recently we have discussed in these columns recondite problems of physical science. To say that these things are beyond the purview of engineers is to limit the scope of the profession. The business of the engineer is to utilize what has been termed, popularly if not accurately, the forces of nature, for the benefit of mankind. To the physicist the world is indebted for the discovery of new phenomena and novel relations existing between old and new natural actions and interactions. It is impossible, however, to draw a narrow line and say that the province of the engineer lies on one side and the territory of the man of pure science on the other. Thus the discovery of the phenomena of electrical induction was mainly the work of Faraday; but the construction of dynamos, which utilize that discovery, is the daily work of the engineer. Reasoning in this way, it easily becomes obvious that the engineer is really deeply interested in the whole course of modern scientific research; and speculations as to the constitution of matter and the nature of energy are by no means to be regarded as of necessity abstractions, possessing no real value sufficient to make them worth studying. No one can tell from day to day whether or not some extremely valuable discovery will be made. There is reason, indeed, to believe that co-relations of phenomena may at any moment be hit on which will reduce the telegraph to the level of a conspicuously clumsy piece of apparatus, or bring down the cost of electric lighting to a tenth of its existing price. When Hertzian waves were first spoken of no one dreamed that they would enable us to transmit messages through long distances without visible means of communication. The telephone was built up out of most unlikely materials; and the man who asserted that he could make an iron plate talk to an audience by the aid of three French nails, a small battery, and a few cylinders, would have been regarded as a lunatic not so very long ago.

Of late those who have watched the signs of the times will have noticed that a change is coming over the mode of thought of the more advanced seekers after physical truth. Possibly not many of our readers have carefully followed Dr. Larmor's address to Section A of the British association, which we have placed on record in our columns. Possibly fewer of those who have read it have understood it. Dr. Larmor has evidently failed to make the English language express clearly what he wanted to say, nor are we surprised. It is a hackneyed saying that "words fail us to express our feelings." But Dr. Larmor has, in all events, succeeded in telling us that much that was formerly accepted as the very groundwork of physical science must be abandoned as untenable. He hints, indeed, that Newton's laws of motion are no longer satisfactory expositions of well known truths. He seems disposed to abandon the idea that force is the cause of motion; a statement which we have often pointed out is wholly inconsistent with Newton's third law. Ions take the place of atoms, from which they seem to differ only in being infinitely more numerous. Kelvin's theory of vortices, with a difference is favored, and we have again a theory of force centres, which so closely resembles that advanced years ago by the late Walter Browne, to say nothing of Bishop Berkeley, that to the superficial observer at all events the distinction is without a difference. But the most notable feature of the whole discourse is Dr. Larmor's tendency to abandon the pursuits of knowledge in certain directions. It will be better, he said in effect, to content ourselves with a statement of the chain of events so far as we can see the links, without attempting to discover the ends of the chain. We can study the effects of gravity, but it is forever impossible for the human mind to conceive of any adequate cause. We may frame mathematical theories about the ether, but the human mind is incapable of forming a concept of a substance which will comply with the conditions. In whatever direction we turn, we are stopped by the presence of the unknown. Dr. Larmor will have it, as we understand him, that much of the unknown is unknowable. It is possible that we overestimate Dr. Larmor's pessimism; we trust that we do.

Among the matters to which he directed attention was attraction. Its phenomena are common and obvious, even apart from gravity, but they appear to be absolutely inexplicable. We speak of a torque of a motor, or a dynamo, and it is part of the work of the electrician and the engineer to calculate its amount under stated conditions; but no one on earth has the smallest notion of why torque exists at all in the combination of iron, copper, cotton and shellac. The magnet gives us a puzzle as recondite as any in the universe. In old times, when men did not use very accurate language, it was said that a lodestone on a permanent magnet "attracted" iron. No one thought of saying that the iron attracted the magnet to precisely the same extent. As to the nature of the links across space between the two, no one worried himself. "Action took place at a distance," that was enough. Sir Isaac Newton was the first man able to influence thought to any sufficient extent to point out that no action of the kind could take place without some bridge to span vacuity. By degrees it began to be un-

derstood that what we term magnetic attraction can be expressed in terms of lines of force; and, what is of all things important, that attraction is due not to anything done by the magnet per se, but to some external form of energy which is localized and directed by the magnet. But what this form of energy is, or how the magnet works, no one, as we have said, knows.—London Engineer.

