

ACADEMIE
FRANÇOIS
BOURDON



LE CREUSOT

BICENTENAIRE de
la PHOTOGRAPHIE

2026.2027

1826.1827

EXPOSITION

OCT. 2026 – SEPT. 2027

PHOTOGRAPHIE ET SCIENCES

TÉMOINS DES MONDES INDUSTRIELS

PAVILLON DE L'INDUSTRIE

LE CREUSOT



Schneider et Compagnie - Usine du Creusot - Forges et laminoirs - Salle des essais (1914)



REGION
BOURGOGNE
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COMTE



Family booklet

An exhibition to explore as a family

English version · Version anglaise

Welcome!

Did you know that photography was born thanks to science? For almost 200 years, it has helped scientists see what is too small, too far away or too fast for our eyes. In this exhibition, follow the trail and discover an amazing invention at every step. Keep your eyes open!

How can we keep an image of light?

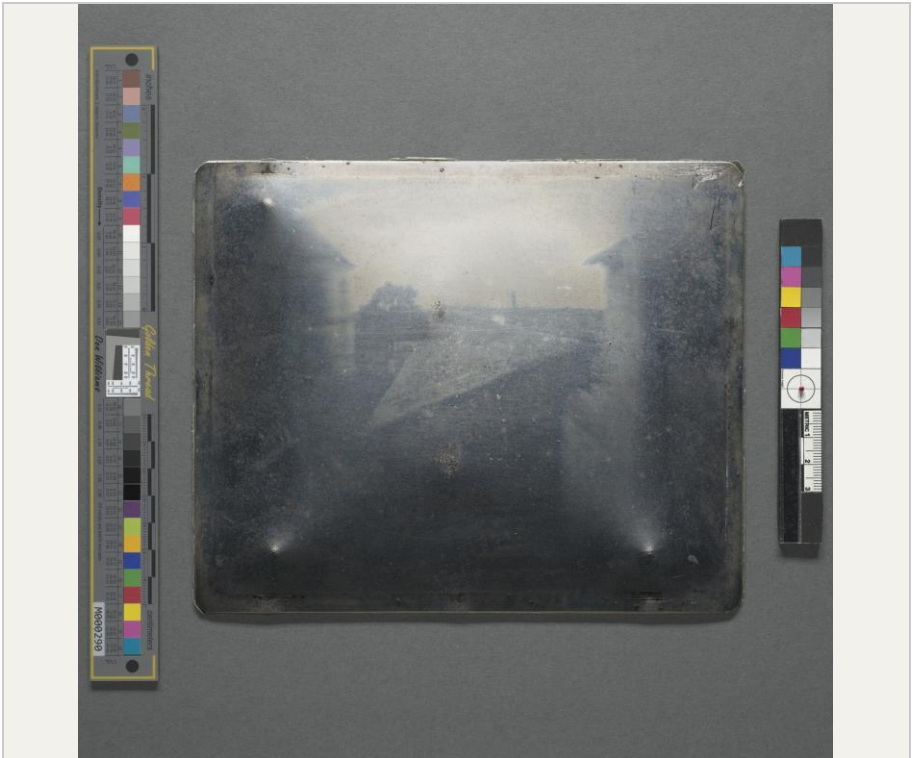
Prologue

P1 - The very first photo in the world

Almost 200 years ago, an inventor named Nicéphore Niépce asked himself a question: could sunlight draw a picture all by itself?

He coated a metal plate with a special substance that hardens in the sun. He placed it in front of his window... and waited for several days! Little by little, the image of the landscape formed on the plate. It was the first photograph in history.

Today, your phone takes a photo in the blink of an eye. But it's still the same idea: light is what makes the image!



The very first photo, taken by Nicéphore Niépce almost 200 years ago. Gernsheim Collection. Harry Ransom Center, The University of Texas at Austin.

Invention: light as a tool

Photography was born thanks to science!

