

HOW A MAN WITH AN IDEA MADE MILLIONS IN TWELVE YEARS

FROM a little shop seventeen feet square to an establishment covering fifteen acres of floor space; from an income of \$10 a week when there happened to be \$10 in the firm—to the control of a company that does a business of \$30,000,000 a year, that is something of a record for twelve years' work. The man who made it is Eldredge Reeves Johnson, inventor and largely owner of the Victor Talking Machine.

Twelve or fifteen years ago the talking machine was a joke—interesting but ludicrous. To-day the greatest singers of the world draw a large part of their income from these same machines. This year Caruso will get royalties amounting to about \$70,000 from the Victor Company. All languages and dialects are recorded, every country's music is represented, and at the great works in Camden they can send out a machine a minute.

The Victor's growth is the story of an idea believed in persistently in the face of ridicule, of unceasing work that for years spelled failure; then success, financial, artistic, beyond even the dreamer's wildest dreams.

Eldredge Johnson is a Delaware man. Like most Delaware men, when he was three years ago, he found the times hard. His father could do nothing for him in the way of a college education, and the young man, having a gift for mechanics, went to Camden, N. J., put on overalls, and went to work at a bench.

Fate took him to a phonograph shop. The invention was new then, and it was the joy of tourists at Coney Island and similar resorts to listen to the squeaking out of the "Star-Spangled Banner" or "A Hot Time in the Old Town To-night." It was wonderful to find the music even imperfectly reproduced, and it was funny to hear the wheezing and scratching that accompanied it. Everybody said it was an amusing and astonishing toy.

To young Johnson, however, it was not a toy. He made motors for his employer in the phonograph shop, and he improved on them. The firm said casually that his invention was good, and they would have taken it up had they not been so busy with the other machines. There was no more experimenting with talking machines for Johnson, but the idea stayed in his head. Perhaps it was more than an idea—one might call it a dream—for the young mechanic saw a good deal more than financial success in it.

Johnson went West—to Seattle or some such place—and had many adventures. Luck was against him and he decided that he would rather starve among his own folks than starve among his own folks. He sent his tools back by freight and bought his own ticket. He reached Philadelphia with 50 cents in his pocket and the bill for freight unpaid.

Penniless and tool-less he called on a friend, the kind of friend to whom a man can safely turn on such occasions. Said the friend, struck with a bright idea as he gazed upon the financial wreck before him:

"What do you say to going into partnership with machines, but we have no money, so it seems just the thing."

It was just the thing, too. They got the tools out of the freight depot and took seventeen square feet of shop in Camden, being too poor to aspire to the proud city across the Delaware. Then they began to do business—any sort of business with machines, but Johnson was the acknowledged expert, his friend the financier. The expert got \$10 a week—if possible—and the financier took what was left—if anything. From a material point of view the firm was not a strong one, as captious critics may point out, but in one respect it couldn't be beaten. The partners had stuck exclusively to that. But they wandered from wheat-cleaning machines to oil burners, and came very near making a fortune. The burners sold like wildfire. Everybody said it was the greatest invention ever made for convenience and economy. Troubles seemed over for three happy months, and then buyers began to complain that the burner got out of repair. So it did, as the promoters sadly discovered. It worked well for a short time, but it was no good as a permanent. Finally, one customer singed off his eyebrows with the thing, and the language he used to the firm discouraged them from continuing the sales.

All this while the talking-machine idea was smoldering back in Johnson's head. He told his partner about it and his partner, as usual, believed. That is, he believed Johnson's machine would be a better machine than any on the market, but when the inventor began to point out its great artistic possibilities, to enlarge on his conviction that every great voice might in future be made immortal, that singers of to-day might thrill audiences a hundred years hence—then even the faithful partner shook his head.

"No, Johnson," he said. "You'll make a good machine and people will buy it because it's so curious. You'll never in this world get out the squeak—never. But if we can make any \$100 or so, just as curious toys, why let's go ahead and do it."

The inventor worked day and night. He had a pretty good thing, but not what was singing in his brain. Then one day he seized his partner as he came in from selling the firm's wares.

"I've got it this time," he said.

When Johnson says he has a thing, he usually has, so the senior member shared the inventor's excitement. Together they turned to the machine, so often changed, so persistently and bafflingly inaccurate. Johnson put on a record and, lo, from the thing came clear and almost squeakless. "I guess I'll go and telegraph my baby."