MAINE'S KING GUMPICKER.

He Leads a Lonely Life, but Makes a Good Income.

Ezra Robar, the king gumpicker of Maine, has camped all winter on Porgie Brook, and when he comes to town this spring he will have bags and bags of amber lumps to swap for the dollars of the druggists, who always pay the highest prices for the best gum. The life of a gumpicker, without doubt, is the most lonely that a man can lead. The men go into the woods in October, and they make a study of spruce growth. They have an odd outfit, consisting generally of several poles and knives, a pair or two of snowshoes, a small dog, a couple of blankets, and a pair of "climbers." They are like those used by telegraph linemen.

The gumpickers travel alone, and have secrets, like gold hunters. They follow the wake of the old whirlwinds that have left long furrows in the wilderness, and as long as they can track the course by the gum that forms on trees wounded the previous season they follow it along. Sometimes a gum hunter finds that his pathway has been intercepted by another hunter, who had discovered the lead, and a new plan of campaign must be resorted to.

There are many men who go into the woods to chop trees or swamp roads at \$25 a month who work every Sunday at digging gum from the boughs of the spruces, and in that way they greatly increase their earnings, although they are not nearly so successful as the professional digger. The veteran gum hunter has made his occupation a life study and has reduced the work to a science. He can go up a tree like a cat, and skin it bare of gum, from stump to top, while the logger would be getting ready to climb. The lumberman generally gets 20 to 25 pounds of gum in a winter, and sells it at from 80 cents to \$1.25 a pound, according to quality.

A professional gum hunter can make from \$3 to \$8 a day when he strikes a really good gum country. When he gets into a good place he keeps very quiet about it until he has gathered the last lump in sight. He makes from \$400 to \$800 in a season, and he earns every cent of it by hard, lonely work.—New York Times.

QUAINT AND CURIOUS.

The leading poultryman in a thriving North Missouri town answers to the name of Henry Coop.

When Hannibal's army descended from the Alps into the valley of Lombardy, the whole force was well nigh routed by a plague of mosquitoes, which drove men and animals almost wild with pain.

"I bought some apples from a Chinaman yesterday, giving him an American dollar," writes a Kansas soldier boy from Pekin, "and in the change which he gave me back was an American half dollar of the date of 1813. I have been offered \$10 for it."

An Equinian baby is born fair except for a dark round spot on the back, varying in size from a three penny bit to a shilling. From this centre head of color the dark that gradually spreads till the toddling Equinian is as beautiful and as completely and as highly colored as an well smoked meerschaum pipe. The same thing happens among the Japanese.

A child's savings bank has been dug out of the ruins of Ostia, the seaport of ancient Rome. The bank was an earthen pot containing 145 silver coins issued by Roman emperors between the years 290 and 19 B. C. The little savings bank was almost perfect when it was uncovered. It is three inches long and two and one-half inches wide, with a slit in the top through which the money was dropped.

Captain Baron Holzing of the Third Baden Dragoons recently covered a distance of 15 kilometres in the space of 25 minutes, riding against a railway train running from Graben to the neighborhood of Carlsruh. He arrived eight minutes before the train. His horse had been especially trained for the ride, having been fed on a particular sort of cake, instead of oats, for weeks past. The ride was accomplished without extraordinary exertion, and the horse was still fit for more work at the finish.

Remarkable to relate, wood can be utilized for soft flowing gowns. Wood pulp silk has long been a staple industry in St. Etienne, district of France. By certain secret chemical processes the pulp is reduced to a soapy condition. It is then forced into tubes full of tiny holes, through which it emerges in the form of fine silk like threads. These are speedily dried by being passed through hot air-spheres, and are forthwith wound on bobbins ready to be woven into silk. The appearance of this unique product is so natural that even experts are mistaken and think it the genuine article.