P2 - A photo is chemistry!

At first, you needed a real laboratory to make a photo. Nicéphore Niépce, and then other inventors, looked for

recipes: which substance captures light? How do you keep the image from fading?

Bit by bit, they found the answers: glass plates, then a lighter, flexible film. One inventor, Talbot, even managed to make several copies of the same image — like a photocopy of a photo!

Finally, thanks to Kodak and its factory near Chalon, everyone could take pictures: all you had to do was press the button. Each invention solved one problem... and created a new one!



*In the old days, taking a photo meant staying still for a very long time!
Public Domain.*

P3 - A black box to catch light

A camera is like a black box with a tiny hole in it. Light comes in through the hole and draws a picture inside. That has been true for a very long time... and it's still true inside your phone!

Long ago, cameras were huge, as heavy as wooden suitcases. Little by little, they became smaller, lighter and easier to use.

Take a good look at the display case: you can follow this great journey, from the big wooden camera to the tiny one that fits in your pocket!



The camera: a black box that catches light. Collection Académie François Bourdon – Le Creusot.

P4 - Photos on glass!

In the old days, photos weren't on soft paper but on glass plates — hard and fragile, like a windowpane!

With a big light box, you could project these plates onto a wall to show them to a whole class, or make giant copies of drawings and plans. Here in Le Creusot, the factory used it to enlarge the plans of its machines.

And in 1907, two brothers, Auguste and Louis Lumière, even managed to put colour on glass... using tiny grains of potato starch, like in fries!



Photos on glass plates. Collection Académie François Bourdon – Le Creusot.

Matter: seeing the invisible

Photography was born thanks to science!

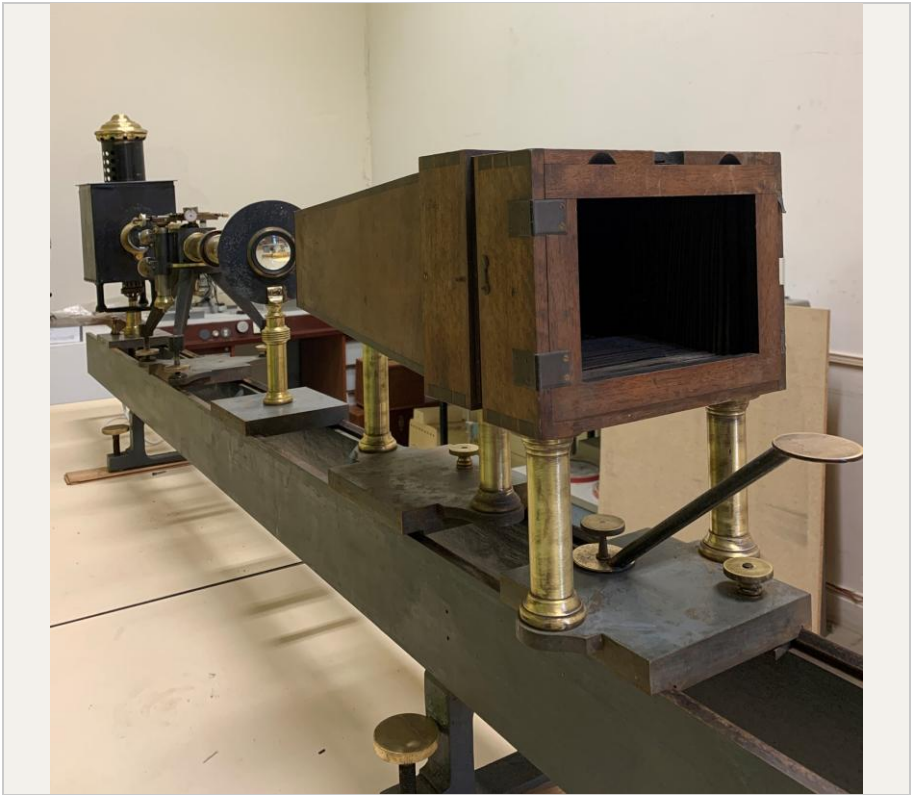
P5 - Steel has a skin... and a secret inside!

