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(Illustrated articles are marked with an asterisk.)



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**For the Week Ending March 26, 1892.**

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## CONGRESSIONAL INQUIRIES CONCERNING THE PATENT OFFICE.

We have had occasion to speak of the crowded condition of the Patent Office, and the resulting delays in reaching results in the prosecution of work. The matter has assumed serious proportions, and it is no longer delay in carrying on the regular operations that is to be apprehended, but a suspension of important parts of work seems imminent.

The subject has been brought to the attention of Congress, and two Senate resolutions have been passed, one asking for an account of all money received by the Patent Office and of the disposition made of it; the other inquiring as to the safety and sanitary condition of the building. In compliance with these resolutions reports have been rendered by the Commissioner of Patents which cast a strong light on the neglect with which the interests of inventors have been treated in this country.

One report shows that there is a balance of $4,041,753.10 to the credit of the Patent Office. This balance is now in the Federal treasury. By Act of Congress of July 28, 1868, the money received from the Patent Office was no longer kept separate. but was included with the other amounts from all sources. The office, however, has kept an account of all such money transmitted. Of this money $358,000 has been appropriated for building purposes, although only a portion was expended. In addition a little over $250,000 has been expended upon the office for work of more or less permanent character.

The other report shows that the portion of the building allotted to the Patent Office is quite insufficient for its purposes. The storage of printed copies of patents is inadequately provided for. They have to be stowed away in all sorts of places, any attempt at consecutive order having been abandoned as impossible. The brickwork in places has cracked under the immense weight of the printed copies. It is said that a special training in the geography of the place is requisite to enable a new clerk or messenger to know where to find copies of patents. The sanitary condition is also reported as very bad. Bad plumbing and insufficient cubic contents of the rooms, with inadequate ventilation, not only threaten, but undoubtedly affect seriously, the health of the employes of the office.

The Patent Office should not be conducted as a business speculation. It should be managed in the interest of the inventors of the country. The four millions of dollars credited to it, or a liberal portion thereof, should be expended on perfecting its service. At present, with this amount to its credit in the U. S. Treasury, the Patent Office is hampered for want of funds, its corps of examiners are rendered incapable of doing justice to themselves or to their work, simply on account of their unfavorable surroundings, and what is to be done in the near future to provide storage for printed copies of patents is altogether problematical.

The Hon. Commissioner of Patents is to be congratulated on having brought this subject before Congress, and it is to be hoped that his efforts in the service of the country's inventors will be well seconded by legislative action.

## RECENT LYMPH TESTS AND EXAMINATIONS FOR TUBERCULAR DISEASE IN CATTLE.

An expensive but scientifically valuable series of experiments was made on March 16 at Clairemont Farms, near Philadelphia, when six high-bred Jersey cows were sacrificed by their owner, Mr. Joseph E. Gillingham, in the interest of sanitary science. Out of a large herd of valuable Jerseys, all of known and registered lineage, a herd that is famous among American cattle breeders, over a score had been selected for slaughter on account of the presence in them of tubercular disease. The presence of this dread malady was made known by the use of Koch's lymph used in the way now familiar to all. Out of seventy-nine head of cattle, thirty had responded to the treatment in such a way as to convince Professor Leonard Pearson, of the Veterinary Department of the University of Pennsylvania, that tubercular taint was present.

The killing of these very valuable animals was a voluntary sacrifice on the part of Mr. Gillingham, for while the State and local sanitary officers and inspectors were present by his invitation, no action had been taken that made the slaughter obligatory upon him. It was entirely in the interests of the continued health of the rest of his herd that they were now sacrificed, and in the interest of a better acquaintance with this disease that over a hundred prominent scientific men and others likely to be interested in these researches were specially invited to be present.

In this herd the purity of the stock has been maintained by the use of all the leading Jersey strains. Such blood as comes from Coomasie, Stoke-Pogis, Rioter, Guilderoy and St. Lambert sires is here, yet, notwithstanding the greatest care having been taken, in some way many of the herd have become tuberculous; this it is thought was brought about by the recent introduction into the herd of some imported cows. Be this as it may, when not long since several of them became sick they were killed, and an examination showed them to have been suffering with tubercular disease. Mr. Gillingham at once decided that all the herd should be carefully examined by Professor Pearson, with the results above stated.