Can you imagine the solemnity, the awe, with which the two men listened to those foolish words? It meant the realization of a dream, it meant wealth, everything. Johnson had "arrived."

It happened that the firm was prosperous at that time. They had a thousand dollars from a job of doing something to ballot boxes—a thousand dollars less what Johnson had spent to buy a gun for his partner. Partner loved to shoot and his gun had a fashion of sending the bullet more or less at right angles, so when this their first great success, came to them Johnson had insisted on a new gun.

Perhaps he felt that \$10 a week had been too large a percentage of the net receipts for him to draw, and suspected his partner of too great self-abnegation. That was the kind of partnership it was, you see. But there was still money in the treasury, and away to London went partner, while Johnson stayed and worked.



Eldredge Reeves Johnson.

day and night to get further perfection.

The gramophone people in London listened to the ditty that he played, and then they said, briefly:

"We'll pay Mr. Johnson what he likes for the European rights of his invention." And partner "I guessed he'd go and cable." Johnson, without delay. Since then the Victor people and the Gramophone Company have controlled Mr. Johnson's inventions—two separate companies, allied for business purposes, so that even the great Victor success does not show all that Mr. Johnson has done in the talking-machine world.

That, briefly, is the story of how a man created an industry that sends its products all over the globe, that has recorded all the great voices of the day, and the songs and folk tales of fifty-nine different languages and dialects.

There are many incidental details that should be given to make a better picture of these early struggles. For instance, to-day the leading grand opera singers draw royalties from the Victor people of from \$5,000 to \$25,000 a year. Caruso draws more. For the last six years he has averaged \$50,000 annually from the talking-machine company, and this year it looks as if he would get in the neighborhood of \$70,000.

But twelve years ago things were otherwise. Not a singer of any reputation would touch the talking-machine business. You were scratched off the list of the elect if you looked at one. Besides, the firm had little to offer in the way of remuneration.

"I remember," said one who worked with the inventor in the early days, "that we had no place for the singers to record in except a loft that you got to with a ladder. I would scurry around and get some poor devil to come and sing for a dollar in real money and then I'd push him up the ladder and try to get a record. Sometimes the voice would record and sometimes we would have nothing but failure."

I sometimes think, as I watch Melba and Farrar and Farrar singing in our laboratory, of a woman I got to sing for us once in the beginning. I can see her now, a stout, good-natured creature who had come in the rain without an umbrella to sing for a dollar or so. She had a long feather in her hat and it hung over one ear and dripped water on the floor of the loft.

"What a time I had getting her up the ladder, too. She was a kindly soul, for she enjoyed singing into the machine so much that she wanted to come back every day and work with us. And then there was a vaudeville chap, down and out, who wore a frock coat and a slouch hat on one side—he used to sing for us. Those were great days."

"There were times when everything went wrong. We could not rely on our machinery to give the proper effects un-failingly. We had to try and try again. Many a time it seemed as if I could not stand another thing. I would report failure to Mr. Johnson, and often if he had said not even a sharp word but something like, 'Well, it's your business to get the thing right,' I should have put my hat and answered: 'It can be yours in future.' But he never did. There was never anything but sympathy and encouragement from him through all that time of struggle and disappointment."

One thing has of course boomed the Victor machine tremendously. That is the trade mark, the little dog with his head on one side listening to "his master's voice" and wondering why the beloved presence delays to come out of the horn. Everybody knows the dog, and we all, when he first came out, stopped long enough before shop windows to give him a sympathetic smile and incidentally to read what was said about the Victor.

The story of the way in which the dog came into the Victor family is odd. The drawing was offered by a young artist to a great firm in London. The manager looked at it and observed, somewhat wearily, that he didn't think much of it, but he would show it at the Directors' meetings. The Directors also eyed it in a bored fashion and said, no, they didn't want it. The manager, so reporting to the young artist, noticed that young man's disappointment and said kindly:

"There's a little firm round the corner you might like to see. They may feel it would do something for them."

The little firm was the London ally of the Victor people and they did think the dog would "do something for them," and they were right, it did. It caught the popular fancy as few trade marks have done.

Nothing better illustrates the prompt triumph of the machine the inventor so joyously christened "Victor" than the way the plant at Camden has grown. It is the most intricate, out-at-elbows, overgrown place imaginable. The company has bought all the land and buildings for several blocks, but the old concern had not yet had time to move and the Victor factory shoots up amid smaller buildings bearing strange names. In a year or so all these will be down, but the demand for talking machines must be met meanwhile, and the firm enlarges as best it can.