Take a metal bar: it looks completely smooth, right?

Well, if you looked at it through a very powerful microscope, you'd see lots of tiny grains stuck together, like a wall of miniature stones!

The shape and size of these grains are what make steel more or less strong. Almost 130 years ago, in Le Creusot, engineers were the first to discover this thanks to the microscope.

But how do you keep a record of what you see? By photographing it! A scientist, Henry Le Chatelier, invented a special microscope that takes photos of metals. Thanks to him, we can read the inside of steel like a map.



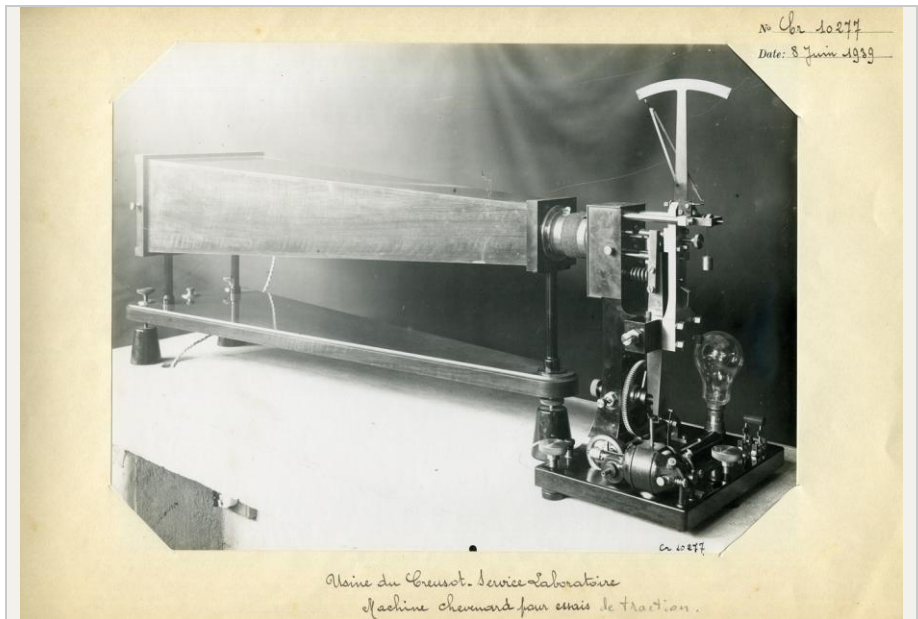
Thanks to a special microscope, steel reveals its secret structure. Collection Académie François Bourdon – Le Creusot. Photo: J.-L. Gisclon.

P6 - Drawing with a beam of light!

Did you know that metals grow a tiny bit when you heat them, and shrink as they cool down? These changes are so tiny that you can't see them with your eyes.

An engineer, Pierre Chevenard, came up with a brilliant trick. He stuck a little mirror on the metal. When the metal moves, the mirror moves too and sends back a beam of light. That beam draws a curve all by itself on a photographic plate!

It's like a magic pencil made of light, writing without ever touching the paper. Thanks to it, we can measure changes smaller than a hair.



Light is used to measure how metals expand and shrink. Collection Académie François Bourdon – Le Creusot.

