

The Promised Ubiquity Revisiting the formative years of television (1877-1926)

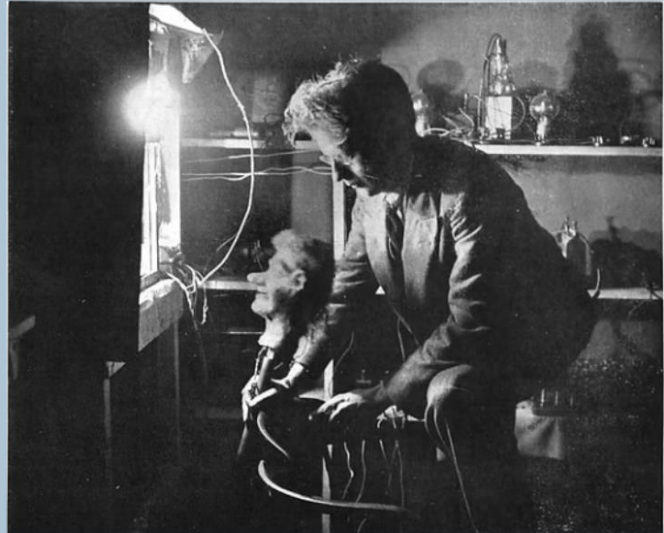
The Cultures of Early Television

Conference organised by the
University of Westminster
(London, 2-3 July 1926)

Dr. André Lange

Editor of the website
"Histoire de la télévision"

<https://histv.net>



I am deeply honoured to have the opportunity to open this conference celebrating the centenary of John Logie Baird's first demonstration of television.

Baird's invention did not arise in isolation.

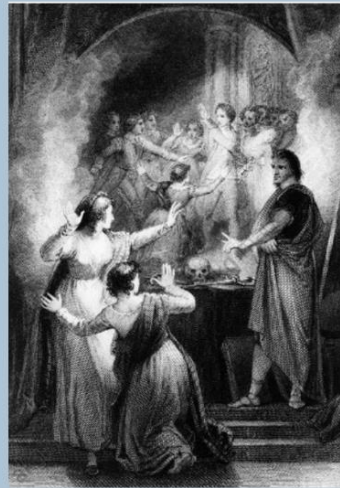
I would like to thank John Wyver, who invited me to analyse the very early years of the project of seeing by electricity.

By considering the contributions that preceded Baird's demonstrations, we can see more clearly that television was the outcome of a long, collective process of scientific research and technical experimentation, as well as the fulfilment of a centuries-old dream.

Lecanomancy and catoptromancy



Pharao Nectanebus
Medieval illustration, Roman d'Alexandre, 13th Century



J.M. Whright, Illustration for Walter Scott,
"My Aunt's Margaret Mirror", *Keepsake* 1829



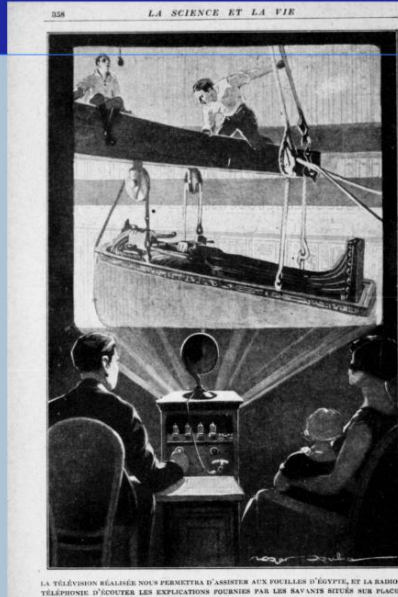
Alexander Liezen-Mayer, Magic Mirror Scene
in Goethe's Faust, 1855

In his article "The Prehistory of Television", published two years after Baird's demonstration, Berthold Laufer, an anthropologist at the University of Chicago, drew a connection between television and narrative traditions in the civilizations of Asia, the Middle East and Europe. He proposed looking to ancient myths for anticipations of what was then an entirely new technology.

Lecanomancy and catoptromancy, as well as the literary theme of the magic mirror, illustrate a very ancient human aspiration to see not only at a distance, but also into the past and the future. The functions of the magic mirror in literature foreshadow many of the functions that would be considered at the end of the 19th century for electric viewing devices.

Revisiting the formative years of television in the age of the Internet





La Science et la Vie, mai 1926

LA TÉLÉVISION RÉALISÉE NOUS PERMETTRA D'ASSISTER AUX FOUILLES D'ÉGYPTE, ET LA RADIO-
TÉLÉPHONE D'ÉCOUTER LES EXPLICATIONS FOURNIES PAR LES SAVANTS SITUÉS SUR PLACE

The historiography of the formative years of television already includes many reference works, in particular works from engineer-historians such as George Shiers, Albert Abramson and Russell Burns, as well as many inventor biographies and contributions from media archaeologists.

As a media researcher, I am especially interested in the movement of ideas, the relations between academic circles and inventors, the relations the various kind of publications, the role of conferences and lectures, literature, cartoons, and other forms of mediation.

My work has drawn extensively on the new digital resources available online. One of my concerns was to identify the original documents, too often quoted in second-hand or that were inaccessible to earlier historians.

This practice allowed me to benefit from the cooperation of a network of correspondents, and to correct dates, rediscover forgotten characters and lines of inquiry and above all, reveal how widespread the expectation of "seeing by electricity" had become.

Since the early 1880s, no one knew exactly when or how it would be achieved, but almost everyone was convinced it would happen, often accepting even the most extravagant hoaxes at face value.

Seeing by electricity : telephotography or television ?

IS THIS A VISION?
A Remarkable Electrical Invention

ANOTHER MARVEL.
Photographing by Electricity—Written
or Printed Documents Transmitted—
The Principles of the Telephoto.

Seeing by Electricity
We hear that a sealed account of an invention for seeing by
telegraphy has been deposited by the inventor of the telephone.

SEEING BY TELEGRAPH.
THE announcement that a sealed description of
an invention for "seeing by telegraph" has
been deposited with the Smithsonian Institution
by Prof. Graham Bell, has brought out the fact

SEEING BY WIRE.
It is now four years since Professor Graham Bell
taught us how to speak to each other by wire, and "was
a sigh from India to the Pole" whenever we have
found the way there by balloons or otherwise. Now,

VISUAL TELEGRAPHY.
When the telephone became an accomplished fact,
and persons were enabled to speak and hear by
electricity, it did not require a great effort of
imagination to predict the time when light as well
as sound would be transmitted to a distance by wire.

LA TÉLÉSCOPIE ÉLECTRIQUE
Sous ce titre, M. Adriano de Paiva, pro-
fesseur de physique de l'Ecole polytechni-
que d'Oporto, vient de publier une brochure
intéressante, dans laquelle il passe en revue
beaucoup de documents qui ont été publiés
sur la transmission des images par l'élec-
tricité, en annonçant pour intermédiaire la

La vision télégraphique. Le DIAPHOTE.
— Un inventeur américain, le doc-
teur Licks, de Bethlehem (Pennsyl-
vanie), vient d'imaginer un instru-
ment auquel il a donné le nom de
« diaphote » et qui permet de voir

Prof. G. M. MITSCHIN described some experiments he had recently
made on photo-telegraphy.

Transmission des images par l'électricité.