Six months ago the old cabinet building

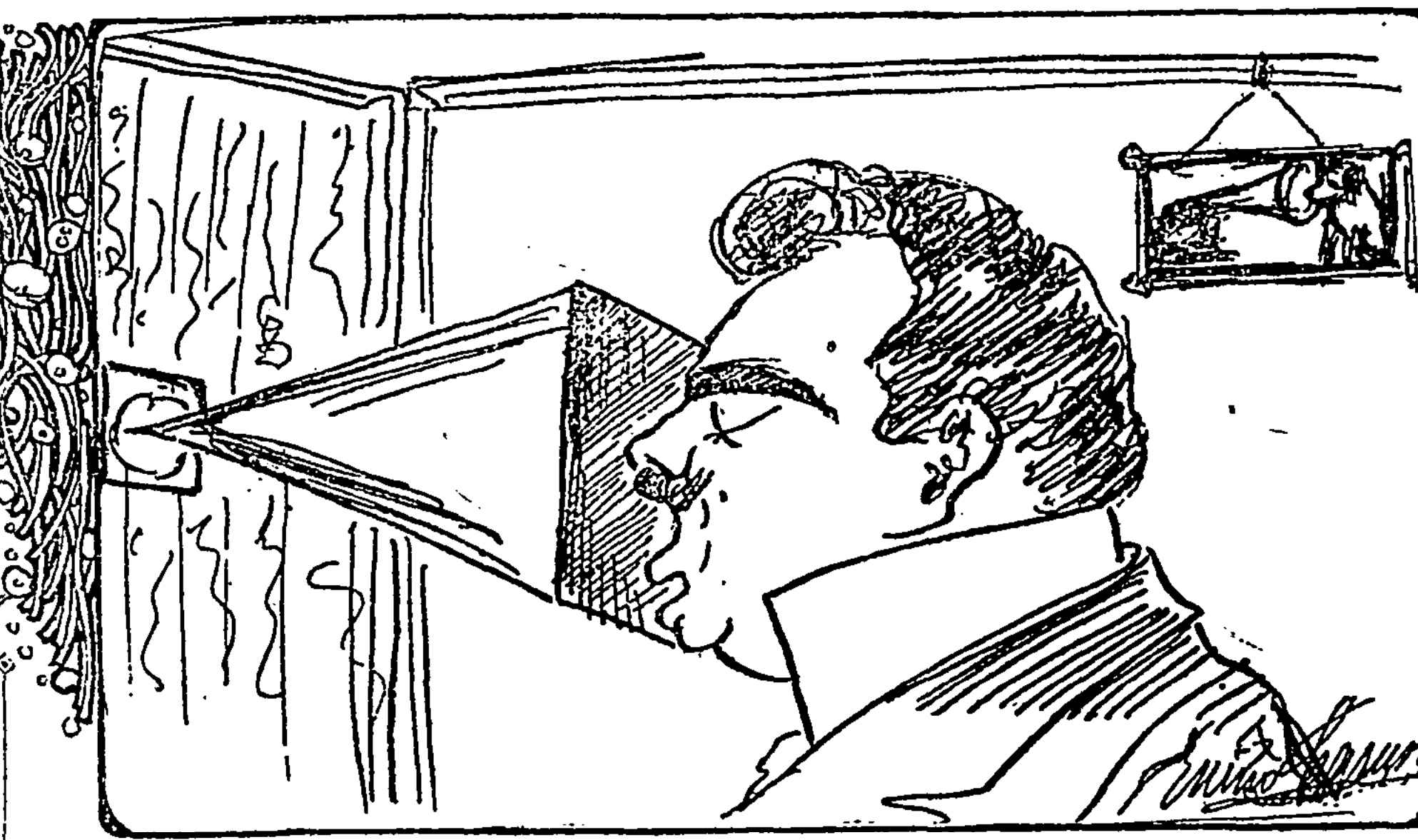
A Little One Room Shop Earning Ten Dollars a Week Becomes Fifteen Acres of Industry Earning \$30,000,000 a Year.

minutes it has cooled enough to be touched and taken up to the room above. There stand men before a heated copper table for a few seconds to get warm and plant again, (it is as hard as a rock when cold); then it is folded into a mold and put in a hydraulic press, with a pressure of 3,000 pounds to the square inch. In half a minute it is taken out, all ready except for a little trimming of the edges.