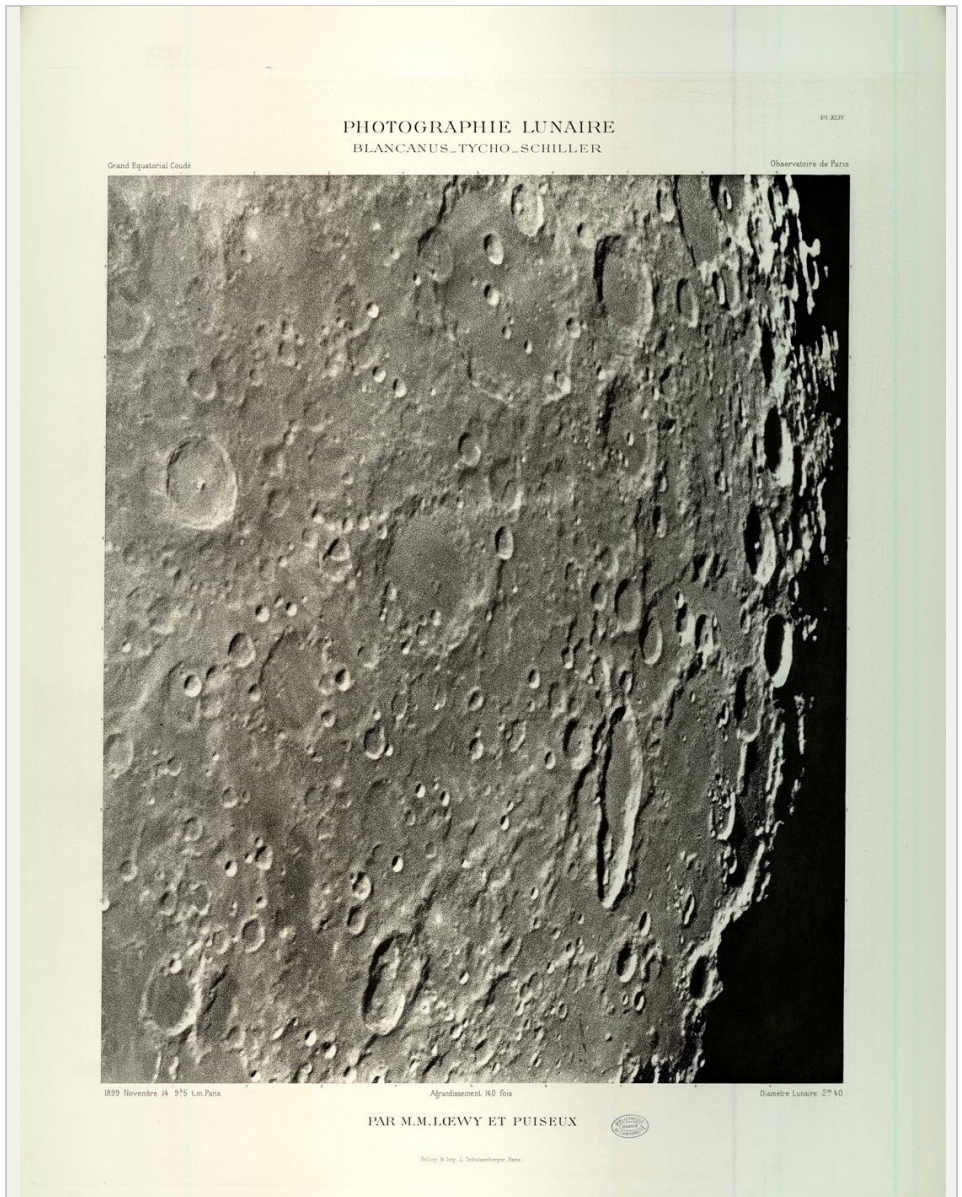
P7 - Photos that see farther than our eyes

Look up at the sky at night: you can see stars. But there are thousands more, far too faint for your eyes to spot!

Astronomers found a trick: leave the camera wide open for a very long time, sometimes a whole night. Light builds up little by little on the plate, and the hidden stars finally appear.

More than a hundred years ago, some scientists even wanted to photograph the entire sky! They didn't have

time to finish... but their photos are still used by scientists today.



Photographing the Moon and the stars. University of Burgundy. Public Domain.

Movement: breaking it down to understand it

Seeing what moves too fast

P8 - Photographing time as it passes!