On a annoncé à diverses reprises dans les journaux une
découverte qui, si elle était réelle, serait évidemment une
merveille; mais, précisément en raison de son merveilleux,
on l'a mise généralement en doute. Sans être trop affirmatif,

One point I would particularly like to emphasize is the relationship between telephotography (transmission of still images) and television (transmission of moving images).

The relations were technical and there was, till the beginning of the 20th century, a great confusion, that can be identified in the great lexical diversity in the press.

The relations were also obvious in the slow process of definitions of functions for the various kind of apparatus, the process I will try to summarise.



1873 : discovery by Willoughby Smith of the sensibility of selenium to light

THE ACTION OF LIGHT ON SELENIUM.
The following communication from Mr. Willoughby Smith was
read —

"Wharf Road,"
"4th February, 1873.

"My dear Latimer Clark,—Being desirous of obtaining a more
stable high resistance for use at the shore station in connection

• Willoughby SMITH, Letter to Latimer Clark, 4
February 1873, *Journal of the Society of
Telegraph Engineers*, 12 February 1873

— On parle en ce moment d'une découverte très-
curieuse relative à l'action de la lumière sur le séle-
nium. Il paraît que M. Willoughby Smith aurait observé
tout récemment que, lorsqu'un rayon de lumière tombe
sur un lingot de sélénium à travers lequel passe un
courant électrique, la conductibilité de ce métalloïde
est aussitôt augmentée jusqu'à atteindre le double de
ce qu'elle était auparavant; et que cette augmentation
de conductibilité cesse dès qu'on retire la source lumi-
neuse. Cet effet a lieu, que la source en question soit

Moniteur de la photographie, 1er mars 1873

Wirkung des Lichts auf Selen.
Willoughby Smith schreibt: Wenn durch eine Selenstange
im Dunkeln ein elektrischer Strom geht und man fast abseits Licht
darauf fallen — gleichviel ob Lampen- oder Kerzenlicht, so wird sein
elektrisches Leitungsvermögen sofort verdoppelt. Die Wirkung hört
auf in dem Moment, wo das Licht ausgeschloßen wird. Licht, das
durch Selenale oder gelbes Glas gegangen ist, wirkt ebenso. Diese
hat mit der Beobachtung nichts zu thun. Mr. Clark glaubt, dass sich
darauf eine photometrische Methode gründen lässt.

*Fotografische Rundschau und Mitteilungen,
März 1873*

At a meeting of the Society of Telegraph Engineers
Mr. Latimer Clark read a communication from Mr.
Willoughby Smith, the electrician of the Telegraph
Construction and Maintenance Company, detailing an
interesting discovery which he had made of the ex-
treme sensibility of selenium to the influence of light
during the passage of an electric current.

The Telegrapher, New York, 8 March 1873

Electrical Conductivity Affected by Light.—A most curious
experiment, involving an alteration in the electrical conductivity of
the element selenium, an element of very high resistance, has recently
been published by Mr. Willoughby Smith. Mr. Smith took several
bars of this substance of from 5 to 10 c. m. in length, and 1 to 1½
mm. in diameter. Each bar was hermetically sealed in a glass tube,
and had a platinum wire at each end for the purpose of connection.
It was found that the resistance altered materially, according to the
intensity of the light to which the element was subjected. When
the bars were fixed in a box with a sealed cover, so as to exclude all
light, their resistance was at a maximum, and remained very constant;
but immediately the cover was removed, the conductivity increased

*Journal of the Franklin Institute,
May 1873*



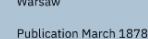
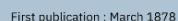
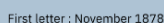
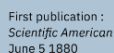
Selenium bars used in 1873 by
Willoughby Smith
(Courtesy of the Institution for
Engineering and Technology)

Historians generally regard Willoughby Smith's 1873 discovery of the photosensitive properties of the metalloid selenium as the starting point for research into "viewing by electricity".

John Logie Baird remembered that, as a young man, he burned his fingers while experimenting with a selenium cell. The discussion remains open between specialists on the fact that he was still using selenium for its January 1926 demonstration.

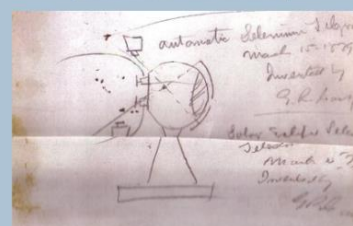
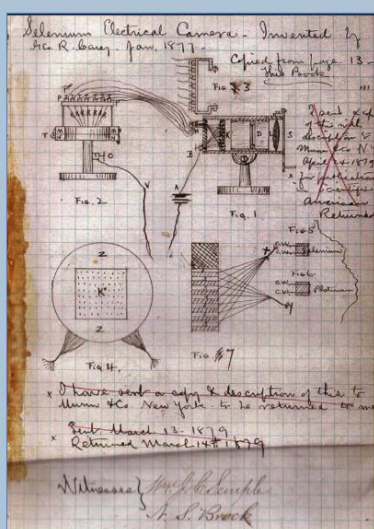
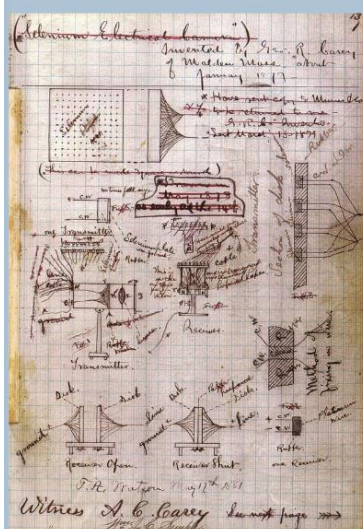
Smith opened a line of inquiry that would shape phototelegraphy and television research well into the 1920s.

Although Smith came from the field of telecommunications (he worked for a transatlantic cable company), his discovery also quickly attracted the attention of photographers—a point that has received too little attention. From the beginning, photography theorists followed the hypotheses of seeing by electricity.



The common basic idea was of course that if sound can be transformed in electricity signal, then the same could be possible for light and pictures.

George R. Carey, Notebook, 1877-1881



By courtesy of the David Karpless Foundation

One of the most memorable moments in my early research came when a New York auction house informed me of the sale of George R. Carey's notebook, the remarkable first manuscript of the history of television.

Until then, only two of his articles, published in Scientific American in 1880, were known.

According to the manuscript, Carey began his work in January 1877 after reading the Scientific American article on Siemens's artificial eye.

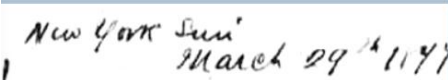
His idea of breaking down the image into a multitude of points captured by as many selenium cells would be explored by other inventors for three decades.

I was able to trace Carey himself: his father was both an inventor and a clairvoyant. The family lived in Malden, and there are some clues that they might have witnessed Graham Bell's first telephone demonstration.



FRIDAY, MARCH 30, 1877.
Amusements To-Day

"The Electroscope", *The New York Sun*, 30 March 1877.



THE ELECTROSCOPE

Is this Marvel to be the Next Achievement of Modern Science?