A century ago the potato was a new and unpopular article of food in France.

The Vicksburg national park will soon be complete as far as the acquisition of land is concerned. It will comprise in all 1,231 acres.

The latest Swiss mountain railway project is to connect the Engadine with the Italian lakes by a road over the Bernina range.

The daffodil is to be one of the favorite flowers of the season.

Garfield Headache Powders—a very simple medicine—cure when other remedies fail. When taken according to directions the results are most satisfactory. Send for samples, Garfield Tea Co., Brooklyn, N. Y.

The weight of the air which encircles the earth is equal to that of 581,000 cubes of copper, each 1003 yards square.

DEERING AT PARIS IN 1900.

The Famous Chicago Harvester Company Received More and Greater Honors Than Were Ever Before. Accorded an American Exhibitor in the History of Expositions.

America may well feel proud of the interest which her citizens took in the Paris Exposition and the elaborate exhibits which were prepared with consummate skill and displayed in a manner not excelled by any other country. Those of Harvester Machinery in particular were most complete and interesting. The Deering Harvester Company, of Chicago, America's foremost manufacturer of this line of goods, was accorded the position of honor, having contributed more to the advancement of the art of harvesting than any other manufacturer, living or dead, and with a greater array of important inventions to his credit than any other company in the world.

Visitors to the Exposition were prompt to accord the Deering exhibit supreme honors, and it only remained for official mandate to ratify the popular verdict, which was done in a manner as substantial as it was well-merited. Each one of the seven Deering exhibits secured the highest award in its class.

In addition to four high decorations, the Deering Harvester Company received twenty-five awards, or twenty-nine in all, as follows: Decoration of Officer of the Legion of Honor, Decoration of Chevalier of the Legion of Honor, Two Decorations of Officer of Merit Agricole, a Special Certificate of Honor, The Grand Prize, Six Gold Medals, Six Silver Medals and Eleven Bronze Medals, including Deering Collaborator Medals.

The Decoration of Legion of Honor was instituted by Napoleon Bonaparte when First Consul in 1802, and is only conferred in recognition of distinguished military or civil achievements. It is the highest distinction in the gift of the French Republic.

The Decoration of Merite Agricole is an honor of but slightly less importance, which is conferred upon those who have contributed greatly to the advancement of agriculture.

An Official Certificate of Honor was accorded the Deering Retrospective Exhibit, which showed the improvement in harvesting machinery during the past century, and excited the highest praise of the French Government Officials who had entrusted to the Deering Harvester Company the preparation of this most important exhibit. By special request this exhibit has been presented to the National Museum of Arts and Sciences at Paris, where it has become a permanent feature of that world-famed institution.

The Deering Trine Exhibit and Corn Harvester Exhibit, both of which received the highest awards, have by request of the French Government been presented to the National Agricultural College of France.

There was no field trial, either official or otherwise, in connection with the Paris Exposition, but the most important foreign contest of the past season was held under the auspices of the Russian Expert Commission at the Governmental Farm of Tomsk, Siberia, August 14th to 18th. All the leading American and European machines participated and were subjected to the most difficult tests by the Government Agriculturist. The Expert Commission awarded the Deering Harvester Company the Grand Silver Medal of the Minister of Agriculture and Domain, which was the highest award.

The Deering Harvester Works are the largest of their kind in the world, covering eighty-five acres and employing 3000 people. They are equipped with modern automatic machines, many of which perform the labor of from five to fifteen hands.

This Company is also the largest manufacturer of Binder Trine in the world, having been first to produce single-strand binder trine, such as is in general use today, making over a third of the product of the entire world. The output of its factory for a single day would tie a band around the earth at the equator, with several thousand miles to spare.

The annual production would fill a freight train twenty miles long. Made into a mat two feet wide, it would reach across the American Continent from ocean to ocean.

