

[Transcript] My First Million / SPECIAL: Thomas Edison (Part 2)

All right.

Quick break to tell you about another podcast that we're interested in right now, HubSpot just launched a Shark Tank rewatch podcast called Another Bite.

Every week, the hosts relive the latest and greatest pitches from Shark Tank, from Squatty Potty to the Mench on a Bench to Ring Doorbell, and they break down why these pitches were winners or losers, and each company's go-to-market strategy, branding, pricing, valuation, everything.

Basically all the things you want to know about how to survive the tank and scale your company on your own.

If you want to give it a listen, you can find another bite on whatever podcast app you listen to, like Apple or Spotify or whatever you're using right now.

All right.

Back to the show.

All right.

So last month, Sam went down to Nashville for the podcast movement conference, and he did a fireside chat with John Lee Dumas.

You might know him as the host of the Entrepreneurs on Fire podcast.

And if you like my first million, you might like the Entrepreneurs on Fire podcast.

It's the same.

It's like inspiration and strategy around your entrepreneurial journey and helps you create the life you've always dreamed of.

That doesn't sound too bad, does it?

All right.

Well, guess what?

It's also part of the HubSpot podcast network.

That's who brings you our show and other great business shows.

So if you want to listen, learn, and grow, go listen to Entrepreneurs on Fire.

It's on the HubSpot podcast network.

You can find it at HubSpot.com slash podcast network.

All right.

We have a special episode by Ben Wilson.

This is a three-part series on Thomas Edison.

We discovered this podcast about two or three months ago and freaking loved it.

It had very small listenership.

Both Sean and I binge listened to all of them.

His name is Ben Wilson.

The podcast is called How to Take Over the World.

Ben has allowed us to air this episode and the next two.

So this is a three-part series on Thomas Edison.

He's allowed us to air it on our feed just because we like it.

So his podcast, it only had a few hundred listeners at the time, but we thought this was so cool, Sean and I, and it's about a similar topic that we talk about.

So we have this segment called Billionaire of the Week.

This one is on Thomas Edison.

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We loved Ben's podcast so much.
We just said, hey, man, let us just air this on our feed because it's so good.
So it's called How to Take Over the World.
This episode is on Thomas Edison.
He's got a few other episodes or a few other folks on his feed.
He's got Thomas Edison, I believe he has Alexander the Great, the Rothschilds family.
It's really, really cool.
I'm a history buff.
And so I'm happy that he was cool and let us air this.
We're doing it none other than just we think it's good and we want you guys to check it out.
So here it is.
Enjoy the episode.
There's part two and part three on our feed.
Check it out.
I'm going to show you how great I am.
I just want to say from the bottom of my heart, I'd like to take this chance to apologize to absolutely nobody.
Hello and welcome to How to Take Over the World.
This is Ben Wilson.
And this episode is the second episode about Thomas Edison covering his life from the invention of electric light until his death.
And I'm going to do something a little bit different this go around.
I'm going to do this episode two.
And then next week, I'm going to do something called End Notes, where I'm just going to record sort of my thoughts that didn't fit neatly into the narrative that I laid out in in part one and part two.
So it'll just be kind of some ramblings and some extra notes.
And you guys can let me know what you think of that.
So for this episode, where we're starting is if you remember Edison invented the phonograph and then he went out West.
He took this big vacation and he came back with ideas about electric light.
And this was in 1878 when Edison was 31 years old.
And when Edison invented the phonograph and with it the entire idea of recorded sound, it was basically by accident.
If you remember, he was working on a different problem and it just kind of came to him all at once.
And his invention of the light bulb could not have been more different.
Electric light was something that dozens of people were working on.
Everyone kind of knew it was the future.
It was just that no one could really figure out how to make it work.
And so when Edison starts working on perfecting the light bulb in 1878, it's the ultimate heat check.
And dozens of other men with more impressive academic credentials than him have been working

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on it for years.

And he thinks he can just come in and figure it out.

No problem.

Right.

Now it's important to keep in mind that a form of electric light had actually already been invented by the time Edison came along.

But it wasn't electric light like we know it.

They had what were called arc lights.

The first arc light was developed way back 20 years previous in 1855.