TO THE EDITOR OF THE SUN—Sir: An eminent scientist of this city, whose name is withheld for the present, is said to be on the point of publishing a series of important discoveries, and exhibiting an instrument invented by him, by means of which objects or persons standing or moving in any part of the world may be instantaneously seen anywhere and by anybody. The utility of the electroscope is undeniable, and if the invention proves successful it will supersede in a very short time the ordinary methods of telegraphic and telephonic communication. By means of the electroscope merchants will be able to exhibit their goods, or

Source: Edison Papers, Rutgers University

The functions of the electroscope :

- The ability for a merchant to display their goods remotely, worldwide
- The ability to quickly disseminate descriptions of fugitives worldwide
- The ability to see loved ones, relatives, friends, or spouses at any time
- The ability for artists to preserve their works while exhibiting them abroad
- The ability to remotely access a specific page of a book
- The ability to transmit handwritten documents
- The ability, in combination with a telephone, to transmit conversations while seeing the other person
- The ability to broadcast live performances.

I do not know whether Carey discussed his ideas with anyone at the outset of his research, but as early as 30 March 1877 the *New York Sun* published a remarkable hoax that had escaped the attention of the historians.

The Sun Electroscope is the first in a long series of hoaxes announcing the invention by an unknown inventor. I have identified a dozen of them and traced their international circulation.

This is important material for understanding the idea people had at the time of the possible uses of "viewing by electricity".

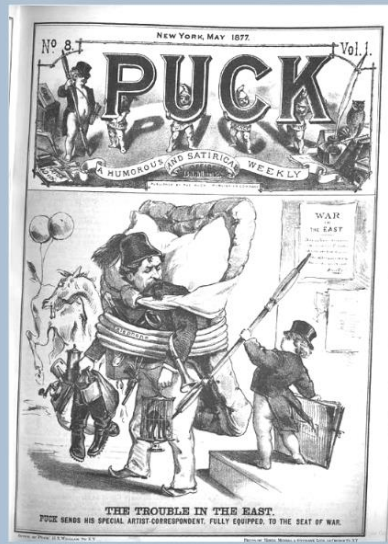
This first hoax is especially rich, listing several functions that would later become familiar in television, videotelephony and, more recently, the internet.

- 1. Merchants could display their goods remotely to customers around the world. What a surprise! This is anticipating television advertising and home shopping.
- 2. Descriptions of fugitives could be circulated rapidly across the world, an argument later used repeatedly by telephotography inventors such as Ernst Hummel, Arthur Korn and Édouard Belin.
- 3. People could see loved ones, relatives, friends or spouses at any time, echoing the legacy of the magic-mirror myth.
- 4. Artists could preserve their works while exhibiting them abroad, a point that seems to anticipate Paul Valéry's reflections in his 1929 article "La conquête de l'ubiquité" forecasting the universal circulation of art works.
- 5. Readers could remotely consult a specific page of a book, anticipating services such as Google Books, HathiTrust and Gallica.
- 6. Handwritten documents could be transmitted at a distance, foreshadowing the fax machine.
- 7. Combined with the telephone, the device could allow people to converse while seeing one another, an industrial challenge that would remain unresolved until the arrival of services such as Skype.

- 8. Last, but not least, live performances could be transmitted remotely, a possibility that would become one of the most frequently cited and earliest applications.

I would like to emphasize that in this initial list of functions, most of them are indeed related to sight. Some historians, in my opinion, tend to reduce the projects for viewing machines a little too readily to a mere extension of the telephone.

**Puck, May 1877. The war correspondent in the Russia/Turkey war :
"all will be transmitted to us by electroscope and telephone"**



Joseph Ferdinand Keppler, "The Trouble in the East", Puck, n°8, May 1877



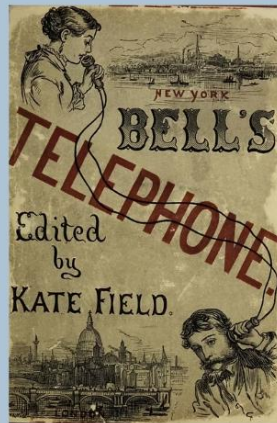
Joseph Ferdinand Keppler, "Special Artisten", Puck, Version in German, n°8, May 1877

Two months later, the US satirical magazine *Puck* imagined another use for the electroscope.

Against the backdrop of the recently begun Russo-Turkish War, it depicted a war correspondent travelling to the front with a telephone and an electroscope capable of transmitting images of the fighting.

This appears to be the first reference to the possible use of a far-seeing machine by the press.

**Kate Field, "The Telephone of the Future (An intercepted letter)",
Whitehall Review, 10 November 1877.**



- Lovers will be able to see each other remotely.
- Remote viewing of opera.
- Opportunity for provincial citizen and for women to attend parliamentary debates.
- Diplomacy by telephone and electroscoposcope

the electroscoposcope, the province of which is to transmit waves of light by electricity. Combine it with the Telephone, and while two persons, hundreds of miles apart, are talking together, they will actually *see* each other! Won't this be fun? If your lover happens to be an amateur photographer, he'll take your picture, my dear, across the ocean! Only let electricity circumvent the Atlantic, and I'm its slave for life.

Still in 1877, Kate Field, an US journalist based in London and a collaborator of Graham Bell, revived the idea of the electroscoposcope.

She proposed various possible uses: enabling lovers to meet at a distance, remote viewing of opera, and, more originally, allowing provincial voters and English women to follow parliamentary debates. Diplomacy and opening of the Parliament by the Queen could be done with the telephone and the electroscoposcope.

Unfortunately, this is one of only two contributions by women that I have been able to identify from this period.

The period was, of course, dominated by the male gaze. Women's faces often appeared in diagrams explaining viewing devices, yet women themselves were largely excluded from the development of electrical technologies.




Abbé Moigno and Louis Figuier: From the electroscope to the telectroscope

Les journaux américains annoncent maintenant une autre découverte aussi extraordinaire. A l'aide d'un appareil électrique, dit *électroscope*, on pourrait voir distinctement à New-York, par exemple, l'image d'un objet placé à Boston. L'électroscope serait à la vision ce que le téléphone est à l'ouïe. Un voyageur pourrait faire le tour du monde et échanger des nouvelles avec ses parents, sa femme, ses enfants assis au foyer domestique.

L'électroscope, comme le téléphone, se compose de deux chambres, une au point de départ, l'autre au point d'arrivée, reliées entre elles par une combinaison de fils métalliques. Dans la chambre de départ, la paroi antérieure interne est hérissée de fils imperceptibles dont l'extrémité apparente forme par leur réunion une surface plane.

Si, devant cette surface on suppose un objet quelconque et que les vibrations lumineuses correspondantes aux détails des formes et des couleurs de cet objet soient saisies par chacun des fils conducteurs soumis à un courant électrique, elle se reproduiront identiquement à l'extrémité de ces fils.

S'il faut en croire les journaux de Boston, les expériences qui ont eu lieu dans cette ville ont parfaitement réussi. En joignant l'électroscope au téléphone, M. Graham Bell prétend obtenir des résultats prodigieux.

Avec ces deux appareils fonctionnant à la fois, il serait possible, assure-t-il, d'entendre à San-Francisco un opéra représenté à Paris, et de voir en même temps les acteurs sur la scène et le public dans la salle.

Journal des débats, Paris, 23 avril 1877

FANTAISIES ÉLECTRIQUES

Il s'agit de deux découvertes. L'une, relative à l'électricité, est l'électroscope. L'autre, relative au son, est le téléphone. Les deux sont combinées dans un appareil qui se nomme l'électroscope-téléphone. Cet appareil se compose de deux chambres, une au point de départ, l'autre au point d'arrivée, reliées entre elles par une combinaison de fils métalliques. Dans la chambre de départ, la paroi antérieure interne est hérissée de fils imperceptibles dont l'extrémité apparente forme par leur réunion une surface plane.