Having discovered so large a proportion of diseased cattle, 38 per cent of the entire herd, and reasoning that what could so soon come to pass under the most careful management was likely to spring up elsewhere under like conditions, the occasion was made by him one of public education. Professor Pearson and Drs. Shakespeare, Guiteras and Abbott were selected as a committee to examine the animals slaughtered and report to the assemblage. Among the latter were representatives of the State Board of Agriculture, the State Board of Health, the University of Pennsylvania, Jefferson Medical College, the National Bureau of Animal Industry and many prominent medical men from Philadelphia and elsewhere.

Owing to the time taken in making examinations that were entirely satisfactory to the experts present, only six of the doomed animals were killed; the rest will be killed later in a more private manner, when only those most intimately connected with the cause of sanitary science will be present. The killing of five of these was done by Dr. S. J. Harger, professor of anatomy in the University of Pennsylvania, by a method technically known as "pithing." This is virtually the usual death stroke dealt by Spanish toreadors in the bull fights of that country. It consists of quickly piercing the back of the neck with a stout dagger, which is passed directly through the spinal cord at the base of the brain, and results in death so instantaneously that only the natural reflex actions of the muscles are noticeable. The other cow was killed by Rabbi Isaac Stemple, according to the Hebrew rite, the jugular vein being severed by a mighty blow from a ponderous knife.

Of the six slaughtered animals, the following statistics were gleaned from the experts and the head herdsman:

| Name. | Age. | Strain. | Effect of the injection of the lymph. Temperature before. | Effect of the injection of the lymph. Temperature after. | Location of tubercles. |
|---|---|---|---|---|---|
| Juno | 4 yrs. | Glucaire | 102 | 106½ | Slight in intestines. |
| Lena | 4 " | Clairmont | 102⅔ | 106⅔ | Lymphatic glands. |
| Steena | 2 " | Clairemont | 101⅔ | 106⅔ | " " |
| Sylvia | 4 " | " | .... | .... | Large on the lungs. |
| Phyllis | 3 " | .... | 102½ | 107 | " " " |
| Pity | 3 " | .... | 101⅔ | 106 | " " " |

After the autopsies Dr. Guiteras announced that in five of the cows there were indisputable evidences of tubercular derangement, and that as some doubt appeared to exist as to the other (Juno) a fuller examination would be made by the committee. It was generally conceded, however, in after conversation that well formed tubercles were found on her intestines. None of the doomed cows or calves are valued at less than $150, and among them Rose, valued at $1,000, who gives 43 pounds of milk daily, is yet to die.

In a spacious stall near by was Amber Stoke-Pogis, an inbred bull, out of Waiter Girl by St. Lambert. This noble animal, though only six years old, weighs 1,700 lb.; his sire has twenty-seven daughters on the tested list, and is now practically the greatest of his breed now living. Beyond this stall was that of Signal, sired by Amber Stoke-Pogis out of Rose; though a beautiful little fellow outwardly, showing every sign of health and coming great value, he too is doomed, for the lymph has shown that from his dam he has inherited the tubercular taint.

### Low Temperature Galvanizing.

The London Metallurgical Company are introducing a new process of galvanizing, which seems to have several advantages over the older process. The process appears to be one in which zinc is deposited from its solution in the cold on the wire or sheeting to be coated, and the inventors claim that in this way a more even and uniform thin coating of the protective metal is obtainable, while at the same time, in the case of wire, the tensile strength is not diminished, as occurs when thin iron or steel wires are galvanized by the common methods of steeping in molten zinc. At the ordinary temperature, too, there is no appreciable tendency to form a zinc-iron alloy, which causes a considerable waste of zinc in addition to the reduction of strength already pointed out, and may be regarded as a further defect in the present system. Comparative tests on the hardness of the coating on iron sheeting by means of the sclerometer also show that a plate galvanized by this process has a harder surface than that obtained by the ordinary hot method of galvanizing.