Deering machines are known as Lion Brand Drags, consisting of Binders, Mowers and Reapers, Corn Harvesters, Shredders and Rakes.

This Company exhibited at the Paris Exposition an Automobile Mower, which attracted much attention, and exhibitions were given with one of these machines in the vicinity of Paris throughout the season.

Berrien County, Michigan, is said to be the greatest peach growing section in the world. The number of acres cultivated last year was 4783, and the total yield of peaches was 40,902 bushels—over half of the Michigan crop for 1900. Van Buren County came next, with 5387 bushels.

Coughing Leads to Consumption. Kemp's Balsam will stop the cough at once. Go to your druggist to-day and get a sample bottle free. Sold in 25 and 50 cent bottles. Go at once, delays are dangerous.

The population of the Isle of Pines is 3,190, composed of 2,900 Cubans, 195 Spaniards and 14 others. Their citizenship is classified as 2,818 Cubans, 32 Spaniards, 334 in suspense and 15 aliens.

Spring Cleaning Made Easy. Much of the terror of spring cleaning may be avoided by proper preparation. Before weather should be selected for the work, and a supply of all needed articles in readiness. Ivory Soap will be found best for washing windows, paints and floors; it is harmless, and very effective in making the house clean and fresh.—Eliza E. Parker.

A clean sweep of about a quarter of a million has been made by several English insurance companies. A gentleman who possessed the above amount did not agree with the elaborate conditions which were purchased several annuities, but made a had investment, for only a week elapsed between the purchase of the last annuity and the death of the gentleman. Thus the whole of the money goes into the insurance companies' coffers. His relatives get nothing.

When suffering with headache and general lassitude take Garfield Headache Powders, a remedy that is pleasant to take and convenient to carry. Business men will find them excellent to clear the head of dullness.

Seven species of wasps secrete and store up honey just as do the bees.

Avoid Cathartics. Non-Rot-Ico-Tea removes poisonous secretions from the bowels. By mail, 25 cents. Neurotic Medicine Co., Hornellville, N. Y.

A copy of Bradshaw's Railway Guide for 1899, the original edition, brought \$125 at a recent London auction.

The oldest statue in the world is of the Sheik of an Egyptian village. It is believed to be not less than 6,000 years old.

The human voice is produced by the assistance of eight pairs of muscles, and 15 other pairs contribute in various ways.

In boring for oil at Beaumont, Tex., it is reported that a vein of pure sulphur 70 feet thick was discovered.

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Liver Don't Act? You know very well how you feel when your liver don't act. Bile collects in the blood, bowels become constipated and your whole system is poisoned. A lazy liver is an invitation for a thousand pains and aches to come and dwell with you. Your life becomes one long measure of irritability and despondency and bad feeling. CASCARETS act directly, and in a peculiarly happy manner on the liver and bowels, cleansing, purifying, revitalizing every portion of the liver, driving all the bile from the blood, as is soon shown by increased appetite for food, power to digest it, and strength to throw off the waste. Beware of imitations! THIS IS THE TABLET THEY WORK WHILE YOU SLEEP BEST FOR BOWELS AND LIVER. 10c. 25c. 50c. NEVER SOLD IN BULK. DRUGGISTS GUARANTEED TO CURE: Five years ago the first box of CASCARETS was sold. Now it is over a million boxes a year, greater than any similar medicine in the world. This is absolute proof of great merit, and our best testimonial. We have faith, and will sell a \$1.00 box absolutely guaranteed to cure or money refunded. Go buy today, two 25c. boxes, give them a fair, honest trial, as per simple directions, and if you are not satisfied after using one box, return the unused 25c. box and the empty box to us by mail, or the druggist from whom you purchased it, and get your money back for both boxes. Tell our name on the matter what all the empty bottles. Health will quickly follow and you will bless the day you first started the use of CASCARETS. Book free by mail. Advt. FRUITFUL REMEDY CO., New York or Chicago.