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Journal des débats, Paris, 23 avril 1877

Chronique télégraphique. — Le télégraphe. — On connaît l'appareil électrique inventé récemment par le professeur Graham Bell, de Boston. Cet instrument, nommé téléphone, transmet les sons à de grandes distances. C'est ainsi qu'on converse, des chais, des conversations, peuvent être entendues d'une ville dans une autre, des demandes et des réponses peuvent être échangées à plusieurs milles de distance, sans qu'il soit nécessaire de parler la voix.

Les journaux américains annoncent maintenant une autre découverte aussi extraordinaire. A l'aide d'un appareil électrique, dit électroscope, on pourrait voir distinctement New-York, par exemple, l'image d'un objet placé à Boston. Le télégraphe serait à la vision ce que le téléphone est à l'ouïe. Un voyageur pourrait faire le tour du monde et échanger des nouvelles avec ses parents, sa femme, ses enfants assis au foyer domestique.

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Journal des débats, Paris, 23 avril 1877

Abbé MOIGNO
"Chronique télégraphique -
Le télégraphe",
Cosmos - Les Mondes, 28 juin 1877

Louis FIGUIER, "Le télégraphe, ou
appareil pour transmettre à distance des
images",
L'Année Scientifique et Industrielle, 1878

The twenty-first volume of M. Figuier's *Année scientifique* * is quite equal to its predecessors, the principal articles being, on this occasion, those describing the telephone and the telectroscope, and the discussion of the projected scheme for flooding the Sahara and thus creating an inland sea south of Algeria and Tunis. The biographical notices include the names of Le Verrier, Le Maout, Rudenhorff, Lawson, and other distinguished savants.

Saturday Review of Politics, Literature, Science and Art, 9 March 1878

Where is thy limit, O Science! After the telephone we have the phonograph, and now here comes the telectroscope. By means of this instrument, through the agency of electricity, of course, a person can enjoy the vision of remote objects, so that not only can speech and music be transmitted from one point to another, but even the aspect of persons and objects. That is nice, but another inventor proposes an improvement on the above which he calls the craneotelectroscope. This apparatus is adapted to be placed on the head of a person, and thus allow an observer connected by a wire, although miles away, to read thought as in a book. What next!

Rockford Daily Register, 24 september 1878

The electroscope hoax quickly reached Europe and, curiously, two leading French science popularisers, Abbé Moigno and then Louis Figuier, transformed it into the term telectroscope, attributing the invention to Graham Bell.

The term reappeared quite rapidly in the US, in September 1878.

The outline of an Orwellian distopia : Ernest Vial, "Le téléphone et le phonographe", *L'Univers*, 7 janvier 1878

L'émulation dont parle cet ennemi de l'ancien monde n'est pas aussi générale qu'il aime à se la représenter. C'est un malheur, soit. Mais enfin tout le monde ne peut pas inventer le téléphone, ni le phonographe, ni le ... Le ... est un signe et d'ailleurs le mot n'a pas encore été tiré du grec, et qui est, par là, destiné à rendre aux yeux les mêmes services que le téléphone.

rend à l'oreille, et par des moyens analogues. Par l'intermédiaire d'un fil électrique, on verra les objets les plus éloignés, comme s'ils étaient sous les yeux. La vue se transportera comme la parole, et ce sera pour le coup qu'on pourra dire, en toute vérité que l'électricité a supprimé les distances. Supposons même qu'on arrive à emmagasiner le produit de l'appareil nouveau, comme le photographe conserve la parole, voilà la peinture et le phonographe supprimés. Le maître de la tribune portera ces deux bulles de conserve, et non seulement on entendra le Maréchal d'anton, mais on le verra.

Déjà même nous devenons trop forts, et tout cela pourrait bien finir mal. Je voudrais bien savoir ce que deviendra la pauvre humanité quand un bon tyran, s'installant quelque part, n'aura qu'à pousser un bouton pour entendre ce qui se dit partout, pour parler lui-même à l'univers, pour se faire voir à la fois à Rome, à New-York, à Saint-Petersbourg et à Pékin, et pour couper le cou lui-même en même temps à tous les républicains. Ce sera le règne de la république universelle, la vraie, celle qui s'obéit qu'aux ordres monstrueux d'un dictateur unique mené de millions d'yeux, de millions d'oreilles et de milliards de coupes. Dehors, dehors ! Dehors, tyran ! Tu n'as rien inventé qu'une servitude !

"The... is a device whose name has not yet been derived from Greek, and which is said to be designed to provide the eyes with the same services that the telephone provides the ear—and by analogous means. (...)

Let us even suppose that we succeed in storing the output of this new device, just as the phonograph preserves speech; painting and photography would thereby be rendered obsolete."

"We are becoming altogether too powerful, and it could well end badly.

I wonder what will become of poor humanity when some tyrant, ensconced somewhere, need only press a button to hear what is being said everywhere, to speak to the entire world, to appear simultaneously in Rome, New York, St. Petersburg, and Beijing, and to personally cut the throats of all who resist.

It will be the reign of the universal republic—the true kind, obeying only the monstrous whims of a single dictator equipped with millions of eyes, millions of ears, and billions of blades."

In January 1878, the French journalist Ernest Vial sketch a pre-Orwellian dystopia.

He imagined that the new unnamed device, could not only transmit pictures but also, as the phonograph does with sound, record and store them.

He wrote:

"The art of painting and photography would thereby be rendered obsolete."

"We are becoming far too powerful, and this may end badly.

What will become of humanity when some tyrant, hidden away somewhere, has only to press a button to hear everything said across the world, address everyone at once, appear simultaneously in Rome, New York, St Petersburg and Beijing, and personally strike down all who resist?

It will be the reign of the universal republic—the true republic, obeying only the monstrous whims of a single dictator equipped with millions of eyes, millions of ears and billions of blades."

**The promised ubiquity :
Adriano de Paiva, "A telefonia, a telegrafia e a telescopia",
O Instituto - revista científica e literária, Março 1878**



Adriano de Paiva, *La télescope électrique basée sur l'emploi du sélénium*, 1880

"With these two marvelous instruments (the telephone and the **telectroscope**), fixed on one spot of the globe, man will be able to extend to the whole of it, his visual and auditory faculties. Ubiquity, from having been utopian, will become perfect reality.

Then, conducting wires charged with all important missions will cross and recross at the surface of the earth ; they will be the mysterious duets which will bring to the observer the impressions received by artificial organs, with human genius has made to compass any distance. And just as the complexity of enormous filaments, nerves of another order, will testify to the high degree of civilization of the monster organism - humanity"

Two months later, in March 1878, Professor Adriano de Paiva of Porto published, in Portuguese, the first scientific text on the possibility of using selenium to see by electricity.

To assert his priority, he published in 1880 a brochure with French and English translations of his seminal text under the title *La télescope électrique basée sur l'emploi du sélénium*, the first dedicated publication on the subject.

After his long technical analysis, de Paiva concluded by imagining a world in which the telephone and the telectroscope were combined, allowing humankind to experience ubiquity from a single fixed point.

As he wrote: "*Ubiquity, from having been utopian, will become perfect reality.*"

In de Paiva's text, telecommunications devices are conceived as prostheses for the human sensory apparatus, a theory developed much later by Marshall McLuhan.