And what it was is essentially a giant open current.

So you got two big metal poles and there's a continuous electric current passing from one to the other.

If you've ever seen a welder with one of those big heavy masks and their tools throwing off this huge bright white light, that is actually called arc welding.

And arc welding is essentially just using mini arc lights to fuse together metal.

So that's really what an arc light is, right?

But there is a problem with it.

One is that they are incredibly dangerous.

So you got to keep them far removed from pedestrians.

The other problem is that they're incredibly bright.

So with an arc light, the strategy is to put it way up high and let a single arc light light a block or even a few blocks.

This creates problems because it casts horrible shadows and also because you can't really use it for indoor lighting.

It's just too bright.

And so these lights were sort of a novelty.

But people were still looking for a better solution, something that they could actually replace candles and gas lamps with, which brings us to incandescent lighting.

Of course, as you probably know with incandescent lights, instead of using an open current as the light source, like an arc light, instead you send a charge through a filament, heating it up until it starts to glow.

And again, incandescent lighting had already been discovered far before Edison, at least in principle.

But the problem in 1878 was finding a material for the filament of an incandescent bulb that would last for long enough to make it practical.

Because if you imagine, most things that you heat up so hot that they glow usually either melt or burst into flame.

And even if you had a good substance that would not melt or burst into flame, most of them would burn out after only a few minutes.

And a light bulb that needs to be replaced every five minutes is, like, that's not practical or that's a science fair project.

So everyone was trying to figure out how to make a practical incandescent light bulb that would last.

And Edison was not lacking in self-confidence.

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He was certain that he could succeed or others had failed.

It seemed easy to him.

In fact, so easy that he starts telling newspaper reporters that he has this thing figured out.

He's got an incandescent light bulb invented after only a few weeks of working on it.

He comes up with this bulb and it's lasting longer than anyone else's and he figures,

hey, that was easy.

I just invented the light bulb and so he's telling people, I did it.

Electric light bulb invented.

And because he's a celebrity inventor already, you know, he invented the phonograph which blew everyone's socks off.

People are paying attention as it becomes huge news, they're reporting it in the New York Times, they're reporting it in the papers all over the world, Edison has invented the electric light bulb.

And not only that, but Edison has a pretty fleshed out idea of how these new bulbs could be used to make electric light practical for millions of people.

Listen to what he wrote.

And remember, this is before any of this is invented.

This is just Edison speculating off the top of his dome.

In fact, they were still years away from anyone getting electric light.

But here's what Edison wrote, quote, with the process I have just discovered, I can produce a thousand bulbs from one machine.

Indeed, the number may be said to be infinite.

When the brilliancy and cheapness of the lights are made known to the public, which will be in a few weeks, or just as soon as I can thoroughly protect the process, illumination by gas will be discarded.

With 15 or 20 of these Dynamo electric machines, I can light the entire lower part of New York City using a 500 horsepower engine.

I propose to establish one of these light centers in Nassau Street, whence wires can be run uptown.

These wires must be insulated and laid in the ground in the same manner as gas pipes.

I also propose to utilize the gas burners and chandeliers now in use.

In each house, I can place a light meter, once these wires will pass through the house, tapping small metallic contrivances that may be placed over each burner.

Whenever it is desired to light a jet, it will only be necessary to touch a little spring near it.

No matches are required.

Again, the same wire that brings the light to you will also bring power and heat.

With the power, you can run an elevator, a sewing machine, or any other mechanical contrivance that requires a motor, and by means of the heat, you may cook your food.

This seems like pretty simple stuff to us today, because he's just describing a power grid.

Yes, you flip a switch and you get light, or you get appliances.

You can run a sewing machine.

You can get heat through your electricity.