When you run, you move too fast for anyone to see clearly how your legs move. So how can we study them?

About 140 years ago, a scientist born very close to here, in Beaune, had a wonderful idea. Étienne-Jules Marey photographed people several times per second, always in the same spot. The result: in a single photo, you can see the whole movement, position after position, like a comic strip!

To see even better, he even dressed his models in black with bright strips. The body became a drawing made of light.



Marey photographs movement, frame by frame. City of Paris / BHdV. Public Domain.

P9 - 6,000 photos in one second!

Do you know what happens when a tiny flash of lightning bursts out inside an electrical device? No? Nobody really knew: it happens far too fast for our eyes!

So in 1935, an engineer named Maurice Gérardin built an extraordinary camera. Instead of taking 24 photos per second like at the cinema, it took 6,000!

Its secret? A big wheel with sixty little lenses spinning very fast in front of the film. Thanks to it, a single second became a film more than four minutes long. At last, you could watch the spark in slow motion.



*A camera that takes 6,000 photos a second can capture an electric arc!
Collection Académie François Bourdon – Le Creusot.*

P10 - Shiny markers on your body to film your movements

Today, in Dijon, researchers are still studying movement in a laboratory named after Marey! To film a movement, they stick little shiny balls on a person's arms, legs and back. All around, sophisticated cameras track how these balls move. On the screen, your body then appears as a three-dimensional puppet that moves exactly like you.

This helps us better understand how limbs and joints move, and helps people walk again after an accident, or sports champions improve. And guess what: even when you imagine a movement really hard without moving, your brain is really training!



*Today, shiny markers are stuck on the body to film movements in 3D.
© Inserm/Guénet, François.*

Le Creusot

Photography tells the story of the town, the factory and its people

P11 - The factory strikes a pose!

More than a hundred years ago, in Le Creusot, the factory loved having its picture taken! It showed off its huge workshops and enormous machines to impress its customers. But do you know what the factory's photographer was mostly used for? Copying papers! Contracts and plans were photographed to keep a copy - just like when you take a picture of a document with a phone today. And to order a photo from him, you even had to fill in a little numbered slip, like a ticket! Take a good look at these photos: behind the big machines, you can see tiny figures. Those are the workers! Try to find the one guiding a huge block of red-hot steel in the dark with a long pole.



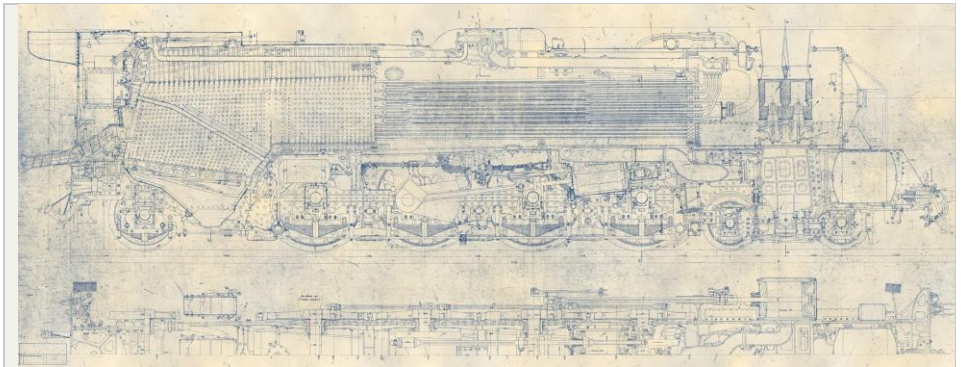
The factory loved having its picture taken. Collection Académie François Bourdon – Le Creusot.

P12 - Blue as proof

Do you know how people checked that a big metal plate really protected a warship? They fired a cannon at it... and photographed it! On the photo, they counted the holes: that was the proof that Le Creusot's steel was strong.

In the laboratory, they also photographed the inside of the metal, or a broken piece, to understand why it had failed.

And to copy a plan, long before the photocopier? You placed the drawing on a special paper and left it in the sun: the lines turned white on a beautiful blue background. It was called a 'blueprint'!



The cyanotype and diazo print: all-blue images to copy plans. Collection Académie François Bourdon – Le Creusot.

P13 - The factory's town

Around the Le Creusot factory, the Schneider family had built almost a whole town: a hospital, a nursery,

schools, a big canteen, a home for the elderly... and they had it all photographed!

Why? To show, in beautiful albums, that they took good care of their staff. In these photos, everything is clean and tidy.

But be careful: a photo never shows everything. Here, you don't see the cramped houses, or the days of strikes. In front of an image, always ask yourself: what did they choose to show me... and to hide?



In the town, everything was organised for the staff. Collection Académie François Bourdon – Le Creusot.

P14 - Everyone in the picture!

In the photos of the big workshops, the workers are so small that you can barely make out their faces. Here, on the contrary, you can see them up close!

In the old days, only rich people had their portrait taken. Then photography became cheaper: families could finally afford photos — for a wedding, a first communion, or just for fun. In Le Creusot, enthusiasts even started a photo club, back in 1901!

Take a good look at these faces: an old worker, a family, a child, a man clowning around with his dog. Behind every photo, there is a real life.



The people of Le Creusot strike a pose. Collection Académie François Bourdon – Le Creusot.

P15 - The whole town in a photo

Can you photograph a whole town? In Le Creusot, they almost managed it! They photographed the streets, the shops, the houses — the old ones and the new ones.

And above all, they climbed very high! In 1916, a photographer climbed to the top of a 70-metre chimney to photograph the whole town at once, turning around on himself. Later, it was even photographed straight down from above, from a plane: it then looks like a map, with its streets and rooftops.

All these photos are kept here, in Le Creusot: it's the town's memory!



Photographing a whole town. Collection Académie François Bourdon – Le Creusot.

Epilogue

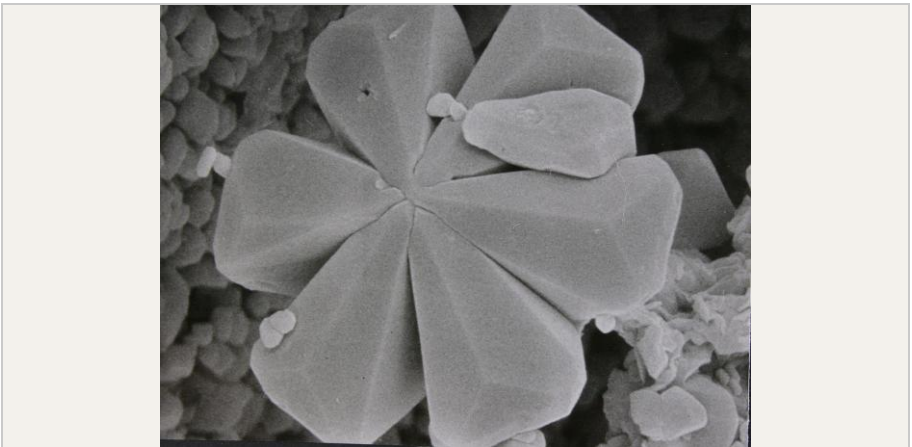
And today?

P16 - And tomorrow?

You've seen how, for 200 years, photography has helped science: seeing the very small, seeing very far, freezing movement, mapping a whole town.

And today? It goes on! Cameras no longer have film: they make images made of numbers, which computers can read. We are even teaching machines to 'see' thanks to these images.

Very close to here — in Le Creusot, Chalon and Dijon — researchers use it to explore the body, matter, space... and even the past, by digitising old photos. And you: what would you like to photograph to understand the world better?



And today, photography still helps scientists. Hannes Grobe, Wikimedia Commons CC-BY-SA-4.0