1879-1881 : First devices and experiments

AN ELECTRIC TELESCOPE.

[1874.]—It may be of interest to your readers to know the details of some experiments on which I have been engaged during the last three months, with the object of transmitting a luminous image by electricity.

To transmit light alone all that is required is a battery circuit with a piece of selenium introduced at the transmitting end, the resistance of which falling as it is exposed to light increases the strength of the current, and renders a piece of platinum incandescent at the receiving end and thus reproducing the light at the distant station.

By using a number of circuits, each containing selenium and platinum arranged at each end, just as the rods and cones are in the retina, the selenium end being exposed in a camera, I have succeeded in transmitting built-up images of very simple luminous objects.

Denis D. REDMOND,
"An electric telescope",
English Mechanic and World of Science,
7 February 1879.

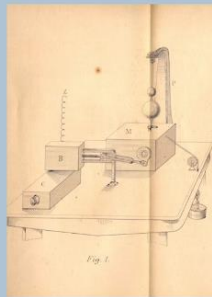
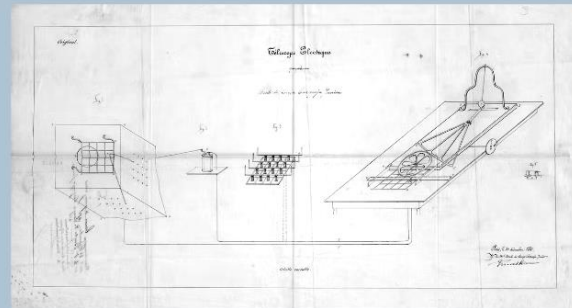
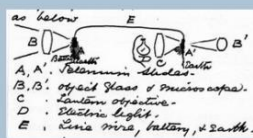


Fig. 1.



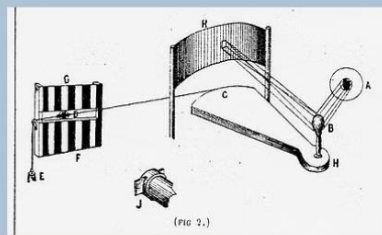
Benito Carqueja, *Télescope électrique*, Brevet français, 30 décembre 1880 (Archives INPI)



Colonel A.T. Fraser
(1880-1881) ?



Le telefotografo ou teletoscopio
de Carlo-Mario Perosino (Torino, 1879)



William Edward Ayrton and John Perry,
"Seeing by Electricity. The Future
Development of Electrical Appliances",
Journal of the Society of Arts, April 1881

The publications by Carey, Senlecq and de Paiva were theoretical, and there is no evidence that they were accompanied by experiments or demonstrations.

Between 1879 and 1881, more practical proposals began to appear.

Among them was that of Benito Carqueja, a young student of de Paiva, who obtained in France the first patent for a selenium-based electric telescope, which I recently discovered in the digital archives of the French patent office INPI.

The Italian Perosino and the Englishmen Ayrton and Perry also proposed devices, while the Irish ophthalmologist Denis Redmond was the first to provide a brief report of his experiments.

The legitimisation of the hypothesis of seeing by electricity (1879-1880)



Giuseppe Basso,
24 mars 1879
Presentation of Perosino's device



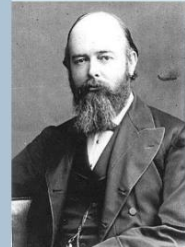
Th. du Moncel, "Le Téléphote et le Diaphote",
La Lumière électrique, 1er juillet 1880.



Graham Bell photophone,
September 1880



Jules Armengaud,
Conference on Bell's Photophone,
Société des ingénieurs civils,
19 novembre 1880



O.J. Lodge, "The relation between
electricity and light",
Lecture delivered to the London
Institution, December 16, 1880

Alongside these proposed devices, the selenium hypothesis gained credibility through the support of prominent scientific figures—a point perhaps insufficiently stressed by engineer historians.

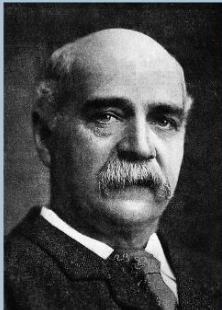
In France, Théodore du Moncel, a leading electrician, discussed the proposed principles and devices with interest in several articles and in a book.

Armengaud Jeune, a gifted graduate of the École Polytechnique and a patent agent, became one of the chief advocates of viewing by electric over the following thirty years.

In England, the physicist Oliver Lodge also expressed confidence that vision by electricity could eventually be achieved.

In September 1880, Graham Bell's demonstration of the photophone, which used selenium to transmit sound, further strengthened the idea that images might also be transmitted. Bell himself remained cautious, but he did not exclude the possibility.

1880: The first criticisms of the hypothesis of a mosaic of selenium cells

Seeing by Electricity. To the Editor of the Scientific American: Your article on "Seeing by Electricity" contained in the SCIENTIFIC AMERICAN of June 5, page 453, will prove of interest to many. Early in the fall of 1877, the principles and even the apparatus for rendering visible objects at a distance through a single telegraphic wire were described at No. 81 Cortlandt Street, in this city, to James G. Smith, Sen., formerly superintendent of the Atlantic and Pacific Telegraph Company, and now of the Continental Telegraph Company, I believe, and to Messrs. Shaw & Baldwin, telegraph constructors, also, I believe, now connected with the Continental. At that time I was engaged in perfecting an autographic telegraph by which maps and pictures were daily transmitted by telegraph over a single wire. The recent announcements of this discovery in three different directions, each undoubtedly independent of my own W.E. Sawyer "Seeing by Electricity", Scientific American, 12 June 1880				For the Daily Times. The Diaphote. A REMARKABLE INVENTION BY DR. H. E. LICKS. A special meeting of the Monday Scientific Club was held on Saturday evening to listen to a paper by Dr. H. E. Licks of Old South Bethlehem on the diaphote, an instrument invented by him after nearly three years of study, and now so nearly perfected that he feels warranted in bringing some few of the results thus far attained to the notice of the public. There were present, besides many scientists of Eastern Pennsylvania, Prof. M. E. Kammich of the polytechnic school at Philadelphia, and Col. A. D. A. Balle of the Brazilian corps of engineers, who is now in this country making extensive purchases of iron and steel. The meeting was called to order by the president, Prof. L. M. Nizette, who in introducing Dr. Licks made a few remarks, saying that he had had an opportunity to witness a few experiments with the diaphote, and he felt convinced that the fundamental principle therein involved was one that would ultimately cause it to rank with the telephone, the phonograph, and the sub-divided electric light, as one of the most remarkable triumphs of science in the nineteenth century.
TELEPHOTIC or diaphotic photography is believed by Captain Abney to be an impossibility, for the reason that one wire can never carry an infinite number of electrical impulses, which, on reconversion into chemical energy, shall give various gradations of light and shade simultaneously on a surface. The Photographic Times, New York, August 1880	Cette note, évidemment, ne signifiait pas grand'chose, sinon que le germe d'une idée nouvelle était dans l'air. Il est si aisé de décrire des appareils en parlant de conducteurs convenablement combinés, et notre conviction est que cette soi-disant invention n'a jamais reçu le moindre commencement d'exécution. Néanmoins M. A. de Paiva, y mettant du sien, la rendit un peu moins irréalisable en lui donnant un point d'appui scientifique, tiré justement des propriétés du sélénium. Une plaque de sélénium formait la plaque sensible. Antoine Breguet, La revue scientifique, 25 septembre 1880	"The diaphote. A remarkable invention by Dr. H. E. Licks", The Daily Times, Bethlehem, 10 Feb. 1880.		