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But that was totally revolutionary at the time, because there were no power grids. In order to say this, Edison had to imagine this future out of the void. In order to make it a reality, he was going to have to invent not only the light bulbs, but the generators, the wiring, the meters, the appliances, even the light switches. First, the key to this entire system of electric light, the first step that would unlock everything else and make it possible, was finding a light bulb that could last. And Edison had a problem in this regard, because the bulb that he had invented, the one he told all these reporters about and sent off a firestorm of publicity, it's a total and complete failure. He had gone down the wrong path. He was using a zinc and platinum construction, which is cleverly designed, but it doesn't last much longer than anyone else's bulb. It showed promising results at first. So he thought that if he kept tinkering with it, he could figure it out. He could get it to last longer. But no, that particular road he was going down was a total dead end. And Edison is starting to realize that he's got absolutely nothing in terms of a light bulb right as the media attention is reaching a fever pitch. People are saying that Edison has struck gold twice in a row. He's invented the phonograph and now the light bulb and they're shouting his praises and everyone is so intrigued to see this new light bulb in action. And again, he's just realizing he's completely wrong. He's got nothing. It's not a great situation to be in. In fact, it's so stressful that he has a complete nervous breakdown. He's been ridden for a week and a half with a horribly painful condition called facial neurology. But luckily, there is one thing that he's got and that's boatloads of money. Because the richest and most powerful men in the world were tripping over themselves to fund Edison's new venture in discovering electric light. The financiers that Edison actually goes with are men representing Western Union and JP Morgan. They capitalize his new electric light company to the tune of \$395,000, which is the equivalent of about \$10.5 million in 2020 money. He's well funded, but he's on the hook. He has to invent the light bulb now. He's got the eyes of the world on him if he doesn't, he's humiliated and ruined. And so Edison goes to the strategy that had always worked best for him, which is to forget the clever theorizing and just experiment and tinker like crazy until he figured something out. So he staffs up and he and his team try out thousands of different substances to see what will work. And he continues these experiments over months and months with everyone pressuring him and waiting to see what he will come up with.

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One reportedly said during this time, quote, I think there's no doubt I am the busiest man in America, which is true.

He's got a group of workers that are referred to as the insomnia squad.

And people refer to this bizarre situation that you'll visit the lab in Menlo Park and it looks like like a homeless shelter.

There are just people fully clothed sleeping all over the place under benches under tables in random corners and closets.

And that's because Edison was completely obsessed with figuring this out.

He had all the pressure of the world on his shoulders and he expected his employees to feel the same way about it that he did.

So there was no regular sleep schedules.

You came into the lab, you worked on finding a working light bulb until your body just couldn't take it anymore, at which point you curled up and grabbed an hour or two of shut eye under some bench somewhere and then you got back to work.

There were no other priorities and there were no distractions.

Well, actually, there was one minor distraction for Edison when a minor scientist by the name of Clarence Blake gives a lecture in which he pays tribute to Alexander Graham Bell for inventing the telephone without mentioning Edison.

Edison goes berserk.

He considered himself essential to the creation of the telephone because of the transmitter that he had invented.

And it was a really big deal.

It made the telephone much more usable over much longer distances.

And so Edison kind of had a point when he said that he was one of the fathers of the telephone.

So for someone to give a big public speech where they only mentioned Bell as the sole inventor of the telephone that insulted Edison and he felt slighted.

So when one of Edison's European agents, a guy by the name of George Gerard, sends Edison a letter saying, you know what we need is a better receiver for the telephone.

Edison jumps at the chance.

He takes a couple months away from the light bulb and invents a new chalk receiver that makes the telephone much more functional and capable of receiving messages from far greater distances.

It's a monumental achievement, a stunning success in a very short period of time.

And he does it just as a sideshow and then he's right back to the light bulb.

And to me, this is kind of like this is peak Edison.

This is him at his powers where he's inventing stuff just to stunt on people just to show them that he can, you know, he's, he's inventing world changing inventions just to solve petty slights.

But despite this, the light bulb is still actually not going that great.

And the news is starting to get out that things are not going well.

14 of the 16 patents that he submitted to the US Patent Office are rejected as unworkable.

And the newspapers who just months ago were reporting that he had solved the problem of the light bulb are now reporting that Edison actually has no idea what he's doing.

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And it's not just the press who are coming after Edison.

The scientific community always had a particular hatred for him because he was a highly successful inventor and scientist, despite having virtually no formal education.

And so they're launching a bunch of invective against him.

In one case, Edison had invented a new dynamo, which is an early form of like generator to generate power for his light bulbs.

And it was weird looking.

It was kind of clunky and awkward and unlike anything else that had been invented in terms of dynamo.