### The Electrical Discoveries of Joseph Henry.

A highly interesting and instructive series of articles upon the electrical discoveries of the late Joseph Henry, of Washington, by his daughter Mary A. Henry, has lately been presented in the *Electrical Engineer*, of this city. Illustrations were given of the original apparatus employed by the distinguished philosopher, many parts of which are still extant, together with copious abstracts from his notes and scientific essays. That Joseph Henry was the maker of the first electro-motor, the maker of the first magneto-electric telegraph, and the discoverer of magneto-electricity is established in these papers by the clearest historical evidence.

The concluding article of the series we have alluded to closes as follows:

A brilliant spark flashes in young Henry's studio in 1829, to betray to him, in the extra current, the secret principle of the dynamo. To-day, this potent instrument enters factory and home in a thousand ways the effectual slave of man, while tired horses rest in their stables as it drives our cars to and fro. High up in our city street, when night comes down, the electric spark, leaping from wire to wire, burns a carbon point and turns our darkness into day. The lightning, forced to be man's messenger in the telegraph, compelled to do his work in the electric motor, has been caught in its free play from cloud to cloud to do this service; even as the steed once coursing in wild freedom over the plain now threads with patient feet the medley of rolling wheels on the pavement below. To tame the intermittent flash into this steady, cheering ray, Henry developed the magnetic force, and Faraday and Henry both set electricity and magnetism to work, the one producing the other; but that they can do so anywhere is due to the discovery of Henry, which made it possible to call them into conjunctive action *through any length of wire.* Each year, each month, each day almost, adds some new blessing to the world, through the great discovery of the *identity of electricity and magnetism.* Let England sing her hymn to Faraday; he well deserves it; but let not America forget the meed of praise due her Henry. His is surely not the second place in the great discovery.

THE SEQUENCE

*of Discoveries Connected with and Accompanying the Discovery of Magneto-Electricity.*

| | | |
|---|---|---|
| 1829 | The making of the powerful intensity magnet, capable of excitation at a distance; the magnet of the telegraph of to-day.<br>The making of the quantity magnet.<br>The discovery of the law embodied in Ohm's theory of the relation between the electric flow and electric resistance.<br>The discovery of the combination rendering possible the telegraph.<br>The making of the first magneto-electric telegraph.<br>*The discovery of and sparks obtained from the extra current*, now considered the same phenomenon as that of magneto-electricity. | BY HENRY. |
| 1830 | The perfection of the quantity magnet, the stepping stone for both Faraday and Henry in the discovery of magneto-electricity.<br>*The discovery of magneto-electricity.* | BY HENRY. |
| Aug. 1831 | The making of the first electric motor.<br>Experiments on a large scale with magneto-electricity; the making of a dynamo. | BY HENRY. |
| Aug. 29-30, 1831 | Experiment with Henry's magnet in the form of a ring, in which the phenomenon of magneto-electricity was obtained, but not fully recognized. | BY FARADAY. |
| Sept. 24, 1831 | Experiment with a bar magnet, viz.:<br>*The discovery of magneto-electricity.* | BY FARADAY. |
| Oct. 17, 1831 | Experiment of inserting cylindrical bar into the end of a helix cylinder, usually given in text books as the one by which the discovery of magneto-electricity was made. | BY FARADAY. |

### A California Lumber Enterprise.

The most important timber land deal carried out in California is the recent securing of 28,000 acres of pine timber land in Siskiyou and Shasta counties by Miles & Brewster, of Green Bay, Wis., and Tatum & Bowen, of San Francisco.

The land lies in sections, scattered over a virgin district which is the largest pine timber belt in the State. It is in southeastern Siskiyou and northeastern Shasta. The region comprises nearly 500,000 acres of timber. It is all east of the California and Oregon Railroad, and also east of the Squaw Mountain range. Most of the land lies on a comparatively level plateau.