The hypothesis of a mosaic of selenium cells as suggested by Carey nevertheless soon drew criticism and mockeries from various scientists and inventors.

The French journalist Henri de Parville was the most sarcastic: *"If we disregard the practical difficulties that stand in the way of the indefinite multiplication of squares, we can say that the problem is solved. It is solved almost as easily as the problem of conquering the moon was solved by Montgolfier in the year of grace 1783."*

In the US, the mathematician Mansfield Merriman created the Dr. Licks Diaphote hoax, probably as a response to Carey's proposal, and it succeeded in deceiving the most serious European electricians.

The dead end of the mosaic of selenium cells model

Two mosaic diagrams of the R.Ed. Liesegang's Phototel (1891). The first shows the setup before the reduction in the number of sensing cells, the second after the reduction.

Armand Suaire's Telefacigraphe, 1893 Source: INPI Archives

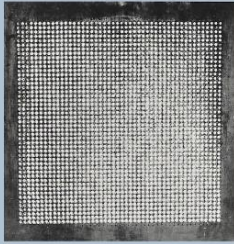
"Many thousands of small insulated wires"
G.H. Morse, 1893

Critics of the proposed model of a mosaic of selenium cells were right.

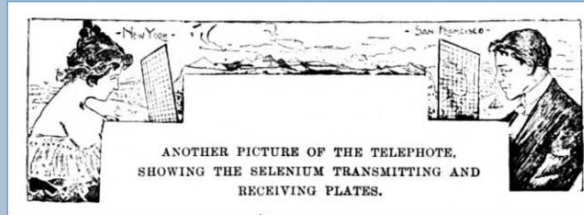
Even Raphael Eduard Liesegang's 1891 system, designed to reduce the number of required cells, would still have needed around 1,400 connection lines for a single 490,000-pixel photograph, as the *British Journal of Photography* observed.

The diagrams in the French patent obtained in 1893 by the Parisian watchmaker Armand Suaire, who imagined three-dimensional transmission of faces, vividly show the impractical complexity of such wiring.

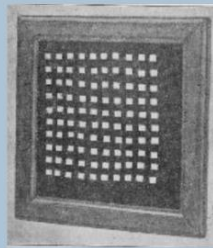
The dead end of the mosaic of selenium cells model



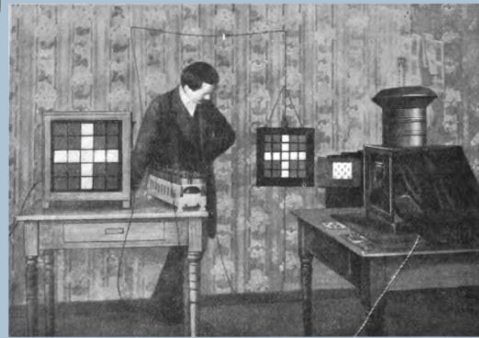
Charles Francis Jenkins,
Sensor with 2304 selenium cells
(ca. 1895 ?)



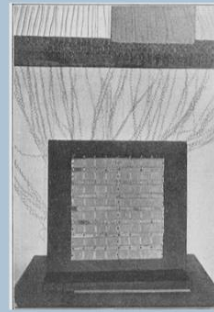
"How Pictures May be Transmitted A
Thousand Miles and Distant Friends Brought
Face to Face,
The Sketch, 11 November 1896.



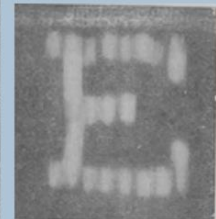
F. Lux,
Reception screen, 100 cells
1906



Ernst Rühmer, Fernseher, 25 cells, 1908



G. Rignoux and A. Fournier, 1909
64 cells telephot



By 1908, thirty years after Carey's proposal, the German inventor Ernst Rühmer was still experimenting with only 25 selenium cells.

His widely publicised plan to transmit images between Brussels and Liège during the 1910 International Exhibition was rejected by the Belgian authorities, as even a portrait of the King would have required 10,000 cells and connections.

A year later, the French inventors Rignoux and Fournier managed to transmit letters of the alphabet using a 64-cells selenium mosaic. This is considered by the historian Albert Abramson as the first comprehensive television system!

The alternative to the mosaic model : the linear scanning

First demonstration of photo-telegraphy by Shelford Bidwell (February 1881)

"Tele-Photography",
Telegraphic Journal, 1 March 1881

FIG. 3.—Image focused upon Transmitter.

FIG. 4.—Image as reproduced by Receiver.

S. Bidwell "Tele-Photography",
Nature, February 10, 1881.

One of the models of Bidwell's instrument to transmit pictures currently held at the National Science and Museum in Bradford.

By chance the British electrician Shelford Bidwell proposed linear scanning as a decisive alternative to the mosaic model.

His phototelegraphy apparatus was demonstrated at Physical Society on February 26, 1881

Although it could transmit only simple geometric figures, it was the first demonstrated use of selenium for image transmission.

The linear analysis in telautography devices : Bain, Bakewell, Caselli (and several others)

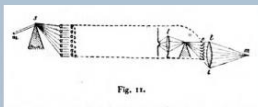
Alexander Bain,
Electrochemical telegraph, 1843

Frederick Bakewell,
Copy Telegraph, 1851

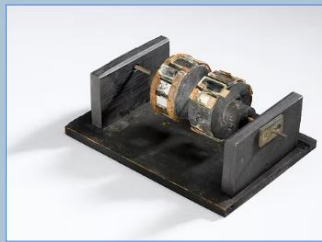
Abbé Caselli, Pantélégraphe, 1856

As du Moncel would later observe, the linear scanning used in Bidwell's device was essentially a selenium-based adaptation of image analysis techniques already employed in telautographic systems by the Scottish watchmaker Alexander Bain in 1843, then by Bakewell, and later by the Italian inventor Giovanni Caselli, whose pan telegraph operated for several years between Paris and Lyon.

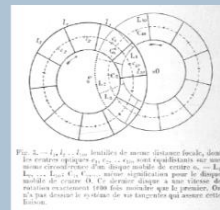
Various proposals for linear scanning



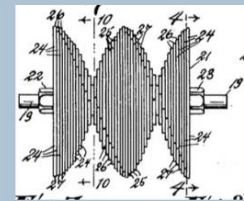
Maurice Leblanc,
Oscillating mirrors, 1880



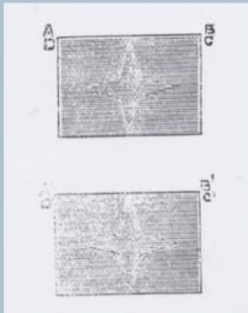
L.B. Atkinson, Mirrors drum, 1882



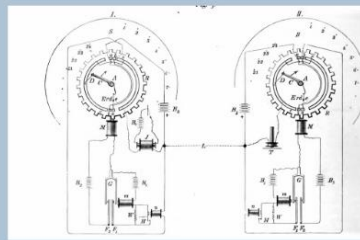
Marcel Brillouin,
Double discs, 1891



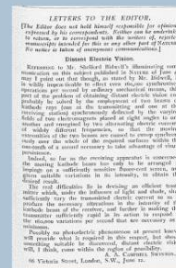
Delamere B. Gadner,
Mirror Screw, 1922



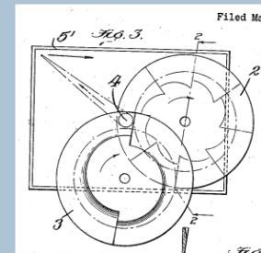
William Lucas, Nicol Prism, 1882



Paul Nipkow,
Perforated spiral disk, 1885



A.A.C. Swinton,
Cathodic rays, 1908



C. Francis Jenkins,
Overlapping prismatic discs, 1922

Linear scanning demonstrated in 1881 by Bidwell inspired several models for television apparatus.