It didn't look like a good functioning dynamo and the scientific community just savage this new machine.

They're brutal in criticizing it.

The Irish physicist and academic John Tyndall said about it, quote, it is difficult adequately to express the ludicrous inefficiency of the arrangement, but one thing is abundantly certain.

And that is that the person who seriously proposed it was wholly destitute of a scientific knowledge of either electricity or the science of energy.

So it's not what you want people to be saying.

But meanwhile, I mean, Edison actually tries the thing and it generates so much energy that it breaks the coils that get hooked up to it.

It's a very raw invention.

It needed a bunch of modifications to become practical, but it was a breakthrough in generator design and academics and theoretical scientists just don't give it the time of day.

They're totally dismissive and condescending.

And this would be one of the inciting incidents in a long feud with the academic scientific establishment.

They generally refused to give Edison much respect.

And he always had some nasty words for what he considered do nothing academics who never actually did or invented anything and only ever criticized those who actually did get out there and invent things.

Edison has quotes.

He says things like, take a whole pile of theoretical scientists that I can name and you will find uncertainty if not imposition in half of what they state as scientific truth.

And with this story, you can definitely see his perspective, why he would feel this way.

Well, in the midst of all this pressure and skepticism from the press and invective from the scientific establishment, Edison finally does have his breakthrough with the light bulb.

On Tuesday, October 21st, Edison had his lab assistants test a bulb with a carbonized filament using lamp black and either thread or a fishing line.

The light lasted for 13 and a half hours.

Edison wrote Eureka in his laboratory logbook.

Now you probably wouldn't buy a light bulb that was going to last for just 13 and a half hours, but it was enough to demonstrate that, hey, we're onto something here.

We can build on this.

And sure enough, two months later by New Year's Eve, they have 59 reliable lamps to show off at Menlo Park with bulbs that can last for over 600 hours.

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They throw a great big party and it's really the arrival of the electric light bulb. I mentioned this party because it's at this party that Edison has one of my favorite quotes. At the party, someone asks Edison, if he is a genius and he responds, quote, you know well enough, I am nothing of the sort. Unless we accept the theory that genius is prolonged patience. I'm patient enough to be sure. And I would just like to point out that that kind of actually is exactly what genius is. Prolonged patience, a good amount of intelligence, married to an unfailing energy and level of effort. You may have heard the other saying genius is 1% inspiration, 99% perspiration. And sounds kind of corny, but that is actually a Thomas Edison quote. And if you can kind of remove the cliché aura around it, I think it tells you a lot about what it takes to do something great about genius and about who Edison was. Now I'd just like to take a second to talk about the nature of this discovery, because on its surface, isn't this earth shattering thing, isn't this breakthrough, it didn't blow people's minds in quite the same way that recorded sounded. And that's because Edison didn't strictly invent electric light, or even the incandescent light bulb. So you'll see some people out there who say, oh, you know, Edison was a fraud and a greedy businessman who really just stole his inventions from other people and claim them as his own. Which is a nice story, right? It fits a certain narrative of the greedy capitalist, but it's just not remotely true. Edison absolutely deserves credit for inventing the light bulb. Yes, other people made other important contributions in the field. But who deserves credit? I mean, on October 21, 1882, no one had electric light, basically. And after that date, they were on the road to that becoming a reality, and to giving electric light to millions of people. So when people try to claim that Edison doesn't deserve credit for the light bulb and for electric light, I think of the line from the movie The Social Network, when Mark Zuckerberg says, if you guys were the inventors of Facebook, you'd have invented Facebook. And I just, I feel that way about the light bulb. If someone else had invented the light bulb, they would have invented the light bulb. And these claims are not new. People at the time tried to downplay his achievements or even downright deny them, especially members of the academic and scientific community, as I was mentioning earlier. When Edison applied for patents in London, his lamp was dismissed as, quote, a hopeless failure, wrong in design, wrong in principle, useful only in showing how singularly devoid of sound scientific knowledge a clever practical man might be. I mean, that's above and beyond what is necessary to shoot down what they thought was a failed light bulb, right? And add to that that they were wrong. It was working.

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The Frenchman Dumont Cell, their greatest scientist on the subject of electric light, said that all should regard a suspicion, the pompous announcements that come our way from the new world.