Miles & Brewster and Tatum & Bowen have been quietly at work for three years gaining possession of timber land in this region, by buying it from original claimants, who gained possession under the usual government rules. They found nearly all the land not owned by the railroad there to be in the possession of these small claimants, each of whom had secured 160 acres. It was found necessary to use the greatest secrecy in making these purchases, for had the object of them become known, the claimants would have advanced their prices. As it was, the land was bought at an average price of $15 an acre, and it was gradually absorbed, until 6,000 acres had come into possession of the capitalists.

After making these extensive purchases they began negotiations with the Southern Pacific Company, bonding 11,000 acres, which they have now virtually purchased, and have begun negotiations for the purchase of some 12,000 acres more. As all the land has been or is to be bought at an average rate of $15 an acre, the total 23,000 acres purchased from the railroad company will cost the lumber company $345,000, which, added to the $90,000 already expended for the lands of private individuals, will make a total of $435,000.

A standard gauge railroad, forty miles long, will be built at once; will cost some $800,000. The road will start from lower Soda Springs, in Shasta County, on the California and Oregon, and will follow Soda Creek, passing over the Squaw Mountain range, and running by Bigelow's and Bartle's northeasterly up into Siskiyou County. For the first five miles the line will be rather difficult of construction, but after the Squaw Mountains are passed it will be almost level, and very easy to build. The timber belt will be reached within ten miles, but although cutting and sawing will be begun somewhere within that distance, the road will be extended through the timber, in order that sawmills may be located far enough apart to insure a long period of usefulness for them before removal.

The importance of this new lumber industry to San Francisco can hardly be estimated. All of the pine timber lands of the northern part of the State, beyond Mount Shasta, to reach this city by rail, must be hauled up very heavy railroad grades before they can be brought down through the Sacramento Valley. The new enterprise, however, is one which involves a much less mileage for freights, and there is a down grade from the timber belt to San Francisco nearly all the way.—*Pacific Lumberman.*

### Launch of the Great British Warship Ramillies, the Largest and Most Powerful Ship Afloat.

At a time when so much is being written on the subject of the relationship of the government to private manufacturers, and of the necessity of these latter being encouraged to perfect their means of producing munitions of war, the floating, on March 1, from the yard on the Clyde of Messrs. J. & G. Thomson, limited, of H.M.S. Ramillies, the largest battle ship yet launched from a private establishment in the United Kingdom, and, indeed, in the world, and costing 843,000*l.* ($4,215,000), is, says *Engineering*, worthy of more than a passing reference. The contention for a closer bond between the army and navy departments and the private establishments in the kingdom is based on the necessity of the government having at their disposal the most extensive resources possible at a time when war is imminent or even probable, and although that would scarcely be a time to lay down battle ships, it is desirable to have yards equipped for the building of battle ships, on the principle that a works capable of keeping pace with the royal dockyards in the building of large vessels may do similarly well with small craft. Besides, the building of ships of war requires quite an education on the part of the workmen as well as of superintendents. In the building of a cargo steamer or "tramp" "the rule of thumb" is a useful factor; but when a warship is in course of construction drawings must be made almost for every detail. In the case of the Ramillies there have been 5,000 plans in use, and they were constantly in requisition. The men in the Clydebank yard of the Messrs. Thomson, limited, are now quite used to such important work. Indeed, for several years past they have seldom been without a warship or 20 knot steamer, and in the past two years they have had something like a million and a third sterling of work from the Admiralty. Besides, the Messrs. Thomson have designed and built several remarkably successful craft for foreign countries, including Spain, Russia, and Japan.

The Admiralty had, therefore, confidence in placing an order for a battle ship of over 14,000 tons with the firm in November, 1889, and the work has been quickly done.

The keel of the Ramillies was laid in August, 1890, so that she has only taken 19 months to build, and when we remember that great credit was and is still taken for the building of the sister ship Royal Sovereign in the Portsmouth Royal Yard, with all its resources, in 17 months, and that the Devonport yard took 22 months to the Empress of India, and the Pembroke yard 34 months to build the Repulse, launched on February 27, Messrs. Thomson have to be congratulated on their performance. In the initial stages 40 tons of steel were built into the ship each day, and now there are a million and three-quarter rivets holding the structure together. These weigh 300 tons. The plates, previous to their being taken in hand for working, had to stand for a few hours in a liquid consisting of nineteen parts of water and one part of hydrochloric acid. When the plates were removed from the dilute acid both the surfaces were well brushed by brushes worked by machinery, and washed to remove any scale which might still adhere to them. They were then thoroughly washed with fresh water by the aid of a hose, then placed on edge to dry. This process removed all the black oxide or scale which adheres to the plates and has the effect of corroding them when placed in communication with sea water. The ship was ready for the armor plating in August, but the plates were not forthcoming. Owing to the simultaneous building of eight battle ships under the Naval Defense Act, steel manufacturers had their resources severely taxed. Otherwise the Ramillies would have been launched some time ago. The armor extends for two hundred and fifty feet along each broadside of the ship, and at each end the two sides are connected by a transverse armor belt. The belt is 18 inches thick, and required special machinery to work it. The drilling of the holes, 5½ inches in diameter, for the bolts, was done by electric power, with specially devised machinery, the perforation of the hole in the plate and in the teak backing being one operation. So complete were the arrangements that 3½ days served for the preparing and fixing of each armor plate weighing 30 tons. The plates are of compound steel, the outer face being of hard steel, while the inside portion is much softer and more ductile, and prevents the cracking of the hard steel face by the impact of shot. As it is important to avoid making any holes in the hard steel face, the plates are secured by bolts 5½ inches in diameter, having a screw thread in each end. A hole is made in the softer steel in the inside of the armor plate, and when the plate is put on to the ship's side the bolt is passed through from the inside of the ship and is screwed into the hole made in the inner part of the armor plate. A long washer is passed over the inside end of the bolt, and rests upon the inside of the skin of the ship, and inside of all a large nut is "hove up" on the end of the bolt, which completes the security of the plate.

The 1 inch steel skin of the ship above the armor belt is covered with 4 inch steel armor, which protects the quick-firing gun deck. The 67 ton guns are mounted en barbette, two forward and two aft. The armor in each barbette weighs 643 tons without the backing. The barbette was chosen in preference to the turret because it raised the guns higher and admitted of increased freeboard—it is 18 feet against 10 feet 3 inches in the Admirals. This, in the interests of the men, is a much needed improvement. The tops of the barbettes project 2 feet 9 inches above the upper deck. The axes of the 67 ton guns are only 4 feet 6 inches above the deck.

There are seventy-eight separate engines in the ship. The main propelling engines consist of two sets of engines of the triple compound type. They are in separate compartments with the powder magazine between, so that it will be very difficult for a shot to pass through to the explosives, as, in addition to the armor, it will require to penetrate through coal bunkers and the engine compartment with its many obstructions. It is not necessary now to enter into details as to the engines, as we hope at a later date to illustrate them. Steel and naval brass have been largely used to reduce the weight, and it is expected that the maximum power of 13,000 indicated horse power will be got with a creditably small ratio of weight. Almost everything in the ship is done by machinery, and the engines incidental to the propelling machinery are all independent. Everything, too, is in duplicate, so that should an engine get out of order another engine is available. The steam is supplied by eight single-ended return tube boilers, each with four furnaces 3 feet 6 inches in diameter. For the purpose of shutting off each combustion chamber from the others, and also for regulating the draught, separate dampers are fitted in the passage from each furnace through the smokebox, and gearing is arranged to work these dampers from the stokehold floor. Each pair of boilers is in a separate water-tight compartment, with independent coal supply. For some time both sets of main engines have been completely fitted up to the smallest detail in Messrs. Thomson's works, with the condensers and all connections and shafts in position complete. In the boiler shop, too, the eight boilers are also all arranged in position with smoke boxes, uptakes, and all boiler mountings, furnace fittings, and firebars, and the two funnels each 8 feet 6 inches external diameter and 90 feet high from the furnace level, lying ready for putting on board, so that when the ship gets under the 120 ton sheerlegs at the company's docks, these will quickly be put on board, and the vessel will doubtless soon attain her guaranteed speed of 17½ knots.

### Medal Offered for a Printing Device or Process.

At the recent annual meeting of the American Newspaper Publishers' Association, it was "*Resolved*, That the Executive Committee be authorized to have prepared a suitable gold medal, containing not less than fifty dollars' worth of pure metal, to be presented to the inventor or discoverer of any specific device or process, the practical use of which will materially cheapen the production or quicken the printing of newspapers, provided such device or process is in their opinion of sufficient importance and value to be entitled to such recognition."

### Sleigh Bells.

In making the bell the jinglet of iron is placed inside a little ball of mud, just the shape of the inside of the bell. Then a mould is made of the outside of the bell. This mud ball is placed in the mould and the metal poured in. The hot metal dries the dirt so it can be shaken out after casting, leaving the jinglet within.

### The Clashing of Atoms.

Professor John Tyndall, one of the highest authorities on matters of natural philosophy, says of this: "It is to the clashing together of the oxygen of the air and the constituents of our gas and candles that the light and heat of our flames are due. When steel filings are scattered in this Bunsen's flame, you see the star-like scintillations produced by the combustion of the steel. Here the steel is first heated till the attraction between it and the oxygen of the air becomes sufficiently strong to cause them to combine, and these rocket-like flashes are the result of their collision. It is the impact of atoms of oxygen against atoms of sulphur which produces the heat and flame observed when sulphur is burned in oxygen or in the air; to the collision of the same atoms against phosphorus are due the intense heat and dazzling light which result from the combustion of phosphorus in oxygen gas. It is the collision of chlorine and antimony which produces the light and heat observed when these bodies are mixed together; and it is the clashing of sulphur and copper which produces incandescence when these substances are heated together in a Florence flask. In short, all cases of combustion are to be ascribed to the collision of atoms which have been urged together by their mutual attractions."

### AN IMPROVED ICE PLOW.

The ice plow shown in the illustration is very simple and durable in construction, and designed to be very effective in operation. It has been patented by Mr. Hamilton Pray, of Clove, N. Y. Its frame consists of two parallel longitudinal beams, connected by suitable transverse beams, two U shaped runners of different length being held adjustably on the front and rear ends of each longitudinal beam, while cutting blades of different length are held adjustably on the beams between the runners, extending below the lower ends of the front runners. In beginning to cut an ice field, a first cut is made to serve as a guide for the runners and cutters of the second longitudinal beam, and thereafter the plow is made to travel in grooves already formed, the advance to a new cut being made with the runners and cutters of one beam in a groove already formed, so that the animal is prevented from dragging the plow out of its grooves by a sidewise pull. All the runners and blades are adjustable, so that the plow may be arranged to cut at regular depths at all times, and can be drawn over the ice field with a steady, uniform pull. This plow has been in practical use for two seasons and is said to have given great satisfaction as a thoroughly efficient ice cutter.

PRAY'S ICE PLOW.

### No Scale Wanted in California.

On March 1, in Los Angeles, Judge McKinley decided that 325,000 orange trees, which were imported from Tahiti infected with eight different kinds of pests, were to be destroyed. Insecticides were used which destroyed seven of the pests, but the eighth was not killed; hence the decision.

This scale is called the *Chinaspis biclavis*, a pest hitherto unknown in California, a scale that all efforts to eradicate were unavailing.

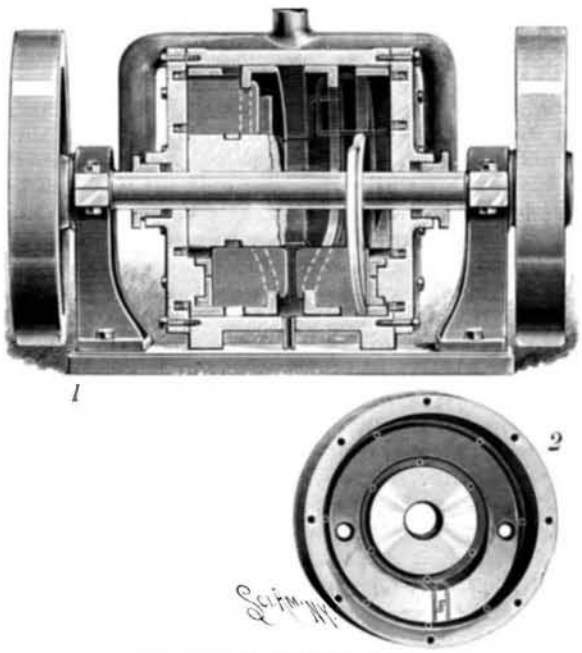
The decision was of very great interest to all fruit growers in the State, as it is the first of its kind ever rendered. It is of interest to Eastern nurserymen also, as they are at the present time trying to get admitted into the State several car loads of infected fruit trees.

R. E. S.

THE U. S. Treasury Department has decided that machinery imported to the Exposition from foreign countries, either wholly as an exhibit or to be shown in connection with the illustration of some manufacturing process, shall be admitted free of duty. Any raw material imported for use in such process must pay regular duty, however.

### AN IMPROVED ROTARY ENGINE.

The engine shown in the accompanying illustration is designed to be very effective in operation, utilizing the steam to the greatest advantage, while it is adapted to be run at a high rate of speed. It is constructed of but few parts, so that it is not liable to get out of order, and friction is reduced to a minimum. The invention has been patented by Mr. William S. Lycan, of Marshall, Ill. Fig. 1 represents a longitudinal section of the engine, and Fig. 2 is an inner face view of one of the cylinder heads. The heads are each provided with a double wedge-shaped abutment extending inwardly into the cylinder, while a piston mounted to turn in the cylinder has flanged wheels forming a steam space at the heads, the piston also having slotted projections, gates sliding longitudinally in the webs of the flanged wheels and slotted projections. The steam inlet pipes lead into the steam space near the ends of the abutments, and exhaust pipes lead from this space oppositely, close to the other ends of the abutments. The driving shaft passes centrally through the cylinder heads and cylinder, the hub of the piston being secured on the shaft, while fixed annular cams have their peripheries fitting the inner face of the cylinder between the wheels of the piston, the inner edges of the cams engaging notches in the gates or valves. In a practical trial this engine is said to have developed great power and shown a very high rate of speed.



LYCAN'S ROTARY ENGINE.

### Strychnia in Snake Bite.

Dr. Wolfgang Hunt, of the Toowoomba Hospital, Queensland, gives an interesting account in the *Australasia Medical Gazette* of a case which had come under his care. The patient was a child aged sixteen months. An elder sister, while playing with her a little way from home, heard her scream, and saw a snake clinging to her hand. Running to the house she quickly fetched her mother and an uncle, who found the child crying and holding the third finger of the left hand, on which was a small punctured wound. The snake was killed as it was making off, and found to be a "death adder." The child was taken to the house, and the end of the finger removed, the stump being sucked and drenched with ammonia and ligatures applied to the arm. She was then brought to Toowoomba for the nearest medical aid, ammonia being applied to the hand meantime. An attempt was made to give stimulants by the mouth, but vomiting immediately followed their administration. On admission to the hospital, three hours after the accident, the child was almost comatose, the body and the extremities cold, pupils dilated and insensitive to light, the pulse rapid and irregular. The child was at once wrapped in hot flannels and heat applied to the limbs, while four minims of liquor strychniæ were administered hypodermically, and a strong faradaic current applied to the nape of the neck and along the spine. Fifteen minutes later another four minims of liquor strychniæ were injected, and almost at once a change began to manifest itself in all the symptoms, and in a short time the child recognized and played with its parents. With the exception of a few slight muscular twitchings, recovery was uninterrupted, and the child was discharged the next day in apparently perfect health and none the worse, except for the loss of her finger. The case is very important, especially with reference to the means used for procuring recovery, viz., the hypodermic injection of strychnia, and Dr. Hunt is to be congratulated on his success in this case, as well as in that of another patient whom he mentions as having been admitted in a similar condition after being bitten by a brown snake, and in whom also recovery followed the hypodermic injection of strychnia.—*The Lancet.*

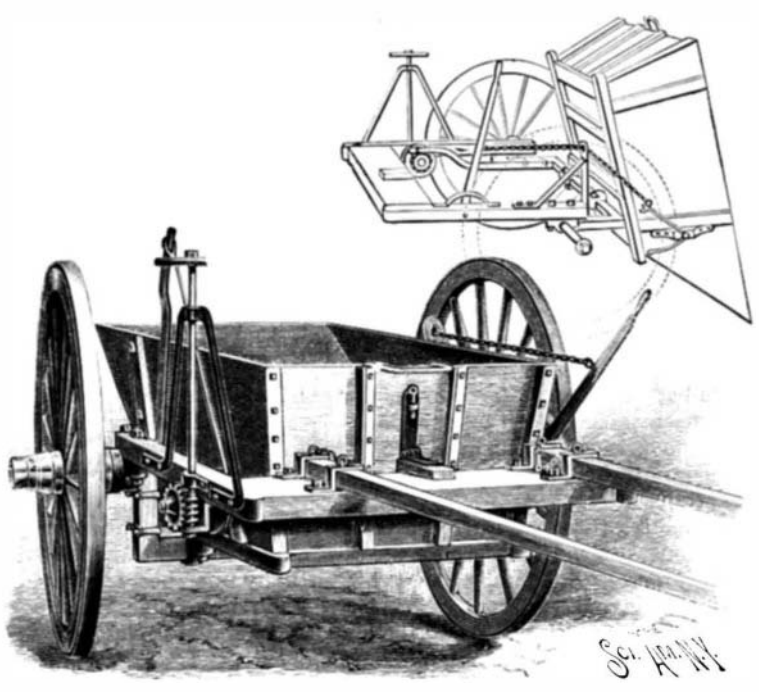
### A Fortunate Use of the Microphone.

Prof. D. E. Hughes, F.R.S., writes to the *Electrical Engineer*, London: "Having been engaged for many years experimenting with my microphone for the detection of sounds too feeble for the unaided human ear, I am pleased to notice by the following paragraph in the *Daily Telegraph* of February 25 that it has been successfully applied in St. Petersburg to the saving of human life."

The paragraph says: "Some particulars of a remarkable case of revival from apparent death have come to hand from St. Petersburg. A lady who had been suffering from a violent nervous attack sank into a state of syncope, and after a time ceased, as it seemed, to breathe. The doctor who was attending her certified that death had resulted from paralysis of the heart. For some reason, which is not explained, another medical man, Dr. Loukhmanow, saw the body, and having been informed that the lady had suffered from attacks of hysteria and catalepsy, thought it worth while to make a thorough examination. After trying various other means he applied the microphone to the region of the heart, and was enabled by this instrument to hear a faint beating, which proved that life was not extinct. Everything was done to resuscitate the patient, who, shortly afteward, recovered consciousness."

### AN IMPROVED DUMP CART.

The illustration represents a cart which is low and easily filled, and at the same time may be easily dumped. The first point is attained by using a crank axle, which brings the bottom of the body to within 6 or 8 inches from the ground. The body is pivoted upon the axle, and when the latter is in the usual position a comparatively slight tipping brings the rear of the cart in contact with the ground. At this point, when a portion of the load has been discharged, the crank of the axle is made to revolve backward and upward, thus lifting and tipping the body more and more until all of the load is dumped. In this movement the axle turns in the hubs, the arms acting as pivots. This is effected by means of a windlass operated by a worm gear and connected by means of a wire rope to a lever projecting upward from the axle. Sometimes, as in dumping over the string piece of a wharf, it may be desirable to raise the body somewhat before dumping. In this case it is kept steady during the lifting by means of a bar having a parallel action with the crank. The body is pulled back into position after dumping by means of a lever and chain. All the operation of dumping and of returning the body into position is effected by the driver without getting down from his place in front. The great advantage of this cart is the extreme facility with which it is loaded. A saving of a foot and a half in the distance through which every shovelful is lifted means a great deal in the course of a day. It is also especially adapted for removing ashes and garbage. Further particulars relative to this improvement may be obtained by addressing the patentee, Mr. A. H. Smith, Station F, New York City.



SMITH'S DUMP CART.