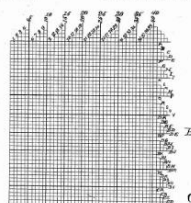
The best known was the Nipkow disk, proposed in 1884 and later used by Baird in his early demonstrations.

Yet the mirror wheel, proposed by the young Llewelyn Atkinson as early as 1882 and theorised in France by Lazare Weiller in 1889, has too often been neglected, partly due to Nazi propaganda to impose Nipkow as the father of television. Baird adopted the mirror drum for his 30-lines broadcasts.

The same principle of linear scanning with cathode rays was proposed by A.A. Campbell Swinton in 1908 and implemented in the electronic television systems developed in the 1930s.

**First digitised picture published in a newspaper:
San Francisco Call, 17 April 1895 (with the Charles Willoughby method)**

(No Model.)
C. WILLOUGHBY.
 PHOTO-TELEGRAPH.
 No. 548,772. Patented June 11, 1895.



PICTURES BY TELEGRAPH.

Practical Working of the
 Idea of a Local In-
 ventor.

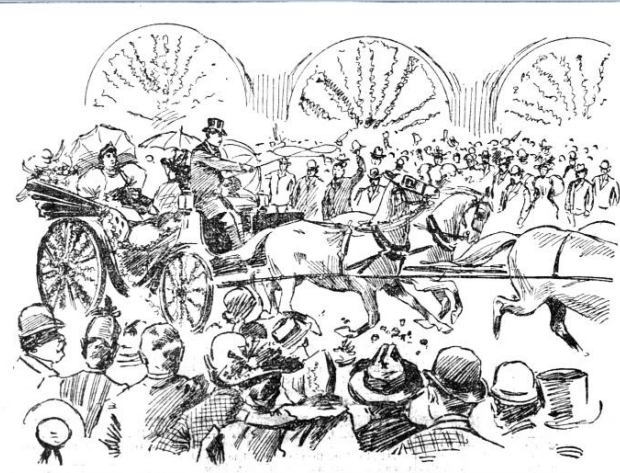
It Allows the Lines of a Picture
 to Be Accurately De-
 scribed.

For the first time a practical test of a recent invention in the sending of pictures by telegraph has been given, and the results appear in the *CALL* of this morning in its account of the events of the fiesta in Los Angeles. The process has been tested before in a superficial way, but no previous opportunity has been given to the inventor, Charles Willoughby of this city, to obtain really practical results.

The picture which appears in the *CALL* showing the arrival of the Queen of the Fiesta in Los Angeles is the first practical test of the invention. The picture is, of course, sent in outline only.

The details of the picture have to be worked up by the artist at the scene of reproduction under the direction of the artist at the other end of the line.

The patent which Mr. Willoughby has received on his invention is upon the process of making the picture and sending it, and not upon any mechanical contrivance used in the transmission. The pic-



THE QUEEN OF THE FIESTA IN LOS ANGELES LEAVING THE ARCADE STATION.

[The "Call" presents this morning for the first time to the *Metron* of Journalism a successful reproduction by telegraph of a picture taken hundreds of miles away. It represents the departure of the Queen of the Fiesta from the Arcade Station. The process of the illustration is explained in another column.]

Although the statistical method was too slow for military use, the press tested it a few years later by transmitting coded images by telegraph.

In April 1895, the *San Francisco Call* published the first digitised images of a Fiesta in Los Angeles, using Charles Willoughby's method.

It is obvious that the transmitted image had to be reworked by a draftsman.

Linear transmission of pictures by telegraph with Ernst Hummel's telediagraph (1897-1899)

The first portraits transmitted by telegraph using
Ernest A. Hummel's telediagraph.
The Saint Paul Globe, December 6, 1897

THE PHILADELPHIA INQUIRER—SATURDAY MORNING, MARCH 12, 1898

SCENE IN HAVANA HARBOR, TRANSMITTED BY TELEGRAPH FROM KEY WEST

MONTGOMERY GOING INTO HAVANA HARBOR
COPYRIGHT, 1898, JAMES GORDON BENNETT.

The arrival of the cruiser Montgomery in Havana,
The Philadelphia Inquirer, March 12, 1898.

Ernst Hummel's telediagraph

Ernst Hummel, a watchmaker in Saint Paul, Minnesota, invented in 1897 the telediagraph, an apparatus belonging to the same family as those of Bain, Bakewell, and Caselli, it is to say with linear analysis.

The apparatus was praised by Marconi.

The system was used between 1898 and 1899 by the New York Herald and associated newspapers, notably to publish pictures of the Cuban War, transmitted over telegraph cable.

It is surprising that media historians ignore these experiences, because it was at this time that the search for immediacy in the transmission of news images was born, as some kind of answer to the deception created by the kinetoscope and the cinématographe, not providing instantaneous pictures.

Early demonstration of wireless transmission of picture : W.J. Clarke with Hummel's telediagraph, 15 June 1901

"Hertzian Waves Flash Pictures Through the Ether", *San Francisco Call*, 24 June 1901

Now, that they have got to sending pictures by wireless telegraphy, courting couples can never know when it is safe to indulge in a little kissing without having the thing known everywhere.

"Pictures Sent by Wireless Telegraph", *New York Herald, Parisian edition*, 7 July 1901

Wireless at a distance of six feet

Wireless at a distance of 15 feet through a wall of 8 inches

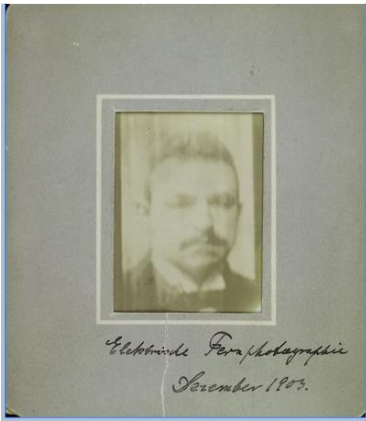
Boston Evening Transcript, 20 June 1901

One other little-known experiment I was pleased to rediscover was W. J. Clarke's first wireless transmission of an image, carried out on 15 June 1901.

By the late 1890s, after Heinrich Herz's theoretical writings, several schemes for wireless image transmission had already been proposed.

Clarke used an adaptation of the Hummel's telediagraph. The experiment itself was modest: it sent a profile drawing of Philadelphia's mayor over 15 feet and through an eight-inch wall.

The short-lived success of telephotography using selenium (Arthur Korn's System, 1903-1909)



Arthur Korn photograph sent by wire, 1903
Deutsches Museum, München



Telephotography of King Edward VII obtained on 16 January 1907 on the circuit Munchen-Nuremberg-Munchen in 11 minutes.
L'illustration, 9 février 1907

Although selenium was inadequate for television, it could still be used to transmit photographs.