And even in America, Professor Henry Morton, president of the Stevens Institute of Technology, called Edison's bulb a conspicuous failure.

All these experts claim that the incandescence of Edison's light bulb was clearly fake and sure to burn out after a few hours, if only given closer inspection and an honest test.

And you can't blame them too much.

I mean, Edison is the same guy who was claiming that he had invented the light bulb years ago.

So his claim probably did deserve some skepticism, but the condescension was over the top.

And of course, they were wrong.

He had figured it out.

The average podcast listener has six shows in their rotation.

So you're most likely not just listening to my first million.

If so, I want to make another suggestion.

I want to share a podcast that I've been listening to.

The show is called the Jordan Harbinger show.

So Jordan is my home.

He's a great friend of mine.

Jordan's one of the guys who helped encourage us to launch his podcast.

He's given us a ton of feedback on how to grow, how to make the content amazing.

And his show is awesome.

I became friends with him because I started listening to show and I reached out and it's very fascinating.

He dives into the minds of some very, very interesting people.

So authors, scientists, CEOs, mobsters.

He's got a gift.

Kind of like Sean does, to be honest.

I'm getting guests to share never heard before stories.

Very cool.

Very fascinating.

A few of my favorite episodes are episode 117 with Robert Green.

I've talked about Robert Green's books all the time in this podcast is one of my favorites.

And then episode 498 with Rob Dierdek, who's coming on our podcast actually a month.

So you can't go wrong with adding Jordan Harbinger show to your rotation.

Check it out.

This is the Jordan Harbinger show that's H A R B I N G E R on Apple podcast, Spotify, wherever you get it.

Check it out.

He's awesome.

I love him.

Edison referred to electric light as the greatest adventure of my life, akin to venturing on an uncharted sea.

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And even after the invention of the light bulb, that adventure was just starting out.

A light bulb is just a bulb.

And if you have nothing to plug it into, it's not going to do you much good.

So Edison and his company had already started working on things like generators and a delivery system, but now they really kicked into high gear working on these things.

The number of patents that Edison and his team submit during this time period is staggering.

They're coming up with and patenting dynamos and engines to create energy, wires to transport the electricity, systems for laying out and distributing it, lamps, bulbs and appliances that can be used with it, safety fuses and centrifugal governors to control the running of motors as demand rose and fell, meters to measure the usage of electricity and more at this point in his career, Edison was receiving a new patent roughly once every four days, which is just mind boggling.

Again, inventing the light bulb was a monumental task, something no one else had been able to achieve, but developing everything else around it to deliver power to people's homes was no less of an achievement.

In fact, it's probably an even bigger achievement.

And it required an enormous amount of intelligence and ingenuity, not just from Edison, but from his team as well.

He definitely didn't do it all himself.

Cruci, who you'll remember as Edison's brilliant machinist from last episode, was really crucial in developing the insulated copper wiring that would transport energy to homes all over the world.

Cruci also basically invented the grid.

Prior to his invention, Edison's idea was to send out energy like a tree, branching off into smaller and smaller wires as it gets closer to individual homes.

Well, Cruci comes up with a grid system that reduced the need for copper by seven-eighths and really made electric light economical.

It was a really elegant, really efficient invention.

So it definitely wasn't a one-man show, but at the same time, I think Edison deserves a lot of the credit for the accomplishments of his subordinates.

He did a lot to push them and guide them towards solutions.

He was a great, not just inventor, but leader.

This was expressed well by one of his junior electrical engineers who would join the company a couple years later.

He said, quote, the effect that Edison produced on me was rather extraordinary.

When I saw this wonderful man, who had no training at all, no advantages, and did it all himself and saw the great results by virtue of his industry and application, I felt mortified that I had squandered my life.

So, you know, this young engineer felt really inspired by seeing how much Edison could do and felt inspired himself to try and, you know, try and match that.

And so in case you didn't guess, that young engineer who was working for Mr. Edison was a guy by the name of Nikola Tesla.