We took the little square we had followed, slipped it into a talking machine,

who sing for the Victor in foreign parts decide that it conceals a devil, they are quite justified in their belief.

The orchestra of sixteen pieces works all the year round for the talking machine, and is made up of first-class musicians, receiving higher salaries than obtain in most of the great philharmonic orchestras. They would look natural enough if they sat around in civilized fashion, but they don't. They are perched on stools of varying height, some quite near to the ground and others stuck aloft on little platforms. This is because the



Caruso's Caricature of Himself Making a Record.

and the ugly black thing that five minutes before had been smoking in a cauldron had become "The Spring Song." It takes about five minutes, not more, to work this modern miracle.

To prepare for it, however, takes the skill of some two thousand men. In the machine shops queer little engines that one cannot call "almost human," but that they are considerably more than human in their accuracy and swiftness, turn out bushels and bushels of screws enough for the whole world, it would seem.

There is an electrotyping plant that has to turn out work 100 per cent. finer than the finest the Government in Washington can do. There is a cabinet factory where a combination of machinery and skilled hand work puts together and smooths and carves rows of cabinets a mile long, more or less. There are engines and machines to run the other engines and machines. There are the testing rooms, where every record and every part of the machinery has to be tested before it is sent out. There are acres of offices where the accounting is done. And then there is the heart of it all, the centre of interest and mystery—the recording laboratory.

The exact process by which the effects of the talking machine are obtained are not for the public, though even if the public saw it probably would not understand. However, by special favor it is possible to enter the precincts and watch the orchestra and singer in the act of making a record. This is how it looks:

At the end of the room there is a cabinet, and through the black draped little windows horns stick out, ugly water-spout things, not at all suggestive of what is in process. The cabinet contains the secret that makes the millions pour into Camden. It connects at the back with a room that is marked, and is "strictly private." The horns are most commonplace things, but the cabinet stones. It is mysterious, suggestive. It looks exactly like the boxes out of which the mediums evoke spirits. If savages

carrying power of the instruments differs and has to be arranged for, so that the receiving horn will not get too much of any one thing.

The singer stands at a horn of his own singing directly into it, so close that the voice sounds faint to those who sit at the back of the room. Sounds carry so well to the machine that everybody is warned not to whisper during the recording. Then the orchestra begins the opening chords of "The Rosary."

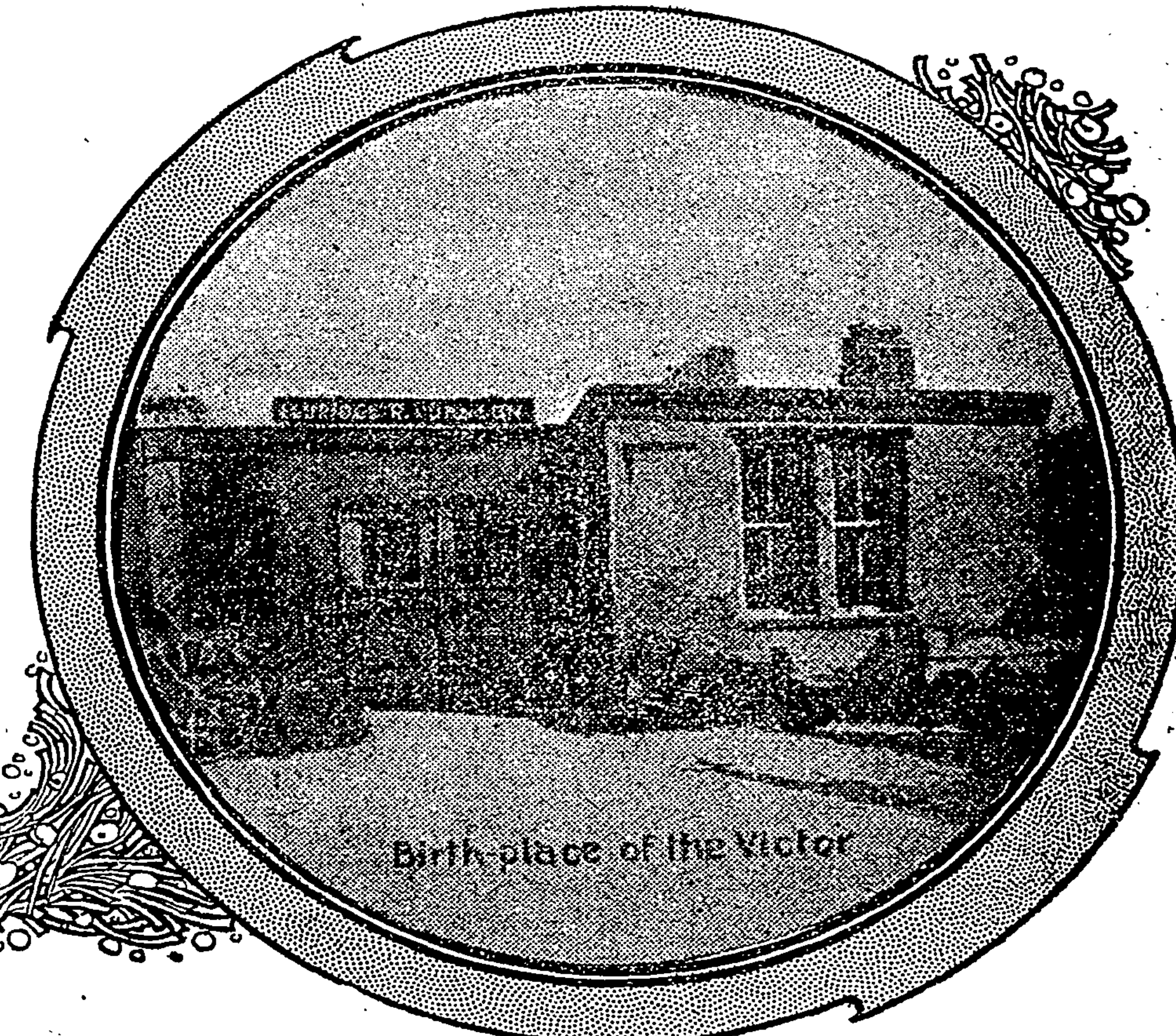
All goes well for a time. The lovely melody makes one forget to watch the mechanics of the place.

"Oh, barren gain and bitter loss—" Tap, tap, goes the baton of the leader against his stand and the music stops. "What was the matter? None of the listeners had heard anything wrong. The conductor explained that one of the violins had attacked a note too soon. The fault was so slight that not one person in even a well-trained audience of a thousand would have noticed it, but these tiny mistakes come out magnified many times in the record.

No concert or operatic performance is ever as perfect as a Victor record must be. Musicians are allowed on the stage an occasional infinitesimal error, but no matter how small it may be it would fairly shout from the talking machine. It demands absolute perfection, and even the best of singers fall occasionally.

Some fall frequently. Caruso's voice and method are both so perfect that he holds the best record, but even he must some times repeat. Fortunately it is not expensive if the error is caught at once. If the record has been cast before it is found it becomes an expensive matter, so the orchestra leader takes no chances.

The music records itself on a disk, like the disk from which it is afterward played, but of some soft mysterious substance that catches every tiny sound vibration. What the substance is the secret of a few men. Then this disk is carried to the electrotyping department and has various hidden things done to it,



The Little One-Room Factory Where Mr Johnson's Idea Began to Grow.

A matrix is made from it, and from this again another is made which is sent over to have the black, muddy shellac stuff poured over it as they did in the case of "The Spring Song."

The original matrix is not used for printing the disks but is stored away in a fireproof vault where, in all human probability, it will be just as good as ever centuries from now. There are 18,000 such records in the Camden vault. Mr. Johnson's dream that a great voice need never die is pretty thoroughly realized.

So much for the record part of the factory. The making of the motor and other parts of the machine is more complicated, though they are marvelously simple, considering the strange work they have to do. This simplicity, which has been perfected through years of experiment, is not, in all communities, an asset for the seller's argument. In China they much preferred at first a German machine with works as large and complicated as those of a chiming clock. It must be better, said the Chinese, because there was so much more of it.

Inside the talking machine there is a small motor the task of which is to revolve the disk in perfect time. This sounds rather easy, but it is not. The machinery of a watch may not be revolved in an absolutely even fashion, and yet one irregularity may counteract another so that the watch will keep perfect time.

This is not good enough for the talking machine. If the disk revolves a fraction of a second faster at one moment than at another the entire pitch is changed and the singer is made apparently to sing false. The motor must work more evenly than is required of any motor serving any other purpose. After the motors are made they are tried, each and every one, to see if the pitch varies in the slightest degree.