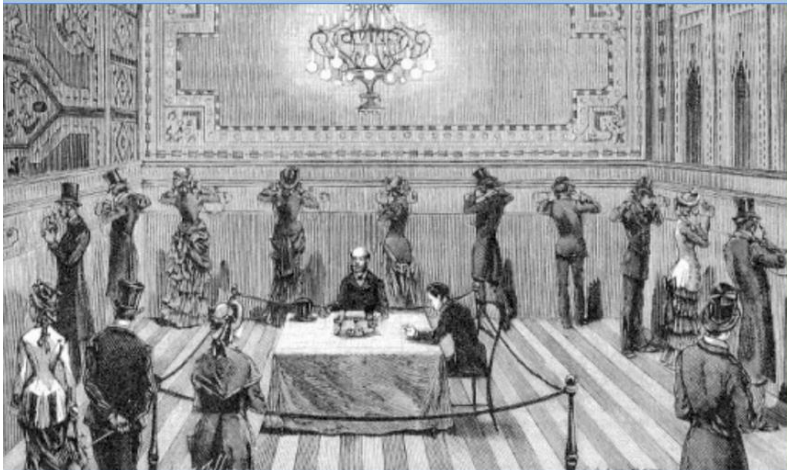
From 1903, the German mathematician Arthur Korn improved on Bidwell's model through a series of technical refinements that increased selenium's effectiveness.

His apparatus attracted considerable enthusiasm, though Korn repeatedly warned that moving-image transmission would require far greater capacities and that television remained a distant goal.

From November 1907 to early 1909, the *Daily Mirror* briefly used his system to publish photographs transmitted from Paris and Manchester.

I am not going to recount the complex history of all these proposals here, and I will stick to the applications envisaged.

The impact of the Paris Electricity Exhibition (1881)



Clément Ader,
"Auditions téléphoniques"



"Revue électrique"
Le Figaro - Supplément littéraire, 5 novembre 1881

The 1881 International Exhibition of Electricity in Paris was a turning point in public awareness of electricity's potential, in particular concerning its potential for entertainment.

Light shows, Edison's phonograph and Clément Ader's telephone auditions, which soon led to the Théâtrophone service, proved highly successful.

Bidwell's telephotography demonstrations created huge interest, and Bidwell himself travelled to Paris to give a lecture



Science columnist Henri de Parville overestimates Bidwell's device (1881-1883)

L'objet ou la personne dont il s'agit de transmettre l'image est placé devant une sorte d'appareil photographique, devant une petite chambre noire percée d'un trou d'épingle. En guise de plaque sensible, se trouve dans la chambre un morceau de sélénium. Un objectif réduit l'image de l'objet presque à des dimensions de photographie microscopique. La paroi dans laquelle est percé le trou d'épingle reçoit méca-

niquement un mouvement de déplacement et de translation très limité, mais suffisant pour que le petit trou passe successivement devant chaque point de l'image ; le petit trou joue ici le rôle du stylet dans le télégraphe Caselli ; il traverse successivement les parties noires, les parties ombrées, les parties blanches de l'image.

Journal des débats politiques et littéraires,
24 novembre 1881

470 L'ÉLECTRICITÉ ET SES APPLICATIONS.

a déjà imaginé un appareil qui permet de reproduire télégraphiquement l'image d'un objet. Un physicien anglais, M. Schelford-Bidwell, a exposé un système intéressant de photographie télégraphique ; il l'a même fait fonctionner au Palais devant la réunion des ingénieurs télégraphistes et électriciens de Londres tenue le 24 septembre.

Une personne se place devant l'appareil ; un fil télégraphique relie cet appareil à un instrument récepteur disposé à l'autre extrémité du Palais, et les curieux voient, à leur grand étonnement, l'image de cette personne se dessiner sur l'appareil récepteur. Bref, ici on s'installe comme devant un objectif photographique ; là bas, le portrait se fait tout seul.

Henri de Parville, L'électricité et ses applications,
1882, 1883

A good example of the excitement is the fact that the journalist Henri de Parville exaggerated Bidwell's results by claiming that photographs of human faces had been successfully transmitted.

"Opinion de Victor Hugo sur l'Exposition" L'Electricité, 20 août 1881 : "suppression complète de tous les exils"

Opinion de Victor Hugo sur l'Exposition

Nous extrayons de la *Ville de Paris*, ou la dégageant du récit des circonstances nécessaires, l'opinion émise par Victor Hugo après sa visite au Palais de l'Industrie, en réponse à un ami qui lui demandait de formuler son impression :

« Je pense, dit-il avec ce ton de simplicité sûre, qui est comme la musique de son âme, que l'homme est en marche vers un avenir extraordinaire. L'électricité, qui a produit, par la création du télégraphe, une sorte d'élargissement de la patrie, lui donnera l'étendue du globe. Nous aurons la patrie partout.

« L'ambition, la vision des millions aimés pouront être, d'un geste, transportées au loin. Suppression complète de tous les exils et, par suite, solution de la question sociale.

« C'est une erreur de dire que les malheureux n'ont rien en misère.

« Tout homme nait propriétaire. Il suffit qu'il consente à se déplacer pour aller prendre possession de son bien. La misère du globe habitable est inhérente. Pourquoi laissez-toutes ces terres en friche? Pourquoi ne guérir des friches qui souffrent à ceux qui viendront les chercher? Les forces de l'univers, en transportant sur tous les points du globe la vie même de la patrie, diminueront les répugnances des prolétaires pour une émigration qui n'est que fictive, car l'existence terrestre a pour champ d'activité toute la terre et non pas seulement le coin tel coin du globe.

« Ce n'est pas tout encore. Le jour est, proche où la surface du sol sera aménagée pour émettre, à la fois, la chaleur, le mouvement, la lumière. C'est la lumière, c'est le mouvement, transformés en électricité, cette chaleur sera distribuée partout, éclairant la nuit les voies publiques, faisant tourner les machines, traînant les locomotives. A-t-on calculé ce qu'on pourrait tirer de la puissance calorifique du soleil?

« L'horrible charbon de terre, pour l'extraction duquel tant de malheureux passent leur vie dans des cachots souterrains, sera laissé où il est. Soyez sûrs que le soleil envoie chaque jour à la terre la quantité de lumière, la quantité de chaleur, la quantité de mouvement dont l'activité humaine a besoin. J'ai dit tout cela il y a quarante ans, et je le redis aujourd'hui.

« L'avenir sera splendide, étonnant, libérateur. Il sera beau et bon. Vous verrez ces merveilleux, vous qui êtes jeunes. Moi, je ne les verrai pas, mais je sais qu'ils seront. »

"The sights and sounds of beloved surroundings will be carried to distant places by a single gesture. This will mean the complete end of all form of exile and, consequently, the resolution of the social question. (...)

The wonders of the future, by bringing the living presence of the homeland to every part of the globe, will reduce the proletariat's reluctance toward an emigration that will be only nominal—for human existence extends across the whole earth, not merely to one place or another."



Victor Hugo by Albert Robida

One of the most striking responses came from Victor Hugo after his visit to the Electricity Exhibition. Convinced that electrical remote viewing would one day be possible, he drew from it a remarkable social vision:

