

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 achieving 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 flavor 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 abstracted manner, the untrimmed hair, the sudden flash of genius in the eye, the inroad of mysterious acids on his clothes. He has been pushed to the center of the world's stage as a dramatic character, the wizard 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 conjuror.

Would be be so enraged at an interruption of his communings with a fluid secret in a tiny bottle before him, and accidentally hurl 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?

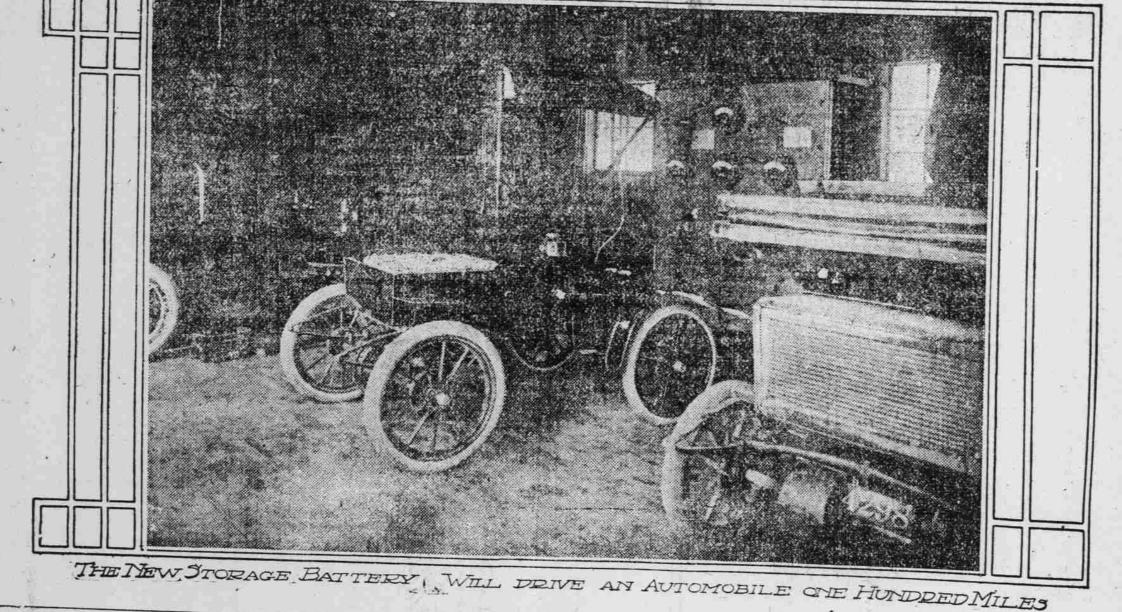
Or would he wave us aside and send us away with only a deeper reverence for the mysterious secrets of his soul. I am not ashamed to confess to this wondering timidity, adult though I am.

It isn't anything to approach imaginative idlers 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 lmagination to supernatural imps, and driving them in through one ucor of his labratory 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

Take the dreamer out of man and you destroy the divining instinct of life, that unseen, unknown land between mane and his maker. The miracles of Edison's diseries are to the scientist desperately easonable, and to label his exact experitents as mere vaporings from dreamland nrages him. Still say what he will the iception of almost any new invention has ppeared first to the inventor in a most-Isionary stage of development.

Take Edison's own story of the new torage battery which he has just comleted, and of which he told me much in etail, it was based upon the inventor's igh esteem for the prolific promises there re in nature, for as he said, he could not



a storage battery to lead and acids. May- | him, fall into an outward semblance of | be it is because he had always been so punctillously 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 confided 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 stylus he was using in connection with the instruments, to this he applied his knowledge of acoustics and the telephone mechanics, with marvels. the result that he produced the phono- It is a place of magical things, achieved graph. And so it seems to have been with him all along the line. Instead of feeling as wizards 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 onceive that nature so generous in all temperament of youth. He may some-

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 hindering exactitudes, 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

by imaginative presclence.

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. He hasn't the imagination to do it. I don't know anything added, "but I can't hire men with logical imagination." Edison will be exactly 59 years old next February; he is still a young man, in

spite of the pressure at which he has played his life. In the laboratory buildings, where all experimental labor is done exclusively. there are only a little over a hundred men employed; in the adjoining factory, where the phonograph and the moving

picture machines are made, there are over 2,500 employes in the season. It is in the laboratory that the spell of Edison's imagination is over all, and yet the secrets are open to any technical observer, because there is really no scientific question about them. Edison would not fearlessly answer, since it is not the natural evolution of experimental changes that counts, so much as it is the character and a certain audacity of imagination in the mind of the inventor who is

conducting them. Edison works with no apparent executive system. You may bunt almost anywhere for him in the various departments of his laboratory at any time. No one knows how many secrets are fermenting in his brain, nor the sequence of their development. Odd corners, enclosed works in the plain brick buildings of the laboratory, were shown to me as places where he snatched a little sleep when too

absorbed to go home. His head mechanic, Fred Ott, probably | till it was done," he said. "Our meals were sent in and we slept here." "Afraid the whole thing would go up in smoke?" I asked.

"No. We were sure enough, but we wanted to get through-to do it." Now Fred Ott voiced the germ that Edison had introduced right there. To do it!

To nail the dream together so that it would never fall apart again. Yes, and to keep it up to date; to inoculate it with the virus of newly applied discoveries, year in and year out, so that it should be not merely a bit of still life, but a progressive energy, alive every minute. Edison himsif carried all the weight of constantly impending failures to a triumphant practical value.

He's as tenacious as a bulldog once he reaches for a thing he "smells around" thoroughly to see if it's worth while, and, whenever he fails to get the intended result, he does not blame natural causes or bad workmanship; he just says: "It isn't nature that's wrong; it's me. I'll keep at it till I know more." There is an experimenting room in the laboratory devoted to the improvement of the phonograph. A. F. E. Wangeman, who bears a striking seremblance to Edison himself, is master of cerethe man who is closer to the magic of if he wishes, that are not yet on the Edison's achievements than any other market. I heard one of them under proceive that nature so generous in all temperament of youth. He may sometimes, because it has been forced upon maticians I need." And he might have left this room, night or day, for weeks, evades reason at times and tumbles upon

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

one of the secrets of nature. We are experimenting constantly to get perfect

tone. There is nothing now, however,

uring 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 forgiven. I had heard about this, and so induced Mr. Wangeman to advance with me.

him, and he lay far down in his chair apparently watching it. Some young

men in shirt sleeves were quietly occu-

pled in the same room, mixing and meas-

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 physically 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 and his resemblance to Shakespearean 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 that a New Yorker has to work hard for. It is the dignity of power .n 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 hlm, 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 no well rounded sentences, no pretty affectations of technical form, and if he doesn't hear you at once he pounces on you with a virile "what?" that permits no misunderstanding on either side. He is only slightly deaf, and the talk

about his necessity to watch the lips of another to understand him is fictional

I asked him what he was doing about the new storage battery. He tossed his head impatiently, while the tolerant smile of a patient man contradicted the first impression, and he began to talk. "Those fellows out West don't seem to

catch on," he began crisply. "Just because those batteries are not all over the United States now they seem to think I haven't done it. I'll show 'em next spring; they'll be on the market then. I'm building a new factory out here to make 'em in, but I didn't want to put 'em on the market till I knew they would do the work." He paused, staring straight he gets a hold of an idea, and you can't he was adjusting to make clear, as he ahead, and I waited, for, as I thought, habitually has done in his experiments. "I have proven that my storage battery does the work; they are being used in New York on trucks today, but I limited the number I put out to make the thing experimental. I've been testing over 20,000 of 'em right here in the laboratory, and they're all right now. They can do the work and it means a solution of the crowded traffic problem in all great cities." Another pause came, and he renewed the talk with more vigor.

"People seem to forget that you can't make a battery that is warranted to work right as you can a dynamo. A battery is a thing of chemical action, it is not a bit of solid machinery. I wasn't going to put out a battery that I couldn't guarantee, that wasn't commercially practical. The

us frequently by accident, but it is still traffic for vehicles in crowded streets because we cut their length in two when we do away with the horse; then we that we cannot record. We had trouble 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.

MAKING A NEW PECOPD

IN THE PHONOGRAPH DEPARTMENT

"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

Once Edison has transformed a dream into a tangible reality he is all business, for he added: "What we wanted this battery to do it is now doing in the New York streets-that is, a minimum 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 wassure. 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 inexhaustible 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 la 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 disposed of the lead battery. I knew 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 there came just a nibble, just a little bit of something; then that disappeared, and for a long time I got not ng. Still I kept at it, little by coaxing it along, but no result. I is 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 t, 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, lastead of using distilled water, the drive ers, unable to find any, had gone to drug stores and purchased carbonic water, the gases of which partly destroyed the attion 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,

suggested. Oh, no! The phonograph is a useful thing, and it's wonderful to see wast 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 success; he never reaches the final word of discovery. His imagination is always luring him into bypaths that no one sa pects. In addition to his better-known patents granted in connection with the development of the electric lamp, the telegraph, telephone, the ore-milling machinery and storage batteries, his inven tions include vote recorders, typewrite electric pens, vocal engines, addressed machines, methods of preserving from cast-iron manufacture, wire drawing. tric locomotives, moving-picture machines. the making of plate glass, compressed air apparatus and many others.

All this shows clearly that it is not so much the result of wizard's magic as it is a plain, censeless genius for work. the imaginative audacity of a poet and hard-headed business which combine to make the man Edison.

PENDENNIS.