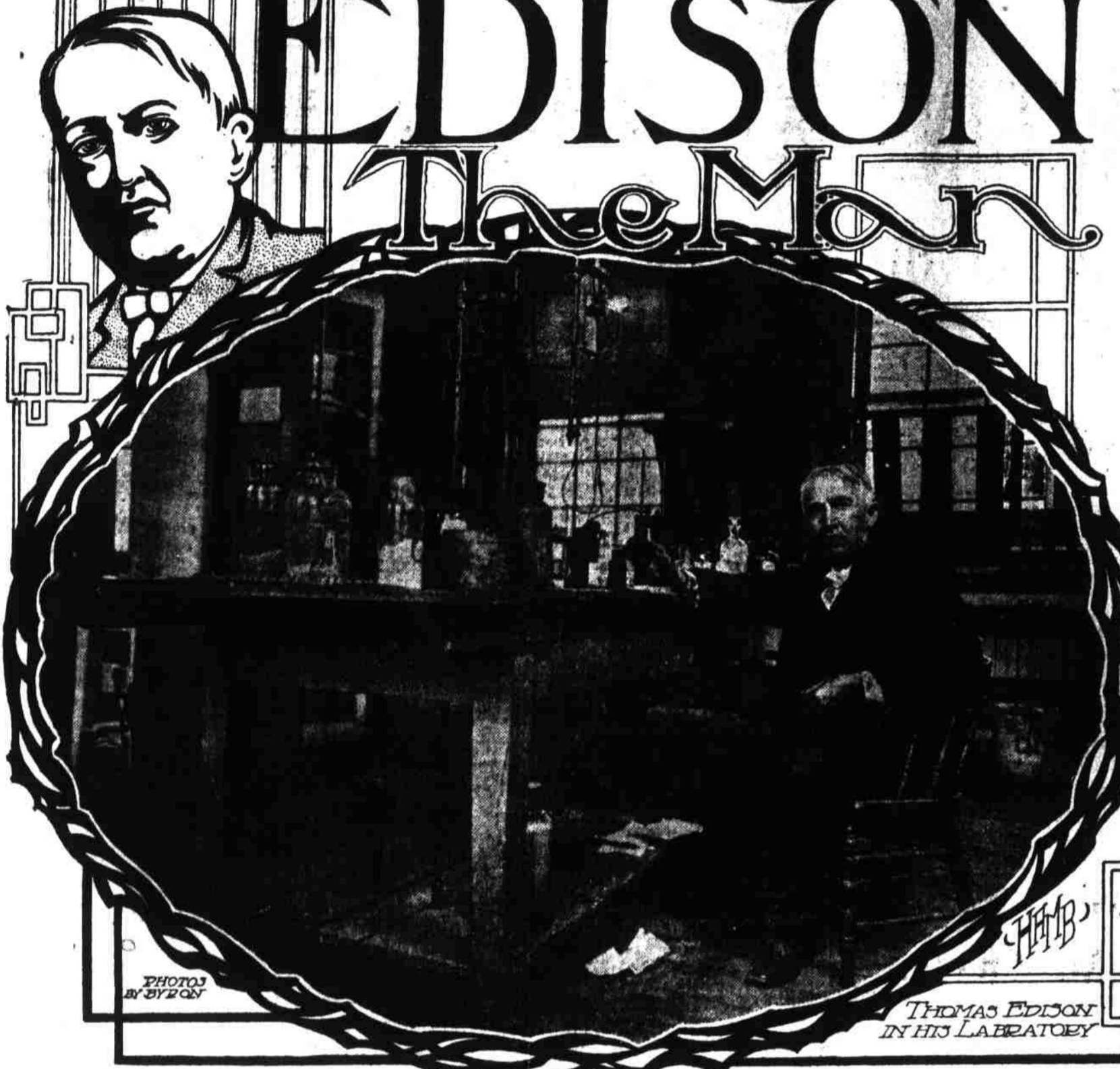


A Study of EDISON The Man



THOMAS EDISON IN HIS LABORATORY



MAKING A NEW RECORD IN THE PHONOGRAPH DEPARTMENT

This is to be as logical a study, briefly related, of Edison the man, as space will allow. I desire to trace the combination of strategy, inspiration and human shrewdness that have been neglected in any general survey of the inventor who has placed America in the foremost rank of the scientific world, among such men as Roentgen, Koch, Haeckel, Loeb and others—searching and acclimating brains of the world. Known to the entire world as a great inventor, there has been a tendency among the few writers who have met him personally to favor their description of him with a literary touch that is as fictitious as the stage picture of Shakespeare's apothecary. Through all the information which has been given to the public of Edison's personality I seem to have traced this literary inaccuracy—an emphasis of the stooping shoulders, the negligee attire, the abstract manner, the untrimmed hair, the sudden flash of genius in the eye, the flood of mysterious acids on his clothes. He has been pushed to the center of the world's stage as a dramatic character, the amateur of that most incomprehensible chamber of magic to the scientific eye, a laboratory.

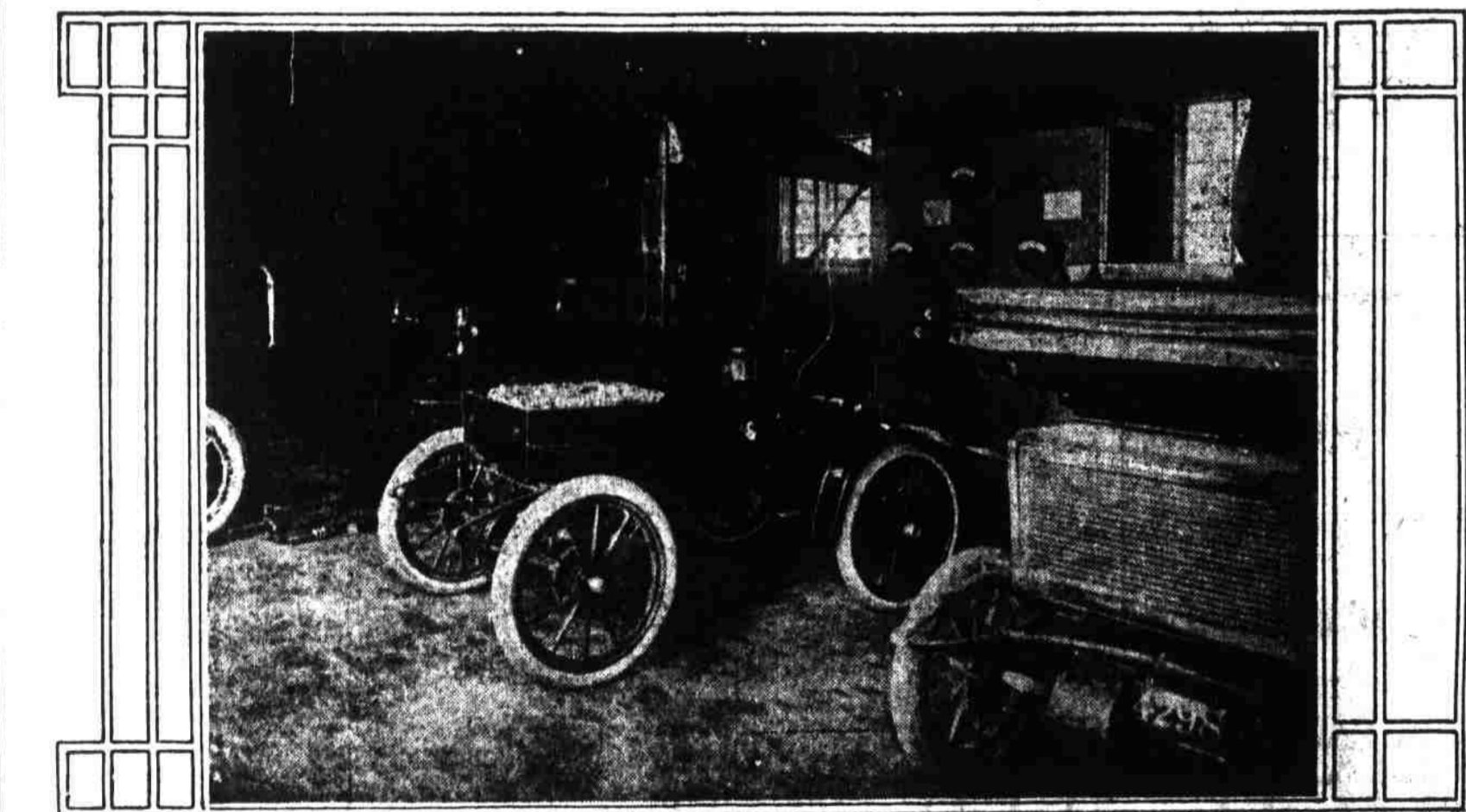
I confess that I approached Edison with something akin to the feeling a child has for a conjurer. Would he be so enraged at an interruption of his summings with a fluid secret in a tiny bottle before him, and accidentally burst explosive chemicals at us, or would he be in some pleasant experimental mood that would induce him to exhibit a few harmless laboratory tricks for our amusement? Or would he waste us aside and send us away with only a deeper reverence for the mysterious secrets of his soul? I am not ashamed to confess to this wondering humility, adult though I am.

It isn't anything to approach imaginative ideas like great painters, or great novelists, or great statesmen, but when it comes to tracing an imagination that has made ghostly traditions, commercial commonplace facts there is no telling what such a man may do at any moment. Say what you will, Edison has harnessed his imagination to supernatural lamps, and driving them in through one uoer of his laboratory has sent them out again at the other end literally reformed and even amusing demons.

No doubt there are scientists and chemists, mechanics and mathematicians in the Edison works that by the very force of their uncompromising training consider the great inventor as a dreamer, but that is exactly the amazing wonder of him which no knowledge of exact science can explain.

Take the dreamer out of man and you destroy the dividing instinct of life, that guesses, unknown land between man and his maker. The miracles of Edison's discoveries are to the scientist desperately reasonable, and to label his exact experiments as mere vapors from dreamland enrages him. Still say what he will the inception of almost any new invention has appeared first to the inventor in a most visionary stage of development.

Take Edison's own story of the new storage battery which he has just completed, and of which he told me much in detail. It was based upon the inventor's high esteem for the prolific promises there are in nature, for as he said, he could not conceive that nature so generous in all her ways had been mean enough to limit



THE NEW STORAGE BATTERY WILL DRIVE AN AUTOMOBILE ONE HUNDRED MILES

a storage battery to lead and acids. May be it is because he had always been so punctiliously chivalrous and just to her in his laboratory, that nature has rewarded him by lifting her veil to him so often. Wireless telegraphy had been confined to him by nature 20 years ago, he told me, when the Lehigh Valley road successfully used it in their freight department service. At that time he flashed a message from earth to a kite two miles in the air above. Just at that time he was in tremendous favor with Dame Nature. She gave him an idea for the incandescent lamp, which obliterated for a time his interest in wireless telegraphy. After the lamp came experimental improvements in automatic telegraphy operating at high speeds, when nature drew his attention to the audible sounds produced by the vibration of a string he was using in connection with the instruments, to this he applied his knowledge of acoustics and the telephone mechanics, with the result that he produced the phonograph. And so it seems to have been with him all along the line. Instead of feeling as a wizard of old have done, that nature was a dangerous, awesome specter to be withstood and feared, he has seen her beauties, approached her with confidence, and found that she holds only the most endearing principles for humanity at large.

Edison is not a wizard. He is a sturdy, sunny souled, hard headed son of Ohio, the great Buckeye State. He has what all great Americans of the present day reveal especially, the temperament of youth. His only enemy is time, because it has been forced upon

him, fall into an outward semblance of the fictional scientist, the man of abstraction and silent mystery, but get him among old friends, and he will tell better stories and listen to old ones as generously and with as keen a pleasure as ordinary hearty human beings. Because Edison is a prophet, chosen to advance the power of his fellow men over mankind, he is not a man of over-mindering exaltation, scarcely warrants that we picture him with any theatrical exaggerations. However, this dramatic flavor has been so liberally mixed with the solid commercial results of the Edison factory at Orange, N. J., that it is as a pretty tinsel veil adorning the business aspect of everything there. Literally, perhaps, it is inevitable, because the main force, the impelling power, the indefinite magic of definite outcomes and incomes at the Edison works, takes source in the prophetic imagination of Thomas A. Edison, the inventor of its marvels.

It is a place of marginal things, achieved by imaginative premeditation. In spite of the many clever assistants I met at the works, in spite of their exact reasoning, their scientific experience and even their experimental caution, take Edison away and there would be no more wonderwork forthcoming there. Edison himself expressed the idea this way: "No man of a mathematical habit of mind ever invented anything that amounted to much. I do not know anything about mathematics, and I don't know anything about science, and I don't know anything about machinery. I am a practical man, and I know that the good machine is made by a man who knows how to use his hands." And by night here

us frequently by accident, but it is still one of the secrets of nature. We are experimenting constantly to get perfect tones. There is nothing new, however, that we cannot record. We had trouble at first with soprano voices, and late with violin and cello solos. We only put 'cello solos on the market about four months ago. No day is exactly like another. There is a constant though minute atmospheric change going on about us, so we try everything, no matter how absurd it may seem at the time, in an effort to catch nature in a scientific trap." What I heard will not be on the market for a year. Edison's policy is to mistrust a merely friendly aspect of nature till he has acquired her assurance of its practical truth.

We found Edison in the chemical department of his laboratory. Something in a copper dish was steaming over a blue flame on a work-bench in front of him, and he lay far down in his chair apparently watching it. Some young man in shirt sleeves were quietly occupied in the same room, mixing and measuring chemicals.

There is a theory, probably supported by data, that there are times when to approach Edison when in one of these seemingly abstract silences is a breach never to be forgotten. I had heard about this, and so induced Mr. Wangeman to advance with me. He may have heard us approach his chair, and he may not, but he did not turn around. Mr. Wangeman is a scientist of the physical independent type, so he told him what he wanted.

I was never more impressed with the nonsense I had read about his melodramatic mannerisms, his wizard dignity apothecaries than when he jumped from his chair and we met cordially. I have met much more assumption of greatness in celebrities of equal fame, but with fewer practical achievements. Edison is not a dandified man, he is not stoop-shouldered, he is not slow or ponderous, or technically mysterious. His hair is only just turned gray, and though his trousers were not creased, nor his shoes patent leather, he had that indescribable dignity one finds in a Westerner who has taken time to work hard for it. It is the dignity of power, a restraint.

There is no word that exactly measures the difference between the wave that laps the shore and the wave that is in the mid ocean. One tells of the shallows at a glance, the other of the unfathomable possibilities. Edison is the sort of Westerner who could ride a scheme till it dropped under him and never lose heart of ultimately finding one that wouldn't drop. He has waiting courage, and no matter how circumstances blind him, he keeps right on feeling his way by little things till they grow big enough for him to see, because what he believes, generally will be. Edison has the habit of mental concentration of clearness, exactness. When he is talking you know that it is in perspective, because he punctuates with sharp, or loud, or softer tones of the voice. He is colloquial in his language, he has as well rounded sentences, so pretty Edison himself during all his long years of constant impending failures to a triumphant practical value.

problem solved is this: We halve the traffic for vehicles in crowded streets because we cut their length in two when we do away with the horse; then we halve it again by greater speed, which prevents congestion." It was clear that he was a bit sensitive about the criticism of the delay, because it revealed an unfair lack of confidence in a man who had done things.

"I don't usually talk much. I prefer to produce, and when I do so my work will hold good. Why, I've been experimenting and perfecting this, just as I have any invention intended for the market. Mind you, an inventor can make a beautiful thing to show much quicker than he can perfect a thing that must work. We're very commercial round here," he added, with a shrewd glint of pride and satisfaction in his blue eye, as he stamped his two feet squarely on the ground in emphatic assurance of this fact.

Once Edison has transformed a dream into a tangible reality he is all business, for he added: "What we wanted of the battery to do it is now doing in the New York streets—that is, a aluminum space, reduced weight, a 40-mile run with a truck capacity of one ton and one charge at a little more than one-half it costs to keep a horse vehicle running now. I've done it, and next spring our factory here will be making them."

Then he returned to the impatience of the public again: "They cannot expect me to finish a job like this as if it were a bit of machinery. Why, even a locomotive has contrary streaks, and that is plain steam, not a complicated chemical action like a battery. That's why it has taken time to make sure. And he was sure. There was no mistake in the shake of his head, the nervous clasp of the hands stretched at arms' length behind it. Confident that it was done, he felt at liberty to recall the dream stage of this, his latest invention.

"You know, it happens sometimes when things get slow around here that I suffer from ennui," he said, with a semi-comic regret in his voice, which set us all laughing, because Edison is an inauspicious working battery himself. "Well, when I get one of these spells I generally go into things pretty thoroughly, and although I was sure that a storage battery could be made (because I didn't think that Nature could be so mean as to confine herself to a lead battery), the important question in my mind was to know just exactly what was required of that battery. So I had a complete census of vehicles taken in New York, a report of the congestion and the average speed. I saw at once that if a storage battery could be made there would be use for it," and he paused with a whimsical smile. "Of course, the question of reducing weight displaced the lead battery, I know that some new combination of chemistry eliminating lead must be found. So I began experimenting, for a long time with no result. Then one day I had an idea, just a little bit of something; then that disappeared, and for a long time I got nothing. Still I kept at it, little by little, coaxing it along, but I never felt perfectly sure that Nature held the secret, and that it wasn't her fault. 'It's me,' I said to myself, 'not Nature that's wrong.' And so it was, for at last I got it, negative and positive, without lead. But after that so delicate and mysterious is chemical action that conditions would alter and make everything unreliable. We had some trouble with them. After we first put them out in New York. Couldn't understand it, till we found out that, instead of using distilled water, the dryers, unable to find any, had gone to drug stores and purchased carbonic water, the gases of which partly destroyed the action of the rest. There is no knowing what I can do with it. I've no doubt I can reduce it to half its present size, but it's small enough now for all purposes."

"The phonograph, at least, is complete," I suggested.

"Oh, no! The phonograph is a useful thing, and it's wonderful to see what pleasure it has given; it is the poor man's music, but we are experimenting, improving, discovering new things all the time in it."

And that is just the secret of Edison's success; he never reaches the final word of discovery. His imagination is always luring him into bypaths that no one suspects. In addition to his best-known inventions granted in connection with the development of the electric lamp, the telegraph, telephone, the ice-milling machinery and storage batteries, his inventions include wax records, typewriters, electric pens, vocal engines, addressing machines, methods of preserving fruit, cast-iron manufacture, wire drawing, electric locomotives, moving-picture machines, the making of plate glass, compressed air apparatus and many others.