I'll get into their relationship, their supposed rivalry, and some of their similarities and differences in a separate episode because I think it merits a longer conversation, although

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I will just say here that the idea of a rivalry between the two of them is sort of overblown. But even with the assistance of this big team of brilliant engineers who assisted Edison, the whole electrifying a city for the first time thing took a lot of effort and it took a long time.

Two years later, they still hadn't installed anything and people start to get anxious naturally. You know, hey, when are we actually going to get electric power and especially the financiers are like, okay, when are we going to start seeing a return on this capital?

One of the big obstacles was getting the approval of corrupt New York City officials.

So Edison comes up with a pretty brilliant plan.

He gets Chief Alderman John C. Morris and other New York City officials to come to Menlo Park where Edison gives them a long lecture during which they start to get a little annoyed and very hungry and then he leads them upstairs to a pitch black room.

As they stand there waiting in this dark room, soft golden electric lights slowly come on revealing an extravagantly set dinner table and white gloved waiters standing at attention.

The wine and the bourbon flowed and by the end of the night, John C. Morris was telling the table that Edison was entitled to the thanks of the world for bringing this light to such perfection that it can now be made to take the place of gas and assuring everyone that he was now an advocate of electric light.

You could count on him.

The next day, Edison had a permit to bring incandescent electric light to 51 blocks of downtown Manhattan.

Around this time, Edison decides that he can't really afford to be way out in Menlo Park, so he moves his family up to New York City and establishes a new operating base and starts work on a power plant facility on Pearl Street.

He also establishes a new company.

He wanted to manufacture all of his own machinery, but his board opposed getting into manufacturing,

so he starts Edison Machine Works as a separate company, which turned out to be a pretty good call as that little company would go on to become what we know as General Electric, which was a pretty big deal for quite a long time.

Edison was juggling all these different constraints, inventing and patenting the technology, building and manufacturing all the different components necessary for all this to finally happen, but delay after delay piled up.

And then, finally, on Monday, September 4, 1882, Edison turned the lights on on New York City.

He actually has them turned on at 3pm, so that no one would notice if they didn't work. But by 7pm, people start becoming aware, whoa, wait, the electric lights are on all over the city.

It was a total transformational moment in the history of the world, but it was also a little anticlimactic.

There were a few news reports about it, no parties, no celebrations, just steady, practical, warm light.

But it was enough for Edison who said, quote, I have accomplished all that I promised. Now, Edison has a really, really packed life, he invented a lot and did a lot over a long

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period of time.

None of it probably matches the heights of inventing the phonograph and the electric light, so I'm going to do sort of a quick overview of the rest of his life before going back and diving deep on a few stories.

Things started to go really well for Edison's electric business, but then in 1884, he had the worst year of his life.

A giant financial crisis hits the US and sinks him into debt, and around the same time, his wife dies.

At the time, no one could or no one would say what exactly it was that she died from, but in retrospect, it's pretty clear that she sadly died of a morphine overdose.

Over the next couple of years, Edison managed to pull himself out of financial crisis, and by 1886, he's in a really good situation with more than 300,000 lamps in his circuit and booming revenue and profits.

He also remarried in 1886 to a woman by the name of Mina Miller, and it's a great year for him.

Business is doing well.

He's in love.

He's got inventive energy, and even has time to patent an important non-electric light invention, the phonoplex.

But there's something else that happens in 1886 that should have concerned him.

On November 2nd, a patent was filed for alternating current electricity, which would allow power to be sent over distances far longer than Edison's direct current system.

And at power levels that were much higher, despite these advantages, Edison decides not to take advantage of AC power.

He said this was because AC was dangerous and could kill people.

Which to be fair to Edison was true, AC was, in fact, much more dangerous than DC.

But that didn't matter all that much to people when it provided much more benefit for far cheaper than his DC electric light.

The Westinghouse Company, with Nikola Tesla, who had left Edison as one of its chief engineers, takes up the mantle of AC power and acquires the rights to it in the United States.

By the end of 1888, Westinghouse is crushing Edison Electric in terms of subscribers.

At the same time, Edison nearly bankrupts himself again by putting money into an improved phonograph business.

In the late 1880s, Edison starts to put more and more control of his existing business into the hands of professional managers so that he can focus more time on inventing.

Consequently, in the late 1880s, Edison makes integral contributions to the development of moving pictures, what we now call cinema or movies.

And in 1892, Edison is forced out as the director of his electric light company and decides to go into, of all things, mining.

He establishes this enormous mine, called the Ogden Mine in New Jersey, and develops all these crazy mining and refining technologies to try to make this mine competitive, even though the ore at this location was significantly less pure than other mines in the United States.

He keeps selling off ownership of his other companies, especially General Electric, in order to fund this mining operation, which is crazy.

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He's just sinking good money after bad.

For this reason, there are multiple people who become fabulously wealthy from Edison's inventions.

There's basically a small group of millionaires and billionaires, most famously Samuel Insell, but Edison isn't one of them.

He keeps pouring money from his profitable businesses into his unprofitable ones.

Edison was never really poor during his life, but he was never rich either.

He was basically always a minor millionaire.

Whenever he achieved a ton of success, he poured a bunch of money from that into these new ventures where he could tinker and invent new things, but then often lost a bunch of money for him.

And that's because for Edison, money was never the point.

You might remember from the last episode that he was literally addicted to inventing, like a junkie who only makes money in order to buy more drugs.

Edison only made money to pour it back into unprofitable ventures where he could invent new things.

And so his mining business is just a total money pit.

He's losing astronomical amounts of money, but he just keeps pouring more and more money into it until he literally can't lose anymore.

He basically hits rock bottom and people refuse to fund the mine anymore.

Despite this, he never really cared.

He was never bitter about the mine.

In fact, he had the time of his life.

He was inventing cool new mining equipment and would later write, quote, I never felt better in my life.

Hard work, nothing to divert my thought, clear air, simple food.

It was very pleasant.

On a return visit to the mine after it had failed, he was able to cheerfully joke, I put \$3 million down that hole in the ground and never heard it hit bottom.

After he leaves the mine, he comes back and partially resumes control of his phonograph, electric light, and moving picture businesses.

Over the years, he also makes important new inventions in the areas of cement manufacturing, x-ray technology, and most profitably with the development of rechargeable batteries.

These were used in cars, submarines, and dozens of other uses.

Speaking of car batteries, one of the most productive relationships of Edison's life came with a young engineer who worked for him early in his career.

The young man named Henry Ford expressed to Edison a desire to keep tinkering on combustion engines, which Edison encouraged.

Edison and Ford struck up a strong relationship that would last Edison's lifetime.

And Ford really, really looked up to and admired Edison and continued to fund some of his less profitable ventures.

Even when Ford kind of knew that he was probably not going to see a return on these investments, he just really admired Edison as like this saint, this father of invention, who gave him his start and would do anything for him.

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So it was a very productive relationship for both of them in different ways.

Toward the end of his life, Edison spent time trying to come up with inventions for the US Navy, but none of them were ever implemented.

After that, the last major initiative of Edison's life, which he undertook in his late 70s and early 80s, was trying to find a domestic source of rubber in the United States, but he wasn't able to complete that work before he died.

During his lifetime, Edison invented the phonograph, the practical light bulb, the rechargeable nickel battery, the kinoscope, the electric pen, the electric stock ticker, the underwater microphone, the fluoroscope, and he was a key innovator in mining motion pictures, cement, and chemical manufacturing, telephony, and telegraphy.

He also founded one of the great American companies of the 20th century, General Electric, and established many other crucial international companies that brought light and electricity to millions.

He did this despite growing up in obscure circumstances with no formal education and a disability deafness that he never made a big deal about and hardly ever mentioned.

To me, the biggest lesson of Edison's life is finding something that you are passionate about the way he was passionate about inventing.

This is a little bit different from doing what you love, as people say, in a subtle but important way.

I'm reminded of one of my favorite quotes from my favorite TV show, a show called Patriot, where one of the lead characters says, quote, you are what you can't stop doing.

What that means is if we discover what someone is passionate about, then that person and that thing will intersect.

Passion involves compulsion.

People and what they love don't always intersect.

People and their compulsions do.

So if you're trying to be successful, lean into doing what you feel compelled to do.

Because if you do, it's like a superpower, you can overcome any obstacle, deal with any setback.

None of it matters because you get to wake up every morning and do the thing that you are compelled to do, the thing that you are borderline addicted to.

So for example, in 1914, an enormous fire swept through Edison's laboratories and manufacturing plants in New Jersey, damaging or destroying more than half the buildings and doing millions of dollars in damage, really destroying his company.

He could only watch as the fire spread from building to building, each new chemical or material that burned being set apart by a different color of fire.

And so what was Edison's response to this total catastrophe that destroyed his business?

He pulled aside his son and said, quote, get your mother and her friends over here.

They'll never see a fire like this again.

And when someone from the advertising department said, Mr. Edison, this is an awful catastrophe for you, he responded, yes, Maxwell, a big fortune has gone up in flames tonight.

But isn't it a beautiful sight?

One other story that I found highly instructive about Edison came from a lunch he had with Henry Ford and a man by the name of Daniels.

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It's very bizarre, but here is what Daniels wrote.

And keep in mind this happened when Edison was in his late 60s.

Daniels wrote, quote, I do not suppose anything so strange ever occurred at the luncheon in New York and elsewhere.

After the first course, Edison pointing to a large chandelier with many globes in the middle of the room, said, Henry, I'll do anything you want that I can kick the globe off that chandelier.

It hung high toward the ceiling.

Ford said he would take the bet.

Edison rose, pushed the table to one side of the room, took his stand in the center, and with his eye fixed on the globe, made the highest kick I have ever seen a man make and smashed the globe into smithereens.

He then said, Henry, let's see what you can do.

The automobile manufacturer took careful aim, but his foot missed the chandelier by a fraction of an inch.

Edison had won, and for the balance of the meal, or until the ice cream was served, he was crowing over Ford, you are a younger man than I am, but I can outkick you.

He seemed prouder of that high kick than if he had invented a means of ending the U-boat warfare.

And that last sentence is a reference to something he was working on during World War One during the time of this story.

So does that story remind you of anyone?

I know who it reminds me of.

Admittedly, I've just been watching some of The Last Dance on ESPN, but it sounds just like Michael Jordan to me, getting way too competitive over totally small and meaningless stuff.

Like MJ, Edison had this compulsion to win, to be the man in charge, the man on top.

He said as much when he said, quote, I don't care so much about making my fortune as I do for getting ahead of the other fellows.

I'd like to finish up with two last stories from his life.

You know I like to draw comparisons between people on this podcast, so I particularly enjoyed this little anecdote.

A journalist asked Edison whose voice, out of all the people in history, he most would have liked to have heard.

Napoleon, Edison replied instantly.

The journalist responded in a reproving tone, well the voice I should most like to have heard is that of our savior.

Edison thought for a moment and said, well, you know I like a hustler.

The last story I want to share comes from the very end of Edison's life, just two years before his death.

He was getting old and finally slowing down.

It was the 50th anniversary of his incandescent light bulb, and a huge international celebration was planned.

As part of it, Henry Ford had the entire lab complex from Menlo Park, which was long since

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abandoned, dissembled, and put back together in Dearborn, Michigan, as essentially a museum. Ford had Edison's old lab completely restored to exactly how it looked when he invented the light bulb.

He even went so far as to track down the old chemical manufacturers who had stocked his lab so that he could have the shelves stocked with the exact same chemicals and materials as Edison had had at the time.

He also excavated the top foot of soil from Menlo Park and had it shipped out so that the old laboratory could even sit on top of the same soil as it had.

When the 80-year-old Edison entered his old lab, it took his breath away.

Where do you suppose they got him all, he asked.

They're all here, every one of the chemicals I had at Menlo Park.

He paced around for a few minutes and then sat down at a workbench.

With tears in his eyes, he said, I could sit right down here and go to work with my old tools.

He attended a party and gave a speech later that night, but in the morning, he was uncharacteristically exhausted.

The exhausted old man needed a rest.

He turned to his assistants and said, I'm tired of all this glory.

I want to get back to work.

Thank you for listening to this episode of How to Take Over the World.

Next week, as I mentioned, I'm going to try something different and release an Endnotes episode where I'm going to talk about some of the random stories and thoughts that I couldn't get into this episode.

I'll also be talking a little bit more about Edison vs. Tesla, the current wars, and more.

Until then, thanks for listening.