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PHONOSCOPE
A Monthly Journal Devoted to
SCIENTIFIC AND AMUSEMENT INVENTIONS
APPERTAINING TO
SOVND & SIGHT.



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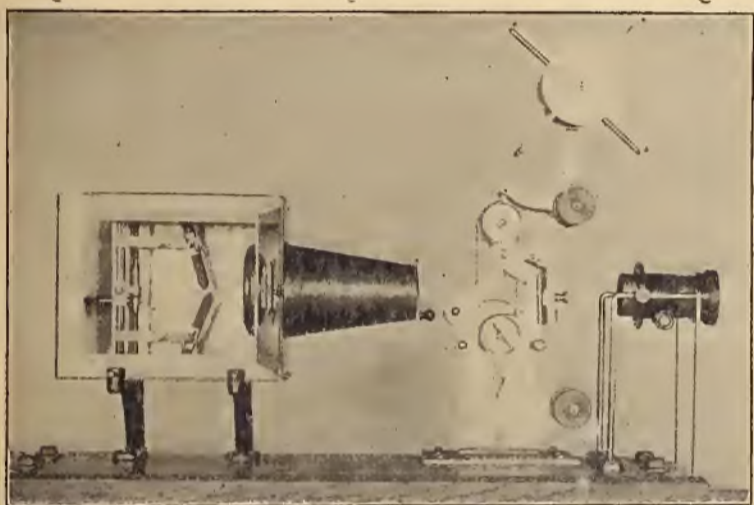
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The Phonoscope

(Copyrighted, 1896)

A Monthly Journal Devoted to Scientific and Amusement Inventions Appertaining to Sound and Sight

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No. 3

Successful Inventions

Some of the Fortuitous Suggestions That Have Made Clever Yankees Rich

One of the most successful inventors of small things was Crandall. He patented several puzzles that made money, but "Pigs in Clover" was his great hit in this line. At one time he was engaged in the business of making croquet sets, the lawn game being then at the height of its popularity. He devised a method of constructing the boxes so that the parts were held together by groove and tongue fastenings instead of nails. One night he took home some of the waste pieces to his little girl, who was sick. She found such delight in playing with them and putting them together that her father conceived the idea of making similar blocks for the amusement of children. Such was the evolution of the well-known Crandall building-blocks.

Another very profitable toy was the invention of a bedridden boy. This was the "Dancing Jim Crow," which for a long time was the rage. It is said to have yielded seventy-five thousand dollars in the first year it came out. By a simple bit of mechanism a darkey was made to dance on a box. The celebrated "Fifteen Puzzle" was never patented; several inventors claimed to have originated it, and fortunes were gained by the sale of it. Most famous of all patented toys was the "return ball." It was sold for a cent, with rubber string and brass finger-ring; yet the profit ran up to an enormous sum. The chameleon top and walking alligator brought fortunes to the patentees. The roller skate was another very profitable invention, though it did not begin to make money until the patent had nearly run out, when the craze came.

Hundreds of thousands of dollars have been made by Dennison out of his shipping tags. The idea consists simply in a little ring of cardboard that reinforces the tying holes and prevents the string from tearing out. A lot of money has been earned by the little brass clip-fastening, patented a few years ago, by which sheets of paper are held together. Yet it is an exact copy of a contrivance in bronze that was used by the Romans more than twenty centuries ago. In fact, there are not a few modern inventions which are in reality merely reproductions of antique contrivances. One of these is the safety-pin, which was commonly employed by the women of ancient Rome to fasten their dresses. Among the most profitable patents have been various little devices having relation to women's costume, such as the perspiration-proof shield of rubber, the idea of substituting the quills of chickens and turkey feathers for whalebone in corsets, and the suspender garter. The last was sold outright for fifty thousand dollars.

The ball-and-socket glove-fastener is a Frenchman's idea, and it has made him rich. Another successful invention is the double-ball clasp for pocketbooks and handbags. It is said that no sort of clasp can be popular unless it makes a noise when it catches. Only a few years ago a lucky man thought of putting a couple of little strips of cork on the nose-piece of eyeglasses to make them more comfortable. Nearly all eyeglasses nowadays have

this improvement, and every pair pays a royalty to the inventor. The latest of the very profitable small inventions is the tin cap for beer bottles, which is taking the place of corks. It is cheaper than cork, more convenient, and keeps the beer better. Metal lemon-squeezers are undesirable because the juice of the fruit acts upon the metal and makes poison. Not long ago somebody thought of making lemon-squeezers of glass, and the idea was worth just fifty thousand dollars to him.

Tin cans are now made so that they can be opened by simply striking the top with a smart blow. As soon as he learned of the invention, Armour, the Chicago packer, ordered five hundred thousand of the cans, and the inventor is already independently wealthy. The automatic inkstand, which keeps an equal supply of ink always ready for the pen, is said to have earned two hundred thousand dollars. The "shading pen" has earned a sum even larger. Shoe-buttons are no longer sewn on, but are applied with a metal fastener. This idea has been worth a big fortune. A new contrivance that promises to be very profitable, is a whistle for bicyclers, made on the principle of the siren fog-whistle. There was five hundred thousand in the shoe-peg, but the inventor went insane just as wealth was pouring in upon him. Another gold producing patent was the inverted glass bell

placed over gas-jets to protect ceilings. Great sums have been earned by the rubber pencil-tip, barbed-wire for fences, and a contrivance for shaving ice: A "hump" on a hook to keep it from slipping out of the eye has made the proprietors of the contrivance millionaires.

One of the most valuable patents was the result of a dream. An engineer named Springer had been trying to devise an automatic lock which would brake a carriage going down hill, so that the driver would not have to get out, but might lock the brake by pulling his horse in. He dreamed that he was driving down a steep hill and had just such a lock on his wagon. He noticed exactly how it was constructed, and on waking he got up and sketched the details of the mechanism. Then he went to bed again. Three days later he applied for a patent, which was granted. It yielded seventy-five thousand the first year. Of the heaps of patents issued every week by the United States Patent Office, only a small percentage of them have any practical usefulness. But it is not always possible to judge before a thing has been tried. A few years ago a man thought of enclosing trees in canvas, and filling the canvas with deadly gases for the purpose of destroying insects. He was considered a lunatic, but this method is now practised on a great scale and with much success in California.

Photographing the Invisible

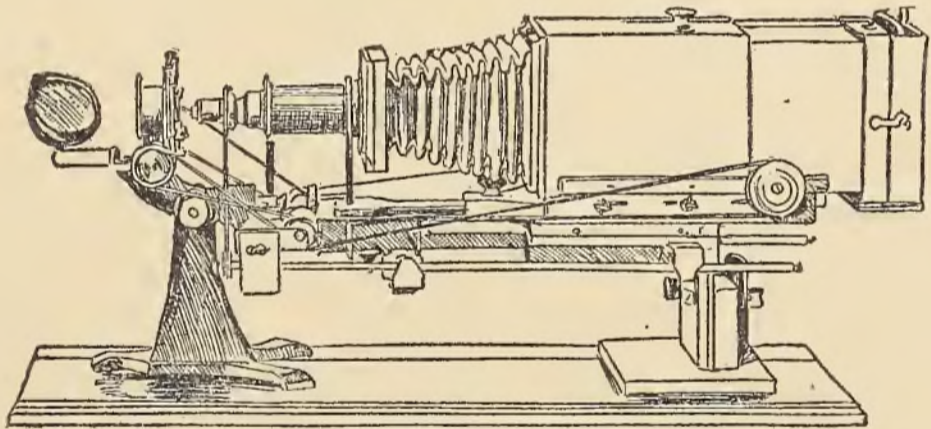


PHOTO-MICROGRAPHIC APPARATUS

Apparatus for Reproducing Objects Unseen to the Eye

As photography is employed to assist the astronomer in detecting the existence of the stars in the heavens which could not be seen by the naked eye with the aid of the telescope, so it is also used to secure accurate enlarged reproductions of minute objects which are revealed to man only by the aid of the microscope.

This development of the art of photography is of great assistance, not only to the microscopist, but also to the pathologist and histologists. A photomicrographic apparatus, as it is called, has recently been invented by O. G. Mason, secretary of the American Microscopical Society, which can be used for making negatives, showing objects with a magnification of 15,000 times.

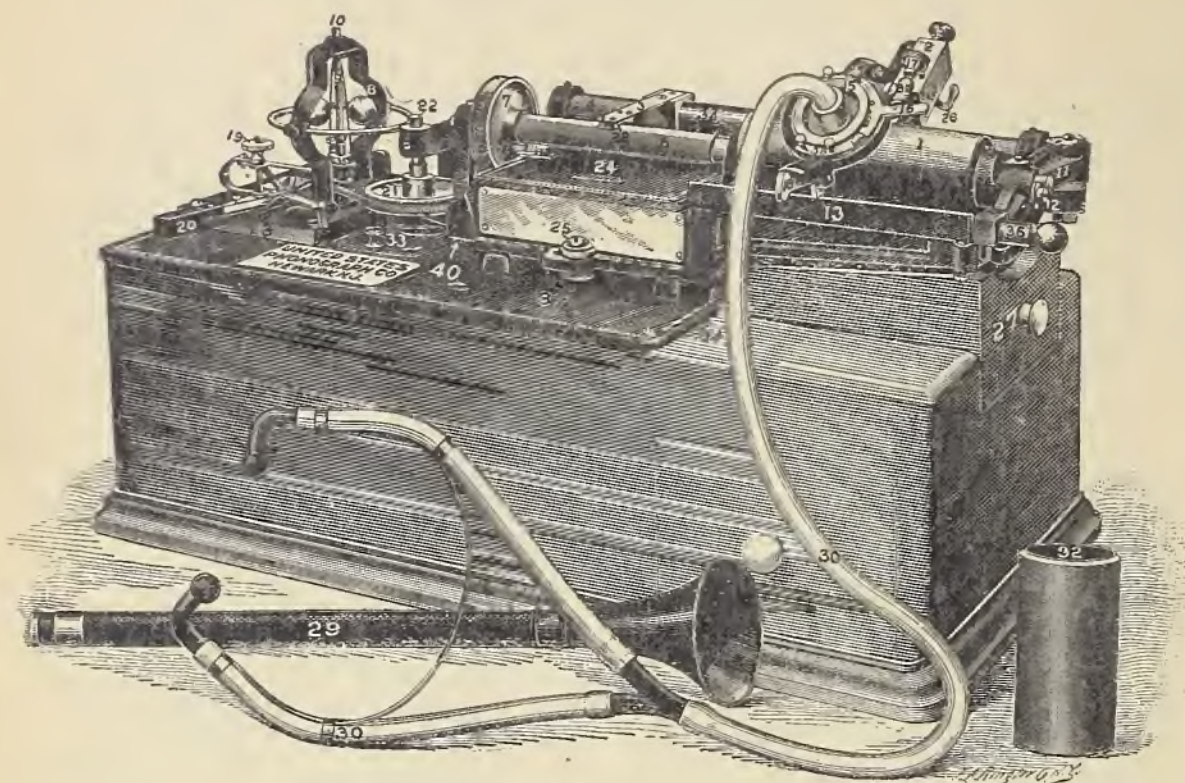
The apparatus is very compact, being only about two feet in length, but it will receive an objective of any power and photograph the most

minute objects. The images are produced on a plate three and one-quarter by four and one-quarter inches. It is mounted on a single base board, so that the apparatus may be shifted at the will of the operator.

To the standard of a microscope the camera box is attached in such a way that the box can be placed horizontally or inclined at any desired angle, like a telescope or microscope itself. Thus adjustments can be made providing for any required distance between the objective and the sensitive plate, so that the desired amplification may be readily secured.

The mechanical stage is operated by the small chains which extend along the sides of the frame of the apparatus, and the rotation of the objective polariscope, etc., and the focusing are effected by rods extending toward the rear of the camera box. By its means the operator, seated at the camera, can manipulate the instrument for focusing or searching the field for any particular object.

The Phonograph



The Edison Phonograph

INDEX OF PARTS

[NOTE.—We have had a number of inquiries in reference to the proper technical terms used in speaking of the parts of the phonograph and graphophone. To answer our patrons in the simplest manner we illustrate above the Edison phonograph with parts numbered and described. Graphophone illustrations will be given next month.—ED.]

- 1 Brass Mandrel, to hold wax cylinder. (Always assembled with Main Shaft.)
- 2 Turning Rest, to pare off cylinders.
- 3 Twin-nut Spring, or Feed Arm.
- 4 Back Rod.
- 5 Sapphire Knife Spring Knob.
- 6 Main Shaft. (Always assembled with Brass Mandrel.)
- 7 Main Shaft Pulley.
- 8 Governor Frame.
- 9 Governor Shaft.
- 10 Governor Shaft Center.
- 11 Swing Arm.
- 12 Swing Arm Center.
- 13 Straight Edge.
- 14 Speaker Arm.
- 15 Speaker.

- 16 Cup Lever, or T Lever.
- 17 Speaker Adjusting Screw.
- 18 Speaker Arm Lift Lever.
- 19 Governor Adjustment Screw.
- 20 Governor Brake, or Switch.
- 21 Armature Pulley.
- 22 Armature Shaft Center.
- 23 Governor Block.
- 24 Phonograph Body.
- 25 Body-holding Screws.
- 26 Shaving Knife Lever.
- 27 Chip Box.
- 28 Twin Nuts.
- 29 Speaking Tube.
- 30 Hearing Tube.
- 31 Speaker Adjusting Screw Sleeve.
- 32 Wax Cylinder, or Blank.
- 33 Top-plate Cover.
- 34 Back-rod Sleeve.
- 35 Governor Contact.
- 36 Lock Bolt.
- 37 Top Plate.
- 38 Speaker Clamp.
- 39 Belt-tightening Screw.
- 40 Idler Pulley.
- 41 Governor Top Brush.

Yvette Guilbert's Phonograph

When Yvette Guilbert sailed for home on February 6 she knew more about the United States than most foreign artists find out in ten times as many trips as she has made. Yvette has a devouring desire to see and know things. In Chicago recently, although she was there only a few days, she visited the stock yards and packing houses, and what she didn't see at those interesting institutions were the things that were not going on that day; that's all. In order to see more of the United States Mlle. Guilbert submitted to be hustled over several thousand miles of territory, making one-night stands at half a dozen principal cities. When she goes back to Paris she will have made a sweeping circle through this country touching New York, Montreal, St. Louis and New Orleans as the extreme points.

There is one person who will regret this ambition of Yvette's to observe a large amount of

territory. That person is her mother. Mlle. Guilbert's devotion to her mother is one of the most striking traits of a character which is full of extremes. She has for her mother a devoted love which is almost adoration, and might somewhat surprise Mr. Moody, who criticised the song "La Glu." A year ago, when she first came to America, Guilbert bought a phonograph, which she took home to her mother in Paris. The first thing she did on her arrival this time was to secure the use of one during her stay in New York. Every morning, after her *petit déjeuner* in bed, she would seat herself at the phonograph and pour into it a graphic account of her surroundings, her feelings, everything that interested her and would therefore interest her mother on the other side of the ocean. Every Wednesday and Saturday the steamer carried the cylinders across the water and next week Yvette's own wonderful voice repeated to the mother all these confidences. Calve was

said to have sent similar records of her daily life and emotions to Paris a year ago, but it is Guilbert that makes a French mother's heart glad because *les Americains — ils sont si pratiques.*

The Graphophone

The Plant of the American Graphophone Company to be Doubled

Since the removal of the Graphophone company from their old factory on the How property in East Bridgeport to their present location in the southern wing of the organ factory, the demands for these machines have been rapidly increasing, and, as a result, the capacity of the factory will soon be greatly enlarged. For some time past the managers of the company have been looking for a suitable place to operate with their present factory. The most suitable place for the concern is the silk mill next to the Graphophone company, occupying the front half of the same building.

Negotiations are now being made for the whole of this building, to be turned over to the use of the Graphophone company, and before very long the company will probably occupy the whole large building with a plant just double the present size. This means much for Bridgeport. The Graphophone is known all over the country, and while the main offices of the concern are in New York, it is well known that the factories are in Bridgeport.

This great enlargement of one of the local industries speaks of a great returning confidence in business, and the boom in the Graphophone line at any rate has already begun. For the past two weeks it has been found necessary by the company to run until 9 o'clock at night, in the vain endeavor to keep up with the orders which have been pouring in on them for some time past.

In conversation with a PHONOSCOPE reporter, Manager T. H. Macdonald of the company said: "For some time past we have been making arrangements to greatly enlarge our plant. We have anticipated a boom, but the orders have been coming in so rapidly lately that we are now away behind, and in order to keep from being hopelessly buried in orders it has become necessary to run nights until 9 o'clock. Of course we cannot keep this up, as the men cannot stand the strain. It will be necessary for us to have a good deal more room.

"We are now negotiating for the whole of this factory, including the silk mill. This will give us double our present space, and we will put in about 300 men at first and will be prepared to put out just double the number of machines which we do now. At the present time we have orders in for some \$30,000 worth of new machinery, which we will place in our present factory, to help us along in filling our orders. The present output of the factory is 75 machines a day, but we find it necessary to be ready to put out at least 150 in the same time.

The concern is in excellent condition. We have now about 200 men on the payroll, with over \$2,500 a week paid to our help. All of the improvements which have been made on the machines in the past five years have been made in this city." When asked to explain the difference between the phonograph of Edison and the graphophone, Mr. Macdonald said: "The phonograph was invented by Edison in '77, and made a record by indenting tinfoil. The graphophone was invented in '81-2 by Alexander Graham Bell, C. A. Bell and Charles S. Tainter. This record was made by cutting or engraving in wax or wax-like substances. The graphophone method is the successful one. There has been quite a little dispute as to which concern was entitled to the use of wax cylinders, but the suit which has just been settled in the New Jersey circuit court shows the Graphophone company to have been the originators of the idea. We will enlarge the plant just as soon as possible.

Our Tattler

I heard a funny story a few days ago which will interest old phonograph exhibitors. Last year, during the Danbury Fair (in Conn.) eight exhibitors gathered on the grounds. All were surprised and worried, as they had each expected a "good thing" and a monopoly.

In the evening after the Fair had closed for the day, they all happened to congregate at the same hotel. Strange to say, they all left their phonographs and batteries in the coat room for the night.

About one or two o'clock in the morning one of the exhibitors, who hailed from Boston, came down stairs and carried his machine and battery up to his room, remarking that he did not feel quite at home without his "old side partner." It may have been but a coincidence, but next day the seven professors who had left their outfits in the coat room over night, found their batteries all dead when they tried to start their machines at the Fair grounds. The man from Boston was the "only pebble on the beach," and wore a bright smile all day as the nimble coins trickled into his coffers.

The New York Advertiser says: Uptown residents, both on the east and west sides, are talking of amalgamating and starting a lantern factory somewhere near the Harlem River. The lantern will be of the ruiners' lamp pattern, but of much greater power, and will be backed by strong reflectors. They will be made so that they may be carried in the pocket and easily attachable to the fronts of their owners' hats, so that their possessor may be able to read their newspapers on their way home in the foggy "L" cars. It has been also suggested that phonographs which can speak real United States be placed in each car to announce where the trains are going to stop next, as the present mediums are frequently somewhat husky and untranslatable.

Two scrub women were sent to clean up the rooms in which, on the previous night, a phonograph entertainment had been given. Their sleeves were rolled back from their water-wrinkled hands; they wore blue-checked aprons and carried brooms. They did not set to work at once, as their curiosity prompted them to part with the last nickel they had to the ever greedy slot of the automatic phonograph, and they were soon leaning over the machine with rapt expressions on their face—solemn and horrified. "I heard every word," said the younger woman as she left the machine, "and be the powers that man were a regular divil to be sure, he ought ter be arrested." They had been listening to the confession of H. H. Holmes, the most appalling record of murder to which human tongue ever gave utterance.

The talking machine is now used in Chicago as an aid in the teaching of foreign languages. An instructor in Spanish has a large number of records, which are intended to assist to a correct pronunciation. The student sits down with the talking machine and listens to its repeated pronunciation of a certain word and then he tries it for himself. There are also special lessons in reading and spelling.

The instructor recently solicited a young business man to take a course of lessons in Spanish on the talking machine.

"Why, I didn't know you could get those machines to talk foreign languages," said he.

Senator Cullom stirred up a laugh in the Senate at Washington last month by reading a letter from the American Talking Machine Company, of

Chicago, which declared that the bill fixing a rate of one cent on letters had passed the House and requesting the Illinois Senators to vote for it when it came up in the Senate. As no such bill has ever passed the House and has never even been seriously considered, some of the Senators on the floor felt justified in saying that the American Talking Machine Company, through mere force of habit, was apparently conversing through its headgear.

Two young men, well known in the phonograph business, "went out and done it." Mr. Leon Douglas, of the Chicago Talking Machine Company, and C. H. Webster, of the National Film Company, were both married last month. Mr. Douglas went to San Francisco for his better half, and Mr. Webster across the bridge to Brooklyn. As "Casey" says: "May the Lord bless yees all entirely." As Mr. Douglas has handled many records in years past, I hope he will make a good record in his new venture. I know Mr. Webster is very sociable. He has my best wishes.

A retired (not tired) graphophone exhibitor once told me that the best money-making record he had was a cylinder which was cracked "way across." He said it was an orchestra waltz selection and was cracked (I mean the record) in such a manner that the stylus passed over the crack in time with the music. He assured me that his patrons believed him when he explained to them the wonder of the machine—that would record the second violin played in the orchestra tapping his foot on the floor.

An Eastern company received a communication from a Maine man last month, who claimed he had discovered a paint which, when gently applied to a talking machine cylinder, "would remove that scratching sound." I'll wager a ham sandwich that there's a scratchy sound in our friend's head. I have believed some of these rural inventors who could "mend" cracked cylinders, etc., but I can't stand for the paint.

Those nickel-in-the-slot machines are a great institution, said a tobacconist to me the other day. Lots of men come in and play my machine, when they don't smoke, just for the excitement of risking money. And then, if they win, they give away the cigars to all their friends. There is a fascination about playing it that helps out my sales considerably.

A Sagacious Animal

Automatic machines are like cupboards to which the public hold the key in the shape of a coin of a given size. They can be made to supply almost all the commodities of life, and they are generally so simple that a child can use them.

But that there has been in actual use for a number of years an automatic store worked by a brute beast may not be so generally known outside of England.

In the Zoological Gardens of Manchester there is a pet elephant who is always on the lookout for pennies. As soon as he receives a penny from a visitor or keeper he struts up to a box which has been fixed in a corner of his pen, drops the penny into a slot contrived on the top of the box, and, with his trunk, pulls out a drawer from which he takes a bun or roll of bread in exchange for his penny. He then pushes the drawer back, enjoys his roll or bun and is again ready for another penny.

The animal knows perfectly well the difference between a penny and a half penny. As soon as it has got two half pennies it tries to have them

exchanged for a penny, which it knows is the only key to his bun-box.

He never neglects to push back the drawer after having helped himself. He seems to understand clearly all the mechanism of his automatic store and the conditions under which it will supply him with buns or rolls.

More honest than most human beings, the animal has never yet attempted to tamper with the machine by force or fraud, although he might do so at any time with absolute impunity. On the contrary, he seems to watch over this box with the care of an affectionate nurse. Should, by chance, the supply of the box have run out and thereby the elephant have lost his penny, he will trumpet loud and long until the caterer has refilled it and returned to him the penny he had dropped into the box without results.

Thus a simple mechanism has sufficed to enable a dumb animal to go through all the transactions of buying and selling in a perfectly correct and business-like manner.

To watch this ponderous mass of animated flesh act in such an intelligent and prudent way opens up a great field for thought and reflection. There may be, after all, only very little difference between the dumb beast and the prating, boastful one called Man.

Where They Were Exhibited Last Month

The Vitascope

Melodeon Hall, Lexington, Ky.; Auditorium, Toledo, O.; Grand and Bittner Theatre, Sioux City, Ia.; Heck and Avery's Museum, Cincinnati, O.; Elston's Hall, Norristown, Pa.; Grand Opera House, Stamford, Conn.; Turner Opera House, Green Bay, Wis.; Grand, Columbus, O.; Association Hall, Dayton, O.

The Projectoscope

Y. M. C. A. Hall, Williamsport, Pa.; Bijou Theatre, Harrisburg, Pa.; Academy of Music, Macon, Ga.; City Opera House, Frederick, Md.; Grand Opera House, Harrisburg, Pa.; York Opera House, York City, Pa.

The Cinematographe

Avenue Theatre, Pittsburg, Pa.; Park City Theatre, Bridgeport, Conn.; Schiller Theatre, Chicago, Ill.; Gillis Opera House, Kansas City, Mo.; Unity Hall, Hartford, Conn.; Metropolitan, St. Paul, Minn.; Willard Hall, Washington, D. C.; Kieth's, Boston, Mass.; Eden Musee, New York City; Grand Opera House, New Haven, Conn.

The Cinographoscope

Parke Theatre, Dayton, O.; Masonic Temple, Saginaw, Mich.; Theatre, Savannah, Ga.

The Photoscope

Ross Street Presbyterian Church, Brooklyn, N. Y.; Grand, Portsmouth, O.; Opera House, Youngstown, O.

The Centographe

Opera House, Danbury, Conn.

The Animotoscope

Nelson Memorial Hall, Wilkesbarre, Pa.; Grand Opera House, Lock Haven, Pa.

The Biograph

Bijou Theatre, Philadelphia, Pa.; Wonderland, New Haven, Conn.; Kieth's, Boston, Mass.; Kieth's, New York City.

The Animatograph

Russel's Opera House, Centerville, Ia.

'Graphs, 'Phones and 'Scopes

The Sphygmograph

One of the most intricate and wonderful instruments used in the science of medicine is what is called the sphygmograph. As every one knows, when you call a doctor in, the first thing he does is to feel your pulse. Before he can prescribe he must know exactly what your heart is doing, and the action of the heart manifests itself through the beating of the pulse. A strong heart produces a strong, firm wave or swell in the pulse, and vice versa.

What the sphygmograph does is to trace clearly on a sheet of paper, by means of a very fine point, in irregular, up-and-down, zig-zag strokes, every one of these waves, so that the doctor can have a chart marking the various beatings of the patient's heart. The instrument is attached to the wrist by means of a broad silk band (not unlike the band used by persons with weak wrists), and fastened to the band is a small button which presses on the pulse artery.

The pulsations acting on this button, move a pointed marker up and down and across the surface of a slip of paper, which is kept moving by means of a delicate piece of mechanism within the instrument. In this manner irregular tracings are produced and an accurate short-hand record kept of the movements of the heart.

The Eophone

There has just been tested on the battleship *Indiana* and on two ships of the Old Dominion line, a wonderful invention, which will be a great factor in preventing collisions and rendering navigation safe in foggy weather.

It is called the eophone, and is the invention of a Virginian of French extraction; an obscure student by the name of La Torrey.

The eophone is a big square box, fitted inside with the most delicate mechanism, for detecting at a great distance a sound which would be entirely inaudible to the unaided ear.

Not only this, but the instrument shows with absolute precision the direction of the sound. It merely has to be turned about, and when the transmitter is directly opposite the sound it can readily be told.

The eophone is carried on mastless ships, on top of the pilot house, but where there is a forward mast, it has to be swung forward on a long brass rod, which may easily be turned about in a semi-circle to determine the direction of the sound. Such an obstruction as a mast in front of it would destroy the effect of a faint sound upon the delicate machinery of the instrument.

The test has been in almost every respect an entire success. The instrument does all that is claimed for it, and the captains who have used it say they would feel safe in a fog with the eophone in front.

The swift steamers upon which it was tried created such a breeze while under way that the rushing of the wind in the receiver drowned all the sounds it was designed to catch, but this was remedied by stretching a piece of silk gauze over the mouth of the transmitter. This shuts out the harsher sounds of the ship, but seems to intensify the delicate noises the instrument is used to locate.

The eophone may be adopted by the Government as a necessary to safe navigation in fogs. In that event its inventor and the manufacturers will reap a fortune, for the little box costs \$1,000 for every ship to which it is fitted.

The Phonendoscope

You can hear yourself wink! A wonderful machine has been invented by which the hitherto imperceptible sound of the action of the eyelid is made clear and distinct to the ear. The invention is called the phonendoscope.

The new wonder was designed to be used by physicians and surgeons for detecting the presence of disease by sound. With its aid it will be possible for the medical world to prepare a perfect chart, which will enumerate the sound of every disease known, and to instantly detect that sound with an application of the phonendoscope.

The delicate instrument, the construction of which has much in common with that of the human ear, is so sensitive that the faintest breath upon a disc sends a wave current through the box against the ear-drum of the listening person.

Not only can this breath upon the disc be heard, but its force in transit is multiplied a thousandfold, so that when it reaches the ears it sounds like the roaring of a gale of wind at sea. Tapping the disc lightly with the fingers sends a sound into the ears like the tramping of many horses, and the wink of an eyelid gives forth a sound like the fall of heavy waters.

It is a sort of microphone about the size of a large watch, having a short staff like the thin part of a stethoscope at the base, and a number of flexible tubes attached to the upper part of the box, whereby to convey the sounds to the ears of the operators. The name is the compound of three Greek words and signifies: Seeing sound within a body, and this is what it really does.

The Scentograph

A machine which is claimed to take its place by the side of the phonograph has been invented by Louis Kramer, a Missouriau, who moved to Binghamton, N. Y., about a year ago. It is used to receive and magnify odors of all kinds and is called a scentograph. A patent is to be applied for, but it has been already practically tested. It will take a liquid heretofore regarded as odorless and distill the most delicate perfume. A drop of perfumery or essence placed on the receiver will produce an odor that would in a very short time cause symptoms of suffocation. The grocer might utilize it in detecting adulteration in goods, while it has been suggested that bank paper can be tintured with a special scent, imperceptible to the ordinary sense of smell, but which could be easily detected when placed in the scentograph, lessening liability of counterfeiting. It is also claimed that the machine will be popular in homes, hospitals, sick rooms, where the air can be kept permeated by most delightful fragrance. The machine is about twelve inches square and eight high. Mr. Kramer says it can be manufactured for \$50. It is thought he will have no trouble in obtaining financial aid for organizing a company to place it on the market as soon as the patent is granted.

The Delineascope

The delineascope is a new instrument for military and topographical surveying. It consists of a small portable camera having a lens with a fixed focus. The lens is directed downward, and has beneath it a mirror inclined at an angle of fifteen degrees to the axis of the lens. This throws a picture of the landscape, with right and left reversed, on the tracing paper on a horizontal object glass. It is then possible, by using a focusing glass, to trace the main features of the landscape on the paper, which is then reversed on a card ruled in squares similar to those in the note book into which the sketch is to be copied and recorded. The details can then be added by the eye, and the more exact numerical data entered on the margin of the page.

Items of Interest.

From every part of the country enthusiastic reports continue to reach us of the great success, financial and otherwise, of the picture enlarging, projecting and animating devices.

Whatever may be the real condition of the country at the present time, it is remarkable the amount of money which people have to spend on theatres whenever there is a special attraction presented to them. During the display of Edison's Vitascope the theatres have been so crowded that many people had to be turned away for want of room. The spectacle merits this attention fully; it is perfectly wonderful.—*Milwaukee Sentinel*.

Nicola Tesla, the electrician, is credited with saying that he believes a man might live 200 years if he would sleep most of the time. That is why negroes often live to advanced old age—because they sleep so much. He also alluded to the current report that Mr. Gladstone now sleeps seventeen hours every day. Edison recently told a reporter that he frequently went for forty-eight hours without sleep, and sometimes for seventy. Following such a period of work, he often sleeps for eighteen hours at a stretch. The celebrated inventor smokes enough large, black cigars to break down an ordinary constitution, but he seems to get more robust of physique as he grows older. He is within a few months of his fiftieth year.

The living photograph machine craze is upon Gotham in its most virulent shape. Beginning with the vitascope, the disease ran the various stages of cinematographe, kineopticon, biograph and contoscope, terminating finally in cinographoscope. The animatograph and theaterscope, both of which are raging in London, have not yet found their way over on the steamships.—*Pittsburg Dispatch*.

[We beg leave to correct our Pittsburg friends. The animatograph and theaterscope are being exhibited in this country, and are both meeting with great success.—ED.]

Experiments are now being made with a machine which, if it is found to meet expectations, is likely to replace that often interesting but always pitiable product of city streets, the newsboy, with an efficient substitute that has no morals to be corrupted or evil associations, no flesh and blood to suffer from cruel exposure, and no future to be ruined by lack of education. "Certain self-styled 'friends of the poor' have raised a cry of indignation at what they call an attempt to rob many an humble home of much-needed pennies. The indignation is either imbecile or insincere. Anything that keeps children from the streets, that prevents the utilization of child labor, is to be commended and furthered by every sensible person. The same pretended sentimentality that is now protesting that to take his wretched occupation from the newsboy is cruel, was equally vociferous a few years ago when little girls were freed from the same horrible slavery. There is almost as much need for the proposed reform as for that one.—*N. Y. Times*.

There are eight storage battery roads in Europe, four of which were installed during the past year. The largest system of this type comprises three roads in Paris, operating nineteen storage battery cars, some of which have been doing duty since 1892, and the addition of a third road last May seems to indicate that for the conditions there existing the storage battery has proved satisfactory. The other four roads are located one at Birmingham, England; one at Hague-Scheveningen, Holland, and two in Austria-Hungary.

Batteries

With the advent of the phonograph, the necessity of a storage battery adapted to this kind of work and a systematic means of keeping it charged, became apparent. This demand was at once met by the Storage Battery Supply Company, which began business in 1891, taking care of all the batteries used by the New York, New Jersey and later the North American Phonograph Companies, numbering in all over 400 machines.

From the first, it was seen that the leakage of batteries then in use must be done away with. Experiments were made and many improvements introduced until now the limit seems to have been reached in their present type of cell.

The many difficulties such as leakage, corrosion of connections and consequent loss of power have been done away with entirely. The batteries are hermetically sealed by a clamping device that prevents the leakage of acid yet allows the cover to be removed and replaced with ease. This is a feature of much merit as the entire interior of the cell is readily exposed. The connections are independent of the lead plates, and thus no creeping of acid or corrosion can take place.

The plates used in these batteries are of electrochemical formation, and the greatest durability, efficiency and lightness are secured. The standard batteries are made up in handsome oak cases and present a different appearance to the leaking, corroded and stained cell sometimes seen.

The Storage Battery Supply Company has its own charging plant, with every appliance for handling batteries and a large stock of cells for rental constantly on hand. It has a complete system of delivery by hand and wagon. This company does storage battery work of every description, including repair work. Their batteries for kinoscope, carriage lighting, medical and general work of all kinds are highly recommended by all those who have used them. * * *

Imitates the Kinetoscope

Novel Little Invention Which Shows Pictures in Motion

The vitascope, kinoscope and cinematographe have justly been given a place among the wonders of the century, and they have afforded as wide a range of entertainment to both old and young as any of the remarkable inventions of the decade. Being essentially a fad of the hour, and widely popular, they have had their cheaper imitations. It is not likely that there has been made as cheap an imitation of an expensive and intricate machine as the living photograph or miniature kinoscope, which seems to be a never ending source of amusement.

Instead of the expensive long celluloid ribbon, with 2,000 or more pictures to every 50 yards, through which the strong incandescent light shines, throwing the pictures on the white canvas as rapidly as the ribbon is run in the larger vitascope, this toy is a collection of about 100 photographs of the same size, 1 x 1½ inches, taken in the same way as the larger one—with the electric camera, which takes 43 photographs a minute—and printed on one end of a cardboard 2½ inches long by 1½ inches wide. The blank ends are fastened together securely and the picture ends left loose, so that by holding the pack firmly in one hand and drawing the thumb of the other across the top edge the pictures will flash before your eyes so rapidly as to have the appearance of being alive.

Popular Science

How to Dodge Lightning

Those who are actually afraid of lightning should place their chair in the center of the room and get their feet up off the floor, or place aluminum glass under their chair posts, which is a sure protection from the dangers of lightning stroke.

Electricity is Safer

Insurance company statistics prove that electric lighting, when the wiring is done in accordance with the rules prepared by them, is the safest of all illuminants. The figures show the following comparative risks in one large city: Fires in one year from paraffin and kerosene, 259; from gas, 110; matches used for gas, 35; candles, 88; arc lights, 7, and incandescent lights, only 1.

Stone and Steel

An experiment, with a view to ascertaining the relative resistance, under pressure, of the hardest steel and the hardest stone, was recently made in Vienna. Small cubes of corundum and of the finest steel were subjected to the test. The corundum broke under the weight of six tons, but the steel resisted up to forty-two tons. The steel split up with a noise like the report of a gun, breaking into a powder and sending sparks in every direction, which bored their way into the machine like shot.

Revolution of the Earth

"One of the wonders of the Paris exposition," says a Paris paper, "will be a 360-foot tower in which the scientists will experiment with a pendulum to ascertain if it is possible to detect or demonstrate the motion of the earth. A similar experiment was once made by Foucault under the cupola of the pantheon, but the results were far from satisfactory. In the coming experiment the pendulum will be 350 feet in length, with a steel globe weighing 180 pounds at its end." The experiment was successfully made several years ago in the old Chicago building.

A Chinese Telegram

Chinese is the only language that cannot be telegraphed, so a cipher system has been invented, by which message can be sent.

The sender of the message need not bother himself about the meaning. He may telegraph all day without the slightest idea of the information he is sending, for he transmits only numerals.

It is very different with the receiver, however. He has a code dictionary at his elbow, and after each message is received he must translate it, writing each literary character in the place of the numeral that stands for it. Only about an eighth of the words in the written language appear in the code, but there are enough of them for all practical purposes.

Electricity Facts

The editor of a periodical devoted to the news of electrical development frequently heard during the recent Electrical Exposition some wiseacre remark to the ladies in his escort: "All very wonderful, but still we must remember that electricity is still in its infancy." The editor, therefore, at the close of the exposition, sent letters to a number of gentlemen who have spent a lifetime in the pursuit of electrical science, with the result that he has gathered some statistics that show that electricity is anything but an infant industry.

It appears that there are not less than 65,000,000 telegraph messages sent in the United States every year. The number of telephonic conversations is 750,000,000. There are 2,700 central electric light stations and 7,000 isolated electric light plants in

buildings of all kinds. These operate about 1,000,000 arc lights and 15,000,000 incandescents, as well as several hundred thousand electric motors. The electric railways of this country reach 1,000, with 12,000 miles of track and 25,000 cars. It is estimated that directly and indirectly some 2,500,000 persons are interested in electricity as their livelihood and sustenance.

New Corporations

A new phonograph company has been formed in New York under the title of The Universal Phonograph Company. This concern will evidently do a large business, as they intend to work in a field that has been heretofore neglected. It proposes to manufacture high-class records by celebrated artists of the vaudeville and dramatic stage. The company has already completed arrangements with Miss Lottie Gilson, Bonnie Thornton, Lottie Mortimer, Leona Lewis, Mr. Thornton, Johnny Carroll, Weber and Fields, Fields and Lewis, Sam Bernard, Sam Devere, etc., and as fast as meritable records of these artists can be obtained they will be offered to the public.

This departure is an excellent one as one of the serious drawbacks of the talking machine business has been the limited amount of talent employed. Records of popular successes would simply be more valuable if they were made by the authors themselves.

The company has been formed by Jos. W. Stern & Co., who have secured the exclusive services of Mr. Russell Hunting, a gentleman whose record-making ability is known throughout the talking machine world.

Jos. W. Stern & Co. are the well-known New York music publishers, who piloted into prominence such successes as "The Honeymoon," "Oriental Echoes," "Handicap" and "King Carnival" Marches, the "Espanita" Waltzes and such song hits as "Lost Child," "My Mother was a Lady," "Kathleen," "Sweet Rosie O'Grady," "His Last Thoughts Were of You," "Benches In the Park," "You Don't Have to Marry the Girl," "Grace O'Moore," "My Own Colleen," "Games We Used to Play," "Down In Poverty Row," "Don't Give Up the Old Love for the New," "Elsie, From Chelsea," "You're Not the Only Pebble On the Beach," etc., etc.

Patrons of the talking machine will surely be benefited by having the latest metropolitan successes offered to them by the publishers who will furnish them records of celebrities.

McDowell, Herrerich Company, of New York City, will manufacture and deal in automatic or coin controlled vending machines. Capital, \$25,000. Directors: Charles H. McDowell, Henry W. Herrerich and William H. Klinker, New York.

The National Ediphone Company was incorporated at Chicago last month, capital stock, \$1,000, to manufacture talking and musical instruments. Incorporators: William H. Hagans, John E. Mathews and Robert S. Miller.

The Long Island Mutoscope Company filed articles of incorporation last month. The company is stocked for \$500,000 and commenced business with \$2,000. The objects of the company are the manufacture and sale of photographic and mutoscopic implements and appliances. The names and residences of the incorporators are: David W. Pye, Brooklyn; Lysander W. Lawrence, Brooklyn, and Edward Schroeder, Jersey City. Principal Office, Jersey City.

THE PHONOSCOPE

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THE PHONOSCOPE is the only journal in the world published in the interest of Talking Machines, Picture Projecting and Animating Devices, and Scientific and Amusement Inventions appertaining to Sound and Sight.

Correspondents in Loudou, Paris, Berlin, Amsterdam, Madrid, Alexandria and Constantinople, Australia, South America, Central America, Canada and 108 cities in the United States.

If we look around the world and note the almost innumerable dailies, weeklies and monthlies that are being issued in every part of the inhabited globe, eagerly devoured by a predominant part of the human race, we certainly must find therein ample matter for reflection and meditation.

It must, indeed, suggest to us the very obvious thought that the highest intelligence of the time is expressing itself through the medium of the periodical press, and that, on the whole, the more advanced the community the greater is the output of periodicals of all sorts. A century ago men penned books and pamphlets in support of a scientific, literary, political, humanitarian, or commercial doctrine; to-day they write a magazine article or newspaper leader.

We allow ourselves none of the old leisure between thought and action; we have no time for ponderous tomes or long-winded oratory. We want our facts marshalled together briefly, succinctly and with conviction, and our mind is made up at once. When the philosopher gets all these facts impressed upon his mental retina, he will jump up from his indolent ease beneath the dreamy canopy of obtruse research and — hustle.

And we mean to hustle, in order to keep ahead of the struggling, panting, hurried work of the outgoing century. It will be hard work, indeed, since men seem anxious to crowd into the last quarter the work and progress of a whole age.

Truly, in most fields of knowledge, but more especially in the one to which we are devoting our labors, more has been accomplished during the past twenty years than ever before during twice that length of time. True, too, that the end of the century has brought to the front most eminent genius in almost every branch of art and science, literature and learning, commerce and politics. We need but mention one, the great wizard, Thomas A. Edison, whose unsurpassed genius has enriched our store of knowledge, whose thirst has been a lesson to us; and the kindness of whose generous heart has cheered our path.

It is not our intention to ring his praises, but he seems to us so true a pattern of American energy, perseverance and vast enterprise, and withal, thoroughness, unrivalled accomplishments and success that we could not find a better example to illustrate this age of untiring hustling and doing. In former ages Mr. Edison would have been an alchemist, a brooding Faust, useless to himself, and lost to the world; to-day he is in touch with the time to which he imparts some of his own energy and genius, and which he endows with an endless string of most useful, most practical, most productive, yet simple invention. He commands, and the elements do his bidding; he raises his wand and all the forces of nature

seem to obey him. The invisible word is arrested on its way and preserved for future service, the flash of light is caught and stopped in its passage; the gloom of night is vanquished by the intelligent hard work and genius of one man. Let us rejoice in the possession of such a fellow-citizen, in whose universal glory we bask, and let us strive to follow his example by hardy, energetic and glorious work, having action follow upon thought as thunder does upon lightning. Thought is quick, thought is electric; it must be similarly treated and caught on the wing. Let us look on life as full of solidity, stuff and activity, and not as a sort of vapor with shadows on it.

Legal Notices

In the case of the American Graphophone Company, *versus* Edward H. Amet, in which an injunction against the Amet talking machine, otherwise known as the metaphone and the echophone, was granted by Judge Grosscup in the United States Circuit Court for the Northern District of Illinois, a motion for a rehearing was argued in Chicago on January 4th, Amet being represented by Muudy, Evarts & Adcock, of Chicago, and the metaphone and echophone interests by Mr. Gilroy, of New York, who went on to Chicago to present that side of the case. Judge Grosscup, after hearing what the defendants had to say, immediately overruled the motion for a rehearing and entered the decree as final. This disposes of the Chicago case, and the American Graphophone Company, by their counsel, Mr. Philip Mauro, of Washington, have obtained a certified copy of the decree, and made a motion before United States Judge Lacombe for a preliminary injunction against the metaphone and echophone in New York. This motion was heard on January 15th, but a final decision has not been rendered.

Abraham M. Frank, of New York, was taken into the Centre Street Court last month by Detective English, on a warrant issued on affidavit of Anthony Comstock, who charges the prisoner with selling pictures which are immoral.

The pictures are in a bunch, arranged in such a manner that by allowing them to slip rapidly from under the thumb they have a kinetoscopic effect. When passed around among the lawyers in court nobody could find anything immoral. Comstock pointed out one picture, and called the attention to certain reflections of the suggestive effect. No one but Mr. Comstock could see anything in the picture.

The Word "Vitascope"

The word "vitascope," which is one of the recent additions to the English language, is the subject of a suit in the United States Circuit Court, because the persons who claimed to have coined it deny the right of others to apply the term to articles they manufacture.

The suit was entered a few days ago by the Vitascope Company, of New York City, against the United States Phonograph Company, of Newark. Judge Kirkpatrick made an order returnable on February 15th, for the defendants to appear and show cause why a preliminary injunction should not be issued, restraining them from further use of the term according to the bill of complaint.

The bill of complaint sets forth that Thomas A. Edison, of Menlo Park, and Thomas Armat, of Washington, were the original and first inventors of a machine for throwing on a canvas or screen pictures accurately representing and portraying the movements of moving and living objects. Under

the direction and immediate supervision of and with the consent of Messrs. Edison and Armat, the complainants, Norman C. Raff and Frank R. Gammon, began the manufacture of these Machines in New York. They coined the term vitascope and applied it to the machine.

Since that time the complainants say the term vitascope has always been used to describe their machines, which were generally termed "Edison Vitascope." They claim to have expended more than \$75,000 in making and advertising these machines, and charge that the defendants have been guilty of fraud in putting on the market a machine similar to the vitascope, and applying to it the name "Edison's Vitascope." They seek to secure a restraining injunction against the defendants and also to recover damages for past infringements.

Annexed to the bill are copies of letters sent by the defendant company to various parties offering to sell them the "only genuine Edison's vitascope," and others received by the Vitascope Company from persons holding territorial privileges and claiming to have lost sales through the false representations of the defendant company.

The defendant company sold their machines outright, while the plaintiffs only leased theirs.

The Western Automatic Weighing Machine Company of Illinois, which has a number of penny-in-the-slot weighing machines posted in public places, was sued in the Superior Court yesterday by the American Weighing Machine Company of New York.

The Illinois corporation in 1887 received from the New York company certain machines, under a contract, the contract being that the machines were to be placed in various localities in Iowa. The proceeds from the machines were to be sent to New York in sealed bags, to be opened by a representative of each of the companies, and the complainant company was to keep two-thirds of the profits.

Up to 1892, the bill says, the New York company received \$983.61 from eighteen machines. Since that time there has been no accounting between the two corporations, and the bill alleges that a true accounting would show that much more is due the complainant than was ever received. The court is asked to appoint a receiver to take charge of the machines until an accounting is had.

There is a phonograph cylinder in Edison's laboratory that is just now of interest in view of the fact that Prince George of Greece has become a central figure in the European war cloud. It contains the Prince's address to Mr. Edison on the occasion of his visit to this country in 1891. The Prince displayed a thirst for scientific knowledge that surprised his hosts here, and he passed part of one day in Mr. Edison's laboratory. The phonograph interested him immensely. He heard it grind out the speeches of celebrated men, and then he called for music. The phonograph responded with the then popular "Where Did You Get that Hat?" Prince George then talked into the receiver, saying in Greek: "Hail, Edison, greatest of inventors, George, Prince of Greece, salutes thee." Prince George was traveling incognito when he visited this country, and therefore no official receptions greeted him. Those who had the privilege of meeting him here were very much impressed with his modest bearing and genuine interest in everything he saw. He has the build of a young Viking. He is over six feet tall, is broad-shouldered, and has light hair. His head is well set on a strong neck. He weighs more than 200 pounds.

General News

A dividend of 1 per cent. on the common capital stock of the American Graphophone Company has been declared, payable February 27, to stockholders of record February 20. This is the third common stock dividend since October, 1896. The quarterly dividend, it will be remembered, of 1¼ per cent. was paid February 15 on the preferred stock of the company.

The Hartford Graphophone Company, under the management of Mr. C. A. I. Norton, have established permanent offices in the Auditorium Building and are doing a rushing business.

Mr. F. J. Root, electrician, of Binghamton, N. Y., was in New York last month buying phonograph and graphophone supplies.

Mr. Frank D. Zimmer called at THE PHONOSCOPE office last month. He is about to go in the talking machine business under the heading "General Agent for All."

Mr. Frank D. Thayer, the prominent Western exhibitor, writes us that business is better this year than ever before.

The local views exhibited by the cinematographe at the Schiller Theatre, Chicago, last month proved a great drawing card.

The following from the Sharon, Pa., *Telegraph* is "quite cute":

Charles Service has lately added to his musical outfit a new Columbia Graphophone. It is a neat instrument, and has both the tube and funnel connections. Charley cau now give parler entertriements and please his hearers with anything from a brass band concert to a Romeo and Juliet tragedy.

Mr. Moore, who invented the Multiplex phonograph, is experimenting on a diaphragm which he claims will record and reproduce the female voice in a marvelous manner.

The Universal Phonograph Company have succeeded in getting some excellent records of Miss Lottie Gilson, "The Little Magnet."

The International Film Company are doing a phenominal business. They are kept busy night and day to supply the increasing demand for their new machine.

We understand that a Boston Phonograph Company is about to go out of business.

There will be a new talking machine on the market in a few weeks that will sell for \$10. It will be fitted with a graphophone reproducing diaphragm.

Russell Hunting shipped some of his Casey records to Norway last month and to Australia the month before. "Casey" is indeed booming.

The Rev. Dr. A. L. Boyle created a furore at the Carmel Bapstist Church, New York, one Sunday last month by using the phonograph during service. He read a short chapter from the Bible and then the phonograph was turned on to sing Psalms and recite extracts from the Old and New Testaments. The effect was queer; lots of members were offended and a number left the Church.

Mr. C. G. Childs, late of the Ohio Phonograph Company, has taken charge of the New York laboratory of the Gramophone Company, and has already begun to show his exceptional ability by adding some excellent new records to their stock.

We understand Len Spencer has left the United States Phonograph Company's employ and will be hereafter associated with his brother in the 'phone business.

The Empire State Phonograph Company has moved from No. 4 East 14th street, New York and has secured an excellent location on University Place.

The Edison Projecting Kinetoscope, as supplied by Maguire & Baucus, New York, is meeting with a great sale, especially in foreign countries. This machine for simplicity and practicability has not a rival.

Mr. V. H. Emerson has resigned his position as manager of the United States Phonograph Company. His resignation will be a severe blow to the company, as he had exclusive charge of the record department, and the wonderful records put out by that concern were the result of his theories and experiments.

Our Foreign Correspondence

OOTACAMUND, INDIA, January 6, 1897.

MY DEAR SIR: Your interesting letter of the 12th with all its charming enclosures and encouraging news reached me in the midst of idlic surroundings on the ever beauteous Nilgherry Mountains, in the very center of Paradise, India.

To escape the tremendous heat of the plains everybody who can rushes to the hills as soon as June appears, and, having found a good substitute to keep things going in Bombay, I have likewise hurried to these health-giving evergreen hills, flecked with cool and commodious bungalows.

And here I am now at dear old Ootse, ensconced in a comfortable cane chair, whilst a coolie keeps fanning me by ceaselessly moving a huge punkah attached to the ceiling of my sitting room.

We are here quite a respectable lot of us, young and old, business men and Government officials, our life being just now one round of recreation, picnics, games, concerts, and balls. Fortunately, I have brought my phonograph with me, and I need hardly tell you that I lost no time in trying the new records you sent me. Casey's are stunners. The whole place is full of him. In the majestic silence of an Indian night we now hear his puns and ingenious refreshing remarks thousands of miles away from the man who originally uttered them.

Science, science, what next?

I am really delighted, don't you know, to see you forging ahead in the right direction, and I am sure THE PHONOSCOPE is just the paper we want. How in the world are we poor fellows, located in out-of-the-way corners, to keep in touch with this particular branch of science, unless we have somebody disinterested in the manufacturing and mercantile part of the business make it his sole duty to tell us from time to time all that goes on and all that is best in the market, as THE PHONOSCOPE intends to do.

Amongst my acquaintances here there are at least three who own a phonograph, but whose interest has fallen down below luke-warm point, simply for the want of proper fuel in the shape of

new and interesting matter. To depend solely on manufacturers and commission agents is to build on sand. They all want to foist upon us poor outcasts that which they cannot dispose of elsewhere, and therefore we all hail with delight the appearance of THE PHONOSCOPE. I gladly accept its representation for the Presidency of Bombay, and I shall attend to the business part of this arrangement as soon as I return to Bombay.

There is undoubtedly a vast field in this country so densely peopled with nature's soft-souled children, fond of amusement and full of kindly spirit.

The mysteries of the phonograph keep them spellbound. I have to give an exhibition each time my Mahometan barber comes to shave me. He looks upon it with awe as something too uncanny to touch, whereas my Buddhist servants regard it as a new incarnation and pay to it divine honors.

Mr. Edison's gifts to humanity in the shape of phonographs, kinetoscopes and similar inventions will prove a great boon to all the collectors, magistrates and officers holding sway in the name of Her Most Gracious Majesty over the 300,000,000 human beings that inhabit India.

Life in the great cities, such as Bombay, Madras or Calcutta is attractive and pleasant enough, but there are thousands of posts where the magistrate, collector, minister and officer are the only white people. They are all well paid men of culture, and always eager to possess scientific novelties, especially when they are as wonderful, useful and entertaining as those which issue from the head of our Jersey wizard. Now, my dear sir, I want you to do me a great favor, and that is to personally select for me a really first-class recording diaphragm, mind you, a first-class one. I don't think there is such a thing in all the Indian Empire. Send it to me as speedily as you can and receive herewith my best anticipated thanks.

I intend to leave here for Bombay about the end of the month, when I shall at once attend to your business, in which I promise you splendid results. Till then farewell. Sincerely yours,

H. D. G.

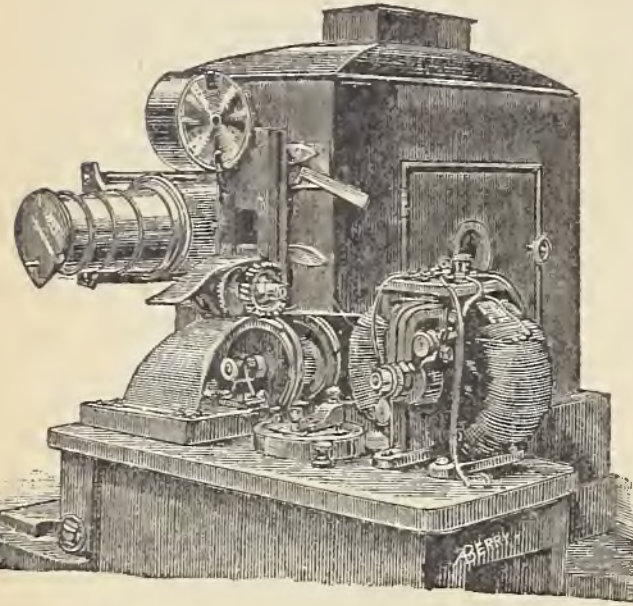
The Phonograph as an Aid in Teaching Languages

A professor of languages in New York City has brought the phonograph into use as an assistant. He uses it to teach his pupils the proper pronunciation. His method is to send with his textbook a phonograph and twenty loaded and twenty blank cylinders. Each lesson in the book is arranged in questions and answers, and the pupil puts the proper cylinder in the phonograph before beginning a lesson. With the book before him and the tubes of the phonograph in his ears, he reads the lesson and also hears the phrases repeated with the proper accent. This he can repeat until he has acquired the proper pronunciation and thoroughly understands the lesson. Then he uses one of the blank cylinders and repeats what he has learned for the purpose of sending it back to the professor and having it corrected. The professor places the tube in his phonograph, listens to his pupil, and writes out such criticisms as are necessary and sends them to him. By this means many are enabled to study at their homes, and the professor to have pupils in any part of the country. The professor has over 500 machines out.

Mr. Frank Idner, a jeweler, of West Palm Beach, Fla., has just completed a perfect phonograph or "talking machine," which, in distinctness of tone and in the reproduction of the human voice, or other sounds, is the equal of any.—*Jacksonville Times-Union*.

"Picture Projecting" Devices

The Kinematograph as Exhibited at the Royal Aquarium, London, Eng.



In this machine the films are contained in a round metal box which is seen above the lens on the forepart of the lantern in Sketch No. 1. The box, when closed, prevents the film from sliding

off the shaft and at the same time allows it to revolve freely.

The film is then made to unwind by means of a sprocket wheel provided with teeth fitting into perforations in the film, the sprocket wheel being made to revolve intermittently by means of a worm wheel in the circumference of which the regular portion of the teeth of the worm only occupies a very small space, the rest of the circumference being plain.

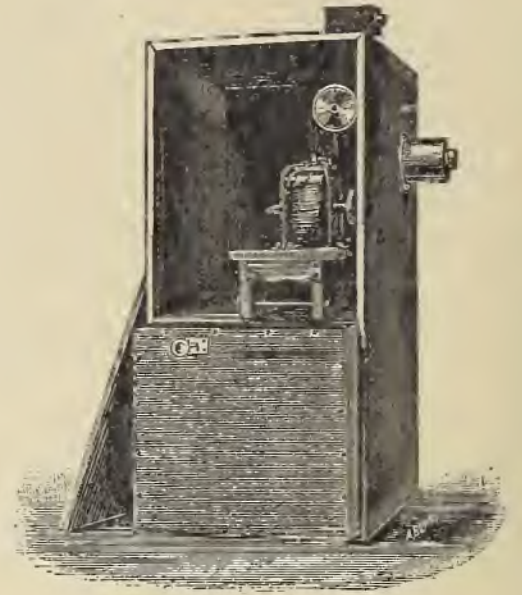
The mechanism is as follows: The worm, upon being revolved, grips the worm wheel and causes it to turn far enough to bring the film into the required position and then entering on the plain part, bring the wheel to a standstill and the picture remains stationary.

This movement is repeated until the whole length of the film is unwound. No pressure pads are used, and thus the films are preserved from damage. Since April last performances have been given with this machine at the Royal Aquarium. A twenty ampere arc lamp is used, but limelight will be found to give equally satisfactory results.

Exhibitors of some machines have complained of the tearing of the perforations, and a month ago a manufacturer attempted to put on the market a machine in which perforated films were dispensed with, but this proved a failure.

The idea was no novelty, for as long as seven years ago a similar machine was constructed for scientific purposes at the Polytechnic in Regent street.

This machine has ever since been in the workshop of a London maker.



To take a picture with the Kinematograph you simply remove the mechanical part from the lantern and slide it into the camera (see Sketch No. 2), which can be done in half a minute.

A four volt motor is used for running the machine for both purposes.

Varioscopes to be Operated at the Corbett-Fitzsimmons Contest

The battle between Corbett and Fitzsimmons, ostensibly for the heavy-weight championship of the world, which will take place in all probability at Carson City, Nev., on March 17, is in reality for the varioscope championship.

The photographing privilege is the main point at issue. It will be worth more to the pugilists and the promoters of the big battle than the \$15,000 purse or the \$10,000 stake.

This was the little dodger that Stuart tried to cover up among privileges, and but for Fitzsimmons's attitude might have done so and kept the swap to himself.

The New Zealander, like all pugilists, however, wanted everything in sight, and at once refused to sign the articles unless he were allowed to share in the phonographic privileges. After some argument this concession was made.

It was a shrewd move on the Antipodean's part, as at that very moment a company was at work building the largest varioscope that had ever been constructed. R. K. Wheelock, who is Stuart's partner, was the head of the firm. Their movements had been made with the utmost secrecy, but somehow or other their plans reached Fitzsimmons's ears.

Now both pugilists, Dan Stuart and the builder of the varioscope will share in what

profits there may be in the venture.

The plan is to build three varioscopes. They will be placed in a row at the ring side in a small enclosure that will be specially constructed for them. The three instruments will have a frontage of eight feet, and each will cover every inch of space between the four posts of the twenty-four foot ring.

The varioscope will carry 1,000 feet of celluloid films each.

The company has decided to make 24,000 feet of celluloid films with them.

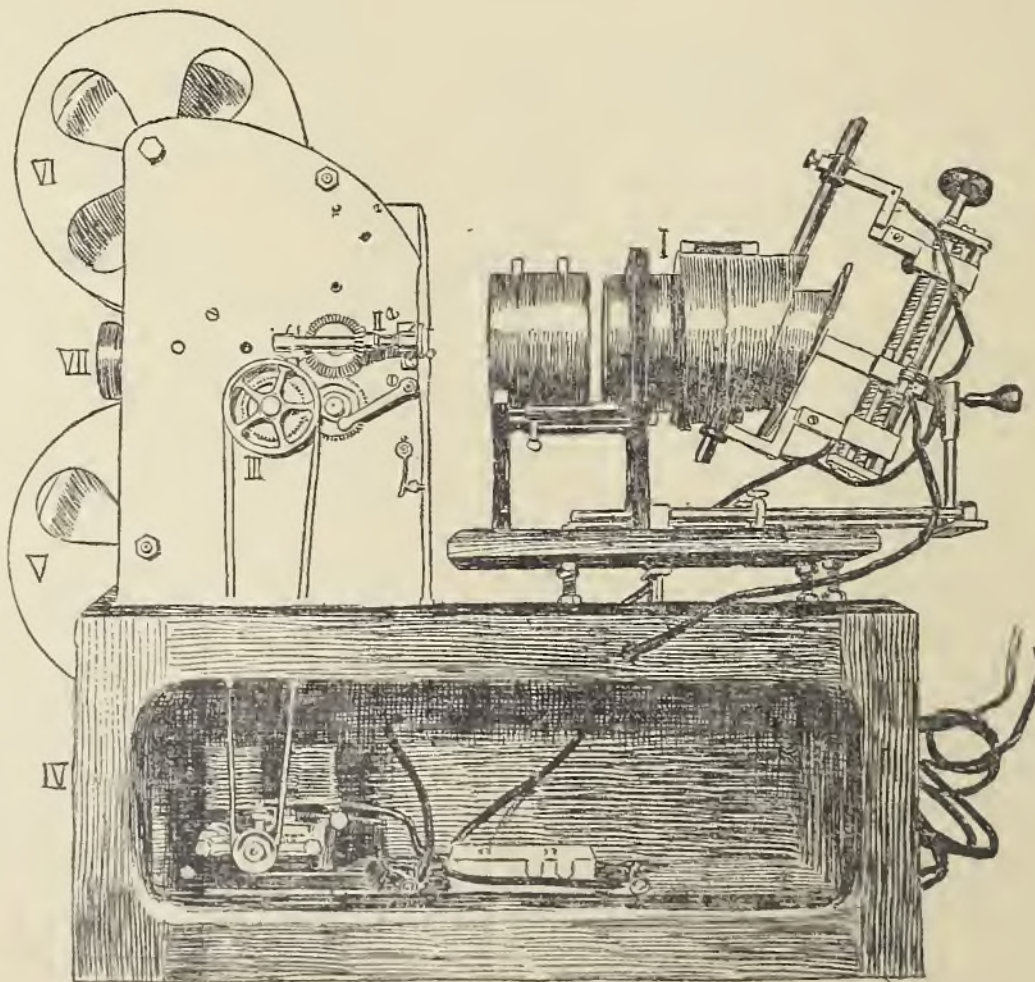
Varioscope No. 1 will be started with the first round and will run four minutes, or until the call of time for the second round. The second instrument will then be set in operation. This will run for a similar period, when the third machine will be put in operation.

When the latter has run its allotted course of four minutes No. 1, which will be recharged with films while the other machines are in operation, will again be started. This mode of procedure will be followed until either the fighters, the instruments or the films give out.

The varioscope will take twenty four photographs a second. Each will be 1½ inches high and 2¼ inches wide. They will be the largest ever made or even attempted with an instrument of the kind. It is expected that with ordinary luck as regards weather the big fight will be perfectly reproduced in all parts of the world.

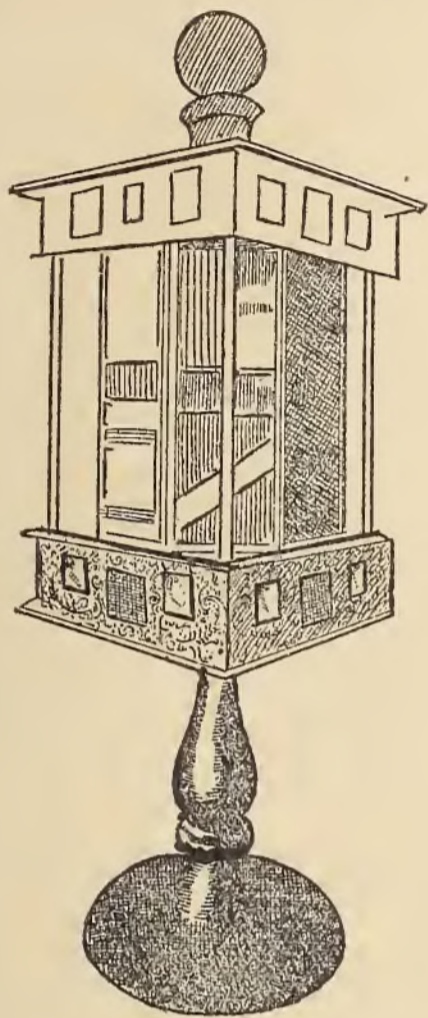
The machines will be operated by means of revolving crank hand gear instead of electricity. This will be an innovation. Some experts predict failure for the enterprise on this account, and others say that the promoters of the machine are trying to do too much.

The instruments are nearly completed. They were built in this city and Brooklyn.



I. REPRODUCING LENS 2. SHUTTER 3. MOTOR BELT 4. MOTOR
5. FEEDING FILMS 6. WINDING FILMS 7. SET SCREW

Slot Machines



Gives a Choice of Seven Articles for a Nickel and Refunds If Out of What You Want

A gentleman of Atlanta, Ga., has invented a slot machine which has been so successful that the Mayor has ordered it to cease operations because it blocks the streets with large crowds.

After spending a year and a half and over \$1,000 the inventor perfected a machine which differs from all others in that it gives the purchaser a choice of seven articles, which are delivered through a single door, and in that it refunds the money to the customer in case the machine is empty of the article desired.

"I have put all the money I have got in that thing," said the inventor as he stood before the machine placed on the sidewalk, "and I don't think it is fair of the city to close me up just because my machine is more successful than the others. The others have places on the sidewalk, but they attract no crowds. If they proposed to take the others in from the streets, it might be fair. But mine is a winner, which seems to be the very cause of the closing up."

In addition to the mechanical virtues of the slot machine it is also an advertising medium, and an octagon display board revolves around the machine proper, giving the names of various firms throughout the city.

"I have always wanted to go into this sort of business, so I went to work and devoted my whole time to it. It took me a year and a half to perfect it. What I wanted was a machine with a single slot and a single door which would give a choice of articles. Some months ago I completed it. After working on it an hour one day I found out I could cheat it. I could get an article without a nickel. I started all over again. I had the arrangement all made and a nickel dropped in would deliver whatever you wanted, but if the receptacle was empty you couldn't get your money back. One night, about 1 o'clock, I thought of how to do this. I made it that morning and had a model completed

out of a cigar box by sunrise. Now, if the machine has not the article you call for, your money will be delivered back to you."

Several days ago the inventor put his machine out on the sidewalk, having arranged to pay the city \$52.50 taxes. The extreme novelty of the machine, its unfailing accuracy and the kind of goods it sold attracted so much attention that crowds stood closely packed behind and around it. Complaint was made and the Mayor forthwith ordered it to cease until the next meeting of the council and ordered a curtain put around the machine.

The machine is likely to become a huge success, and it may not be long before the inventor will be chinkling his thousands.

It delivers cubical boxes of uniform size, about three and a half inches each way. Pies were sold in them the other day. They will sell peanuts, popcorn, candies, confections, bread, cakes and any food stuff or other articles. You may approach it and get a choice, say of mince, peach and apple pie, popcorn, peanuts, candy and fancy cakes. There is a knob on the machine which you turn to the number indicated by the menu card. You drop your nickel in a slot, pull a door and there is your pie, your popcorn or your peanuts.

If you wanted pie and there was none, the nickel would have tinkled back into a little tray and you would not have lost.

Africa to Be Enlightened

The natives and Dutch burghers in the sunny districts of the southern part of the dark continent are soon to be introduced to the seductive Yankee device known as the nickel-in-the-slot machine. In order to avoid possibility of having to turn away customers the energetic projectors of the scheme have secured not only one, two or a dozen machines, but a number that weigh in aggregate 6000 pounds.

The good ship Senator, Captain Lewis, which will sail from Tacoma in the near future, will carry three tons of nickel-in-the-slot machines for Delagoa Bay. They are from the wicked city of San Francisco. It is expected the festive Hottentots and Zulus will cast away their hunting spears and abandon their wives and sweethearts in their eagerness to toy with the new American plaything. Captain Lewis is rumored to be keeping the fact quiet that he is to guide the ship that will carry the strange consignment from this port for fear that some one will ship a copy of the Tacoma nickel-in-the-slot license ordinance among the goods, and disclose to the authorities of that country a scheme that prevails in America for replenishing the public coffers.

The Senator will carry, also, 35 tons of wheat, 10 tons of canned goods, 600,000 feet of redwood and 800,000 feet of Washington fir.

British ship Manx King, now in port, will load lumber for South Africa. British ship Drumblair, also here, is chartered to load lumber at the Tacoma mill with the option of England or South Africa as the point of destination.

Automatic Telephones

There are three public telephones in Newark, N. J., that collect the money for the service rendered. They are located in Crawford's shoe store, on Broad street; in Lewis Bros.' drug store at Market and Mulberry street, and in Murray's cafe on Market street.

The collection department of the telephone consists of some very delicate machinery operated by small batteries. The patron drops the necessary coin in the slot, whereupon a "buzzer" makes a noise in the central office. If a nickel is dropped in the slot "central" hears two "brrs;" if a dime, one; if a quarter, three; a half-dollar,

four, and a dollar, five. If other coins are dropped in, the 'phone refuses to work and an inspector must remove the money that caused the trouble. When the operator hears the "brr" she responds and is able to tell by the number of the signals whether the patron has deposited enough money for the service required.

The one in Lewis Bros.' store has been in operation about five months and has given such satisfaction that it is probable the automatic collector will be attached to many other public 'phones. Thus far none of the 'phones have collected more than half a dollar at a time.

The legislature has abolished the nickel-in-the-slot machine and those chaps will mourn who are in the habit of working their luck for a good smoke. The nickel-in-the-slot device is a gambling affair pure and simple, and the objections to it are not fully met when it is said that the sums wagered are too insignificant to cut a figure. The boy who wins twenty-five cents in a nickel machine is educating himself to lose several times that many dollars when he becomes big enough to play poker or attack faro. The machine is developing the appetite for getting something for nothing and will soon put a young chap where he will get nothing for something. Now, if the legislature will get after the deadly cigarette and pass that bill against swearing, South Dakota wont be such a bad place after all.—*Sioux Falls Argus-Leader*.

Ten citizens of New Haven, Conn., have formed a stock company to manufacture and place on the market an automatic exhibiting machine.

The machine consists of a small cabinet in which a nickel can be dropped. The person using the machine then looks through two glasses and a series of views pass for inspection.

It is after the general model of nickel-in-the-slot machines placed in saloons throughout the country. The organization just incorporated will have charge of the machines in Ohio.

William Reeves is the inventor. The capital stock is \$5,000, 100 shares of \$50 each. The shareholders are: J. M. Marvin, 10; Julius Lederer, 10; R. C. Bright, 10; S. Z. Poli, 10; F. B. Street, 5; L. C. Thompson, 5; C. B. Bryant, 5; William Reeves, 30; H. H. Asher, 10; C. H. Street, 5. Cash paid in, \$1,000.

About 250 owners of slot machines in Kansas City, Mo., have taken out licenses, but since Chief Julian issued an edict against the machines the owners have taken them out of their places of business. They are now besieging the office of the license inspector demanding the return of their license money; but nothing can be done without a special ordinance of the council. Judge Gifford has not passed upon the question as to what constitutes a gambling device in the shape of a slot machine. The city counselor holds that some of the machines are not gambling devices, while Chief Julian says they are all gambling devices.

An effort will be made at an early day to ascertain which of these positions is correct.

"There is a good deal of misapprehension as to the ordinance," said License Inspector Earhart yesterday. "The ordinance expressly excepts from its operation machines used for gambling purposes, in this way. It says, 'Nickel or penny-in-the-slot machines, others than those used for gambling purposes—\$5 per year.' Now this department has no means of knowing whether a machine is used for gambling purposes or not, and when the owner pays the tax we have nothing to do except issue the license. Judge McDougal has not said, as reported, that all these machines are used for gambling devices, but has said that if used for gambling purposes the license did not protect the owner.

Letters

This column is open to any of our patrons who have a complaint to make, a grievance to ventilate, information to give, or a subject of general interest to discuss appertaining to Sound Producing Machines, Picture Projecting Devices, Slot Machines, Amusement Inventions or Scientific Novelties in general.

Can anybody give me any information as to on what Mr. Thos. Armat, of Washington, D. C., bases his claim to the invention of the vitascope, generally attributed to Mr. Edison? I fail to see how a real estate dealer can dispute with a man of Edison's world-wide reputation, an invention which must needs be the outcome of a life time devotion to science.
T. L.

Your issue of THE PHONOSCOPE received with thanks. Pleased to see at last sensible persons publishing a journal for the interest of phonograph, graphophone and kinoscope users. Whoever gets your paper will be happy to consider himself a subscriber. I know I do. Enclosed please find one year's subscription. While phonographs, kinoscopes, etc., are secondary in my business, I think well enough of it to have eight phonographs, one cabinet graphophone, fifteen kinoscopes, and in a few days a vitascope, X-rays, electric piano and many fine imported automatic musical and other instruments which probably give me the largest plant of the kind in the New England States. It is your duty to put on guard all of our great phonograph and supply firms against filling the market with duplicate records called "high grade," while the original remains in their cabinets. It is a race now between the fake and best films who will make and sell the most cylinders. To facilitate their works, they use these white soft blanks, no more of those good and hard dark blanks. This process will do more harm to the legitimate phonograph exhibitors than anything else. Of course amateurs will not perceive this at once, but when they do, good-bye phonograph amusements. Yours respectfully,
L.

I have a spring motor phonograph which runs perfectly smooth and even, but about the middle of each cylinder the springs give a jump and very often throws the reproducer out of track. Can any reader of THE PHONOSCOPE enlighten me on this point?
INQUIRY, New Orleans.

EDITOR OF THE PHONOSCOPE:

If you will kindly grant me a little space in your journal, I wish to receive a little light. I wish to ascertain the reason why so many records crack after using a short time? I have always handled my records with great care, but they will crack on me and, of course, I must consign them to the ash barrel. Perhaps some of your readers could give me a pointer on this question. Yours,
F. C. E., Lowell, Mass.

Our Correspondents

NORFOLK, VA.—The Richmond Stereopticon Advertising Company, which was organized in in this city, intend to establish a branch office for an exhibition to be given in Norfolk. The company is composed of several leading business men, and have been operating very successfully for the past two months upon their canvass located on the corner of Sixth and Broad streets. This novel form of "reaching the eyes" of the people in the interests of Richmond merchants and manufacturing businesses is a repetition of the canvass at

Herald Square, New York City, which attracted so much attention. Mr. K. Hoyt Stone, Jr., of Brooklyn, N. Y., who has had considerable experience with stereopticon machine in the North, has been secured as advance agent for the company.
WILLIAMS.

MEMPHIS, TENN.—The phono. business here in Memphis is about like every other business, very quiet. The vitascope had a four weeks' run at the Auditorium for which Mr. Miller told me he received \$1,000. It came in at the close of the regular performances, giving seven pictures, with a change each week, and it proved a drawing card. He claimed the right for Tennessee. There was a snide imported concern here at the same time, I can't now recall the kind of 'graph it was. The greatest hit of the season was Morris's illusions from Paris and London. For a ten cent show it was immense, and took hundreds of dollars from the city. A few months ago two young men stopped at a fashionable boarding house and proposed to exhibit a little graphophone, and our city license inspector wanted to pull them for \$50 only, and if I mistake not, it was \$50 a day. I called to see them twice, but they were out each time. Now, tell me if some of our big men who have some influence in Washington can get Congress to prohibit such an outrage. If a sister state wants to show her nakedness or act the pirate or robber, should not the united sisters object and put their veto on such conduct? I succeeded in getting the 1895 Legislature to cut the license on photograph galleries from \$150 to \$75 per annum. Even a little tintype tent is taxed the same, so I say don't come to Tennessee. We have many noble people, but they do not predominate. Solomon knew the truth when he wrote this Proverb: "When the wicked rule, the people mourn." How does this strike these times? How would it fit our Washington, D. C., as well as Europe?
W. T. BROOKS.

SANDUSKY, OHIO.—The Sandusky, Ohio, city council have at last disposed of the famous slot machine ordinance which came up for second reading last month. Upon motion of Charles Miller the rules were suspended and it was passed to the final reading. Then the question of its passage came up, and the ordinance was downed in less time than it takes to tell about it, and Sandusky is now one of the few cities of its size in this state allowing the operation of slot machines. Those voting in favor of the ordinance and prohibiting the running of the machines are as follows: Chandler, Coles, Fettel, Gilcher, Walsh, Windisch, Zimmerman and President Miller—8. Those opposed to the ordinance were Buehrle, Close, Horn, Chas. Miller, Moltz, Schatz, Stang, Wagner, Zeitzheim and Zistel. Mr. Nusly was excused before the vote was taken up.
EMONS.

PORTLAND, ORE.—"Begorra business is bad in Portland!" as "Casey" says in "The Auctioneer," and that don't half tell the story for the past month. For the thirty days just past, ending December 29th, business fell with me to less than one half the month previous. Of course, the exceeding cold weather in the early part of the month answers for a good part of the trouble, and the holidays for the rest. People will save up for Christmas, and while they are saving the phonograph suffers.

The vitascope is here, showed two weeks at at Cordray's Theatre, then "set up" on Third street. Is doing fair business, I think. The animatiscopes then came and cast anchor at the Third and Stark, but remained only a few days; has now gone to the Sound. It opened at the Olympia. These are the only two out of the very

many projecting instruments on the market that I have seen. They both work very fine and give good satisfaction; think they are a long jump ahead of the kinoscope. Mr. W. L. Wright is the discoverer of the animatiscopes and made the first two in this city, then removed to San Francisco, where he formed a company who are now manufacturing. Had Mr. Wright opened in this city as he intended last February he would have been the first to expose the projecting instrument on this continent.

In the November PHONOSCOPE I notice what "Leonard" says of white cylinders, etc. He says that "late records are not nearly as good as they were three and four years ago." This is exactly the opposite to my experience, which is this: Every kind of record that I know of—and I buy all the makers'—has improved one hundred per cent. during the past two years. Take Hunting, Myers, Gaskin, Quinn and Spencer, and they never made such records as they are now making. The same may be said of all the bands, especially Issler's Orchestra. An Issler is as sure to be good as a gold dollar is good for one hundred cents, and I have had several recently that are marvels. In regard to white cylinders, I am quite sure that they are the best. I can name four that I have taken more than \$50 each on—two of them are now in my box and the other two I sold a few days since for \$1.50 each.

This is simply my experience. There is nothing lost by giving it. I go for the white cylinders all the time—'til they make something better. I have just ordered a barrel of blanks, and "all white" was in the order.

Let us endeavor to get the best for everything, keep our instruments in order and the phonograph will win out.
MONROE.

Answers to Correspondence

All questions pertaining to Talking Machines, Picture-Projecting Inventions, Automatic Coin-in-Slot devices, Amusement Inventions, etc., will be cheerfully and fully answered in this column. Inquiries for this department should be addressed, Information Department, The Phonoscope, 4 East Fourteenth Street, New York, U. S. A. ❀ ❀ ❀ ❀ ❀

THE PHONOSCOPE. Gentlemen: Will you please answer me the following questions in your next issue? Does the slot phonograph business pay? Why are there so many wanting to sell second-hand slot cabinets? What are its greatest drawbacks? Are hotels generally given a commission for putting them in? What kind of records seem to take best in slot machines? Are they being run for one cent or a nickel? Which pays or takes best, one-way tube or horn? What slot device do you consider the most perfect? What is the usual life of an original and of a duplicate record? Does a rubber mandrel interfere with the clearness of a record?
H. B., Ottawa, Ont.

1.—Yes, if you place your machines in a good location, keep them in condition and use up-to-date records. 2.—Probably because party wishes to change the style of machine or cabinet. 3.—We know of none. 4.—Yes. 5.—Records of the latest popular songs. 6.—A nickel. 7.—According to location; if in a quiet place, a horn; if in a bustling business location, tubes. 8.—New England or Kansas device. 9.—We cannot answer, as a good duplicate will sometimes outwear a poor cut master. 10.—Not at all. You must have rubber mandrels on your slot machines as they allow the records to expand or contract with the change of weather without cracking.

Danger in X-Rays

Human Tissues Injured by Constant Contact
Finger Nails and Skin Drop Off



The effect of X-rays upon human tissue is shown in the peculiar case of William Paley, an electrician, of No. 203 East Thirteenth street.

Paley had been a practical electrician for years, having studied at the South Kensington Museum, England, in 1878. Since his experience with the X-rays he has been perfecting the "kaltelescope," a portable improvement upon the vitascope, which he has invented.

Paley is six feet high, weighs 270 pounds, and, until last Summer, was never ill.

He was at Asbury Park, and undertook to operate an X-ray exhibition. He conducted the exhibition there and in Willow Grove, Pa., until October.

"I held the object through which I was to send the ray in front of the screen with my hand," he said. "The four fingers of my left hand were thus exposed to the ray from the knuckles to the tips."

"Early in August my fingers began to itch, and then little water boils appeared under the skin, some of which filled with blood. My fingers grew red as if they were scalded."

"In a week the skin peeled from the fingers. I tried to protect my hand as much as possible and used the right hand. I had the same trouble with the forefinger of that hand."

"The skin of my fingers grew red and peeled off twice while I was working the X-rays. My nails began to fall off a month after the first redness appeared. I have new nails on the four fingers of my left hand and on the forefinger of the right hand."

"A slight swelling of the fingers accompanied the redness and disappeared with it. Towards the last of the exhibition I let those who wished to see the rays hold the object they wished to look through, and in this way I avoided further irritation."

Mr. Paley said the man who conducted the X-ray exhibition at Willow Grove before his arrival there suffered in the same way.

"I am not forty years old, but see how gray my hair is," he said. "My wife says it has become gray in the last few months, and I attribute it to the rays. My eyesight seems poorer, and at times I have a slight buzzing in the ears, which, I think, is the result of the rays."

Paley does not show any effect of the rays now except the grayness of his hair and the shortness of his nails, which have not grown out the full length.

X-Ray Items

Quite a budget of discoveries in connection with the Röntgen ray investigations have been reported from the Continent within a few days. That reported by Prof. Friedrich to the Vienna Academy of Sciences is the most important. The Professor discovered certain black rays that issue from the vacuum tube and pass through the human body. The photographs produced by means of these rays, which the Professor calls "critical rays," are not the same when taken of a living body as from a dead one. Photographs of living hands show the skeleton as in the Röntgen photographs. A dead hand appears in full, showing all the fleshy integument, while the bones remain invisible. It is thought that, by means of these rays, it may be ascertained whether a person is really dead.

The use of the Röntgen rays as a hair extirpator is also revived. Dr. Freund, also of Vienna, tried them upon a boy whose spine was hidden by an abundant crop of hair. The malady is known to the faculty as hypertrichosis. Dr. Freund turned the rays upon the boy's back and the superfluous hair vanished, roots and all. The boy, no longer an infant phenomenon, has been shown to the medical society in Vienna, and photographs of his condition before and after are circulating in that city. The Prussian Government has appropriated \$12,000 for Röntgen ray experiments during the current year.

All metals and certain metalloids are endowed with a greater or less degree of resistance to the Röntgen rays. Halogenic substances, such as iodine, bromine and chlorine are opaque to X-rays, which property belongs to the substance itself, as it appears in all its chemical combinations with an intensity proportionate to the amount of the element opaque to the Röntgen rays which the combination contains.

Consequently, radiographics will form a qualitative and quantitative method of chemical analysis that will enable us to easily discover certain pharmaceutical adulterations.

Strange to say, there is quite a number of liquids which are transparent to ordinary light and opaque to the X-rays. To this group belong hydrochloric acid, chloroform, chloral, tetrachloride of carbon, sulphide of carbon, and particularly bromoform.

Mammoth X-Ray Coil

The largest Röntgen ray apparatus in the world has just been completed by Professor A. Fessenden, of the Western University, for the Academy of Science and Art.

The machine is enclosed in a neat oak cabinet, four feet high and two feet wide, and weighs but 175 pounds. Handles are provided on either side to carry it. The most important feature is the coil which rests near the base, between the legs of the cabinet. This is composed of seventeen coils, and is wound with fifty miles of small wire. It is arranged to give a spark over twenty inches long, while the capacity of the machine reaches thirty inches.

The current is received from two portable storage batteries, the ordinary direct or the alternating currents. The main circuit is broken by a revolving contact breaker which makes about two hundred breaks a second. This is important when it is known that the sparks are produced when the current on the large wire is broken. The contact breaker is immersed in ordinary petroleum, and is adjacent to a magnet, both of which put out any light produced in the breaker. This is enclosed in a small box on the top of the cabinet, and is driven by a small one-horse power motor placed beside it. The suddenness of the breaking of the

sparks is regulated by an adjustable condenser, also on the cabinet top. It is simply an alternation of tin foil sheets and paraffin paper. It arrests sparks and makes the break more sudden.

Fastened to the side of the cabinet is an adjustable arm for holding the Röntgen ray tube. This is so constructed with several elbows that it can be placed in any position. If necessary it can be placed beneath the bed upon which the patient lies and the photograph taken without moving or disturbing the sick one. A drawer is also inserted in the cabinet for the storing of assorted sizes of tubes.

The tube is of Professor Fessenden's own discovery and represents the latest and most economical principles. It was worked out six months ago, and has been in successful operation. It was designed in accordance with a principle that the positive electrode must not be nearer any part of the fluorescent glass than the length of spark the coil will give. The positive terminal is, therefore, enclosed in a long tube connected with the main bulb.

The coil is the most powerful ever successfully made. A photograph can be taken through the thickest part of the body in fifteen minutes, and the surgeon can easily see through every part of the body with the fluoroscope.

Recent Inventions

An Electric Eye For Delicate Surgical Operations

The latest adjunct which science gives to the surgical operator is an electric eye. Strictly speaking, it is not an eye at all, but rather a sort of searchlight which is used to aid the human eye in delicate surgical operations.

Oftentimes surgeons are handicapped in their work by the fact that they cannot see distinctly the parts upon which they must operate. The formation of the human body is such that in many instances no light can be put directly upon the particular portion of the human anatomy which is to be operated upon.

The eye can see to the extent of human capability, but in intricate operations, however strong the light in the operating theatre may be, the rays lack that penetration and power of concentration so necessary to delicate surgical operations.

Professor Charles E. Quimby, of Bellevue Hospital, New York, has patented this new aid to surgery. From an ordinary electric light wire a connection is made with this device, which fits the face much in the manner of a pair of spectacles. The appliance in itself consists of two small incandescent lamps, which are fitted one above and the other below the eye of the operator. They are so adjusted that the rays focus at a point sufficiently near the ordinary point of vision to throw all the power of the electric rays upon the point desired. It is practically a portable searchlight adapted to the operating theatre.

The lamps are in the form of an annular glass globe, with an illuminating conductor. An insulated backing, consisting of a metal leather lined band, which passes around the head, prevents the heat from affecting the wearer, and at the same time holds the light in position and prevents any possible effect which otherwise the electricity might have upon the wearer.

The lights more nearly resemble long glass tubes than anything else. Within these tubes are placed the lamps, which can be adjusted to any desired angle. When a direct downward ray is desired, a small reflector is fixed above the light and the rays thrown in the desired direction.

New Films for "Screen" Machines

INFANTRY MANŒUVRES. This scene was taken at Harrisburg, and shows the State Militia executing orders on "double quick" time.

BLACK DIAMOND EXPRESS. This scene presents the famous Lehigh Valley "flyer" emerging from a wood in the distance and approaching the camera under full head of steam. A section gang in the foreground, engaged in repairing track, wave their hats to the engineer, who is leaning out of the cab window. The subject is the only one in existence showing an express train making seventy miles an hour.

CHICAGO AND BUFFALO EXPRESS. This scene shows the arrival at a station, and passengers alighting from and boarding the train, together with the usual bustling activity of the baggage men, etc. It is an interesting and impressive subject of its kind.

MORNING FIRE ALARM. This shows the Fire Department leaving headquarters for an early morning fire. The scene is remarkable for its natural effect. The opening of the engine house doors, the prancing of the horses and even the startled expression upon the faces of the spectators are all clearly depicted.

GOING TO THE FIRE. This scene shows almost the entire Fire Department led by the Chief, responding to an alarm. The horses, said to be the finest of their kind in the country, present a thrilling spectacle as they dash rapidly by, flecked with foam, and panting from the exertion of their long gallop.

AMERICAN FALLS. (From Canada Shore, below). This is probably the best general view of Niagara, and is so clear that the mist can be seen arising and gradually settling over the Falls.

CADETS' CHARGE. Showing a squadron of cavalry (at the U. S. Military Academy, West Point, N. Y.), charging towards the camera at headlong speed. The flashing of their sabres in the sunlight as they are brandished aloft adds vim to the picture.

CORBETT-COURTNEY FIGHT.

LEONARD-CUSHING FIGHT.

SOUND MONEY PARADE IN NEW YORK. This scene shows the famous sound money demonstration in New York City, in which 125,000 men were in line.

THE BAND PARADE. Showing the celebrated New York Band marching up Fifth Avenue, New York.

LOVE NEVER RUNS SMOOTHLY. This scene shows lovers very busily engaged. Entrance of angry mother and hasty exit of lover on a bicycle.

FARMYARD SCENE. Showing little girl feeding chickens, ducks and geese, during which the old cow puts her nose in the feeding pail. This is very popular.

GRAND BOULEVARD SCENE, PARIS.

TRAMWAY STATION, ST. PETERSBURG.

CORONATION OF THE CZAR OF RUSSIA.

RUE ROYAL, PARIS.

MARKET STREET SCENE, PARIS.

LIVELY SUPPER PARTY, AUVERGNE PEASANTS.

DOWN PENNSYLVANIA AVENUE, WASHINGTON, D. C. Capitol in the distance.

CABLE TRANSFER AT SEVENTH STREET, WASHINGTON, D. C.

THE OLD GERMAN MILL, in which one of the millers thrusts a woman into the hopper of the mill and she soon emerges from beneath it, having apparently been run through the machine.

New Records for Talking Machines

The following list of new records has been compiled from lists sent us by the leading talking machine companies of the United States ❀ ❀ ❀ ❀ ❀

A Fosse e Lui, from opera Traviata
All Coons Look Alike to Me. Ernest Hogan
All For the Love of a Girl. Myers
All Over Town. Quinn
Amor de Madre. Mexican Trio
Aria, from opera Rigoletto
A Trip to the County Fair. Hunting
Au Revoir, Sweetheart. Myers
Ball of Hen-cooped Knights. Voss
Better Than Gold. Gaskin
Casey as Auctioneer. Hunting
Casey as Book-Agent. Hunting
Casey as Chairman of the Mugwump Club. Hunting
Casey as Mayor. Hunting
Casey at the Circus. Hunting
Casey Departing by Steamboat. Hunting
Casey on a Bicycle. Hunting
Casey on Love. Hunting
Casey on Skates. Hunting
Climb the Golden Fence. Hattie Starr and N. D. Mann
Coon With the Big White Spot. Spencer
Coronation March. Gilmore
Dancing in the Dark. Sousa
Dancing in the Sunlight (Xylophone). Lowe
Dancing on the Housetops. Issler
Dear Little Jappy, Jap, Jappy. Quinn
Dio Possente, from opera Faust
Departure from the Mountains. Schweinfest
Don't Tell Her that You Love Her. Gaskin
Down in Hogan's Alley. Quinn
Dreams of My Own Land. Gaskin
El Curru. Mexican Trio
Elle ne croyait, by Tomas
Enquirer Club March. Washington Military Cadet
Evening Star, from opera Tannhauser
Faces We Miss From the Stage. Quinn
Four Fingers and a Thumb. Quinn
Girl With the Naughty Wink. Quinn
Grace O'Moore. Gaskin
Hiram Wilkins on Superstition. Hunting
Hiram Wilkins's Girl Hannah. Hunting
Hiram Wilkins's Visit to New York. Hunting
Hot Time in Old Town To-night. Spencer
If I Were Really a King. Myers
I Love to See My Dear Old Mother Work. Hunting
Imitation Medley. Diamond Comedy Four
I Never Knew I Loved Her So. Gaskin
In Old Madrid. Æolian Trio
Just a Little Yellow Coon. Æolian Trio
Kentucky Babe. Spencer
King Carnival March, Issler
La Paloma. Mexican Trio
Laugh and the World Laughs With You. Myers
Laughing Song. From the Opera, "The Artist Model"
Lesson in Music. Signor Frejoli
Little Willie. Lottie Gilson
Love, I Adore You. Myers
Lucky Jim. Gaskin
Lucy Lou. A. B. Sloane
Mamie, Me Pet. Quinn
Mammy's Little Pickaniny Boy. Bert Williams
My Girl's a Corker. Favor
My Lady Fair Serenade. Gaskin
Ninon, by Tosti
Oochy Koochy. Quinn
Original Polka. Monsieur O'Gust, the celebrated French clown and imitator, from the Eldorado, Paris
Popular Medley. Diamond Comedy Four
Rosie O'Grady. Gaskin
Rosie O'Grady. Lottie Gilson
Serenade by Gounod
Sylvia Yorke (Clarinet Solo). Tuson
Take Back Your Gold. Gaskin
Take Back Your Gold. Diamond Comedy Four
The Girl that Loves Me Best. Æolian Trio
The Handicap. Quinn
The Reception Medley. Diamond Comedy Four
The Old, Old Home. Myers
There Ain't Any Medals On You. Quinn
There'll Come a Time. Gaskin
Three Little Maids from School. Æolian Trio
Two Heads Are Better Than One. Myers
Uncle Rastus. Sousa
Way Down in Georgia. Sousa
Whisper Your Mother's Name. Diamond Comedy Four
Wing Dance. Issler
Yer Baby's a Coming to Town. J. T. Kelly
You're a Good Daddy. Gaskin
You're Not the Only Pebble on the Bench. Lottie Gilson
You're Not the Only Pebble on the Bench. Spencer

The Latest Popular Songs

The following is a list of the very latest popular songs published by the leading music publishers of the United States ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀ ❀

A Dead Swell Colored Lady. Charles A. Burke and H. Beri
A Dream of My Boyhood Days. Dresser
Ah, Could It Be! F. Ryan
Ain't I Your Honey Boy No More? G. L. Davis
Alma, Dear. E. A. Couturier
America's Girl. Safford Waters
A Mother Never Can Never Forget Her Boy. Chrs. Miller
An American Beauty. Hugh Morton
And Then He Woke Up. Johnson
A Night of the Play. Fred J. Hamill
A Picture of My Best Girl. Moreland
As the Ship Went Down. J. C. Howard
As They Did in Days of Yore. House & SeEVERS
Back to His Childhood's Home. William Slafer
Belle of Avenue A. Safford and Waters
Belle of Hogan's Alley. James J. Blake and M. Bernard
Best Sweetheart of All. Will C. Carleton
Black Four Hundred's Ball. Billy Johnson and N. D. Mann
Bob, the Bowery Boy. E. Selden
Booze, Glorious Booze. Deane
Breaking Home Ties. Joseph Hart
Casey's Dog and Tracey's Cat. Joseph Hart
Chimes of Trinity. M. J. Fitzpatrick
Chimmie Fadden and the Duchess. L. A. George
Chippies on Broadway. Cooper and Francis
Come, Cuddle Your Head on My Shoulder. Ella Wheeler and A. P. Bedell
Coochy Coochy Coo (Negro Comic). M. S. Fitzpatrick
Cycling Song. M. R. Knapp
Daisy and Nell (The Twius). W. A. White
Day Will Come. E. Selden and E. Holst
Dear Old Friends. Lindsay Lenox
Dis Coon Lubs Oo. George Evans
Don't Leave Your Father, Boy. North
Down in Tamale Town. Edw. F. Bender
Drummer's Dream of Home. Charles Robinson
Games We Used to Play. Marks & Stern
Going for a Pardon. Thornton
Grace O'More. Witt
Handicap, Vocal. D. Reed
Hugh McCue. Cohan
Hush Yo' Business! Oh, Go On! Midgley and Levi
Honey, Does You Love Yer Man? Ford and Bratton
I Don't Blame You, Tom. May
If They Write I'm Forgiven I'll Go Home. Gussie L. Davis
I Love You. By Madame Ducreux. Geraldine
In the Baggage-coach Ahead. Gussie L. Davis
Isabelle. Ford & Bratton
Just Because They Put Him Into Trousers. Lawrence Barclay
Just Plain Dora Brown. Edward Armstrong
Just Say Good-bye Again. Charles Miller
Like a Good Little Girl Should Do. Ford & Bratton
Let Me Call You My Sweetheart Again. Thornton
Looking for a Bully. Howard
Love, I Adore You. Cooper & Osborne
Love's Souvenir. Feist
Mary Black, From Hackensack. Lew Dockstader
Modern Century Girl. Packford
Moonlight On the River. Goldeu & Dolan
My Coal-black Lady. W. T. Jefferson
My Gal is a High Born Lady. Fagan
Oh, Aunt Jane. Isaac G. Reynolds
Only Me. Ford and Bratton
On Sunday. Flynn
On the Benches in the Park. Thornton
Pat Malone Forgot that He Was Dead. Carroll
Pebbles On the Beach. Mann & Starr
Ridin' on the Golden Bike. Petrie Music Co.
Send Me a Picture of the Old Home. Fitzgibbons and Arnold
She Might Flirt with Others. Dave Marion
Sweet Rosie O'Grady. Nugent
Tell Her That We Love Her Just the Same. A. J. Lamb
That's When You Learn to Love Them More and More Lawlor and Blake
The Belle of Hogan's Alley. Bernard & Blake
The Battery. Evans and Dresser
Then the Pipe Went Out. J. G. Reynolds
The Real Thing. Arthur Laub
When it is Love at First Sight. Mock
When it's a Boy. Goodwin & Morse
When She's Just About to Fall. Cy Wornau
Won't Somebody Give Me a Kiss?
Would You Ask? Smith
Yes, I Love You. R. M. Stults
You'll Be Sorry When I'm Gone. Monroe H. Rosenfeld
You're So Good, Daddy. Hattie Starr

Wants and For Sale

Special "Want" and "For Sale" advertisements will be inserted in this column at the uniform rate of three cents a word, each insertion. Answers can be sent in charge of "The Phonoscope" if desired. All letters received will be promptly forwarded to parties for whom intended, without extra charge.

FOR SALE.—An exhibition X-Ray machine, complete, with batteries (cheap). Address T., Phonoscope, 4 East 14th Street, New York.

FOR SALE.—Three kinetophones, used but one season; in good condition. \$120 each; cost \$350 each. Also several Standard Graphophone Slot-machines, as good as new; cost

\$160; will sell for \$80 each. Address Talking-Machine Co., care Phonoscope, 4 East 14th Street, New York.

I HAVE a market for all kinds of Amusement Machines, new and second-hand. John McCarty, Box 628, St. Catherine, Ontario.

FOR SALE.—Two new Chloride-Accumulator Batteries, \$10 each, cost \$16. Owner has spring-motor and has no use for them. Address Cash, care of Phonoscope, 4 East 14th Street, New York.

FOR SALE.—Two Columbia Graphophone outfits, consisting of Columbia Graphophone, twelve records, horn, and hearing tubes, \$22.50 each. Address, J. D., care of Phonoscope, 4 East 14th Street, New York.

FOR SALE.—Cheap. Complete Slot Phonograph outfit, with two batteries, records, etc. Write to E. B. A., care of Phonoscope Office, 4 East 14th Street, New York.

WANTED.—I want to buy about ten recording diaphragms, for the Edison Phonograph. Address Maker, care of Phonoscope, 4 East 14th Street, New York.

WANTED.—A partner with a few hundred dollars to invest in a phonograph parlor at an Eastern summer resort. Exclusive right, sure thing. Address Partner, Phonoscope Publishing Co., 4 East 14th Street, New York.

WANTED.—I want to buy old records that are in good condition to use as blanks. A. W., 4 East 14th Street, New York, care of Phonoscope.

The Phonoscope

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ONE OF the serious drawbacks in the Talking-Machine business has been the limited amount of talent employed in record-making. The entire phonograph and graphophone world for the past six years has had to satisfy itself with records which were limited to the product of about ten vocalists, three bands and a few instrumental soloists.

We propose to offer to the patrons of the phonograph and graphophone a series of records by celebrated artists that command public attention at the leading theatres, such as Lottie Gilson, Bounie Thornton, James Thornton, Sam Devere, Johnnie Carroll, Sam Bernard, Weber and Fields, Leona Lewis, Myer Cohen, Lottie Mortimer, Annie Hart, Maud Nugent, Allan May, William Jerome, Margaret Gonzalez, May Howard, Walter Talbot, La Porte Sisters, Ed. Latell, May Lowry, Gotham Comedy Four, Anna Willmuth Curran, John P. Curran, and many other vaudeville stars.

We shall also manufacture and keep in stock records by the popular artists who have been associated with the talking-machine for years, such as Spencer, Gaskin, Quinn, Golden, At Lee, Hunting, Favor, etc.

The above artists have popularized such hits as "Sweet Rosie O'Grady," "You're Not the Only Pebble on the Beach," "Mother Was a Lady," "The Lost Child," "My Best Girl's a New Yorker," "Down in Poverty Row," "Kathleen," "On the Benches in the Park," "Elsie from Chelsea," "Handicap March," "Honeymoon March," "Oriental Echoes" (March), etc.

Jos. W. Stern & Co., who are interested in this new enterprise, have published all of the above and many other hits, and we are consequently enabled to supply the public with the latest New York successes immediately upon their gaining popularity, and before most of the phonograph companies are aware of their existence.

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- BY GEORGE J. GASKIN
- 3 BANJO SOLO *Titus March*
- 4 SONG—Baritone Solo *Starlight, Starbright*
- BY J. W. MYERS
- 5 RECITATION *Imitation of a Street Fiddler*
- BY GEORGE GRAHAM
- 6 MALE QUARTETTE—Medley *Mary Ann*
- 7 SONG—Plantation Shout *Bye, Bye, Ma Honey*
- BY BILLY GOLDEN
- 8 CORNET DUET *Short and Sweet*
- 9 SONG *La Marseillaise*
- BY SIGNOR GIANNINI
- 10 BANJO SOLO *Melley of Jigs and Reels*
- 11 SONG—Tenor Solo *Down in Poverty Row*
- BY GEORGE J. GASKIN
- 12 QUARTETTE—Negro Song *Hear dem Bells*
- 13 RECITATION—Poem by Eugene Field *Departure*
- 14 DRUM AND FIFE—Descriptive *Spirit of -*
- 15 SONG—Baritone Solo *I Want Yr, Ma Honey*
- BY DAN W. QUINN
- 16 RECITATION *Sid-Shoa Crator*
- BY GEORGE GRAHAM
- 17 SONG—M. Farkoa's Great Success *French Laughing Song*
- 18 SONG—Baritone Solo *Say Au Revoir*
- BY J. W. MYERS

* You will find our number for each selection in the list of our records *

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