Have you stood and looked at a talking machine as it gave out its wonderful melody and wondered what made the notes? Did you think it was some complicated thing hidden inside? What really does the trick is a small disk of mica about two inches in diameter. Ninety-three per cent of the world's output of mica is examined for use in the talking machines, and only 3 or 4 per cent is found to be sufficiently perfect. The workers find, even in the best samples, almost imperceptible blemishes—an air bubble, a roughness, a brittleness—something—and away goes the piece of mica. It costs \$7 or \$8 a pound, so this is an expensive business, but it must be done if the mica is to give out the proper sounds.

Then the little disk is fastened in the

sound box, to which the needle is attached, (the needles having to be tested, too.) The whole is fastened to the horn, and presto! you have music. It is the mica that gives out the sounds. Every vibration marked by the voice on the disk is conveyed by the needle to the mica, and this in turn produces sound waves exactly like those that made the marks on the disk. The mica does the singing.

The vibrations are so slight that they cannot be seen even with a microscope, but they are sufficient to produce the sound waves with which Tarnagno amazed the world. The horn, of course, increases the volume, but even without the horn the sound is clear. They say in the Victor office that for a camel to pass through a needle's eye has seemed the limit of impossibility, but they make an entire orchestra pass through a needle's point.

This is the machine that idealistic, hard-working Young Johnson saw in his vision. But not even he, perhaps, realized quite how eager the world would be for its possession. When the mechanism was so perfect that great singers felt they could sing into the funny looking horn without loss of dignity and with great increase of income a new chapter of the world's art had been written. Now not only beautiful voices are preserved, but it is possible through the talking machine to study the music and folk songs of the world.

All over the globe the traveling recorders carry their apparatus and induce the Chinese, the Japanese, the Africans to sing into it. There is a great demand just now for Arabian records in Argentina. There are Arabs working there, and they want the songs of home. In the Orient wealthy Chinese and Japanese buy their native music as sung by the greatest singers. They are content to say the Victor people, buy the Western music, for our finest productions mean nothing to them, but they want their own, and are willing to pay for it.

Many have been the adventures of these traveling recorders. In Japan, for instance, music is taught especially to the blind, and they were the persons most wanted by the agents. They contacted the blind, but it was found that they would not allow an "unclean white man" to touch them, and being blind they wandered all over the room, singing everywhere except into the horn, while the agents fumed furious and impotent. When half a dozen records had been spoiled a Japanese friend came to their assistance, and leading the proud singers gently by the arm drew them within range of the horn.

It is not uncommon now to find in camps of Italian laborers a talking machine with records of all the good old-fashioned operas that Italians love and others of the songs that make the Bay of Naples gay.

The laborers together buy the machine and some records. Then concerts are given, and after four or five numbers the list is passed around with the word that if more songs are to be heard there must be money forthcoming for new records. This is getting to be quite a business for the Victor Company. Not only the Italians, but the Hungarians, Bohemians, and other immigrants who come over and live huddled together in mining and lumber camps, call for the machine and records that will bring home near to them.

The "best seller" is Caruso, with Tetrassini, Farrar, Melba, and Scotti close seconds. Apropos of Tetrassini, the company tells a joke on itself. Some years ago, before she made her spectacular hit, she sang a number of records for a small company at \$90 a record. The Victor traveling agents were in Mexico and she passed through there. They wrote that she would sing twelve records for \$1,000, should they go ahead? The manager said no, it was too much. The year after she was the idol of New York and London and the company is paying her now \$25,000 or more annually for what it could have bought outright for one thousand dollars.

The company has done several operas entire—"Faust," "Trovatore," "Ernani," and "Pagliacci." It has not yet found a way of making the whole record so that it will be sung continuously, as on the stage. The disks have to be changed. And the company has not yet found a way of giving the full perfection of a great orchestra of ninety or one hundred pieces, but it is working for it. Mr. Johnson has a passion for perfection. They say in the office that if he saw a way of improving the machine, though it would not add a cent to his income, he would spend all he made in a year to bring it about. As it is, there is a small house given over to men at salaries of \$10,000 and \$12,000 a year, who experiment day in and day out, following the dream the young inventor saw fifteen years ago.

The whole business is in a peculiar way Johnson's. Not a mechanic works in the factory who does not know that his chief understands the work on which he is engaged better than he does himself. There is not a part of the machine he has not made with his own hands and the most delicate parts he has himself created.

The talking machine's business is not a great concern built by rich men's capital on poor men's brains. Johnson made it, with the help of his loyal friends, out of nothing. And throughout the buildings they warn you, "Don't mention my name. This is Johnson's business. He made it and his is the only name that should be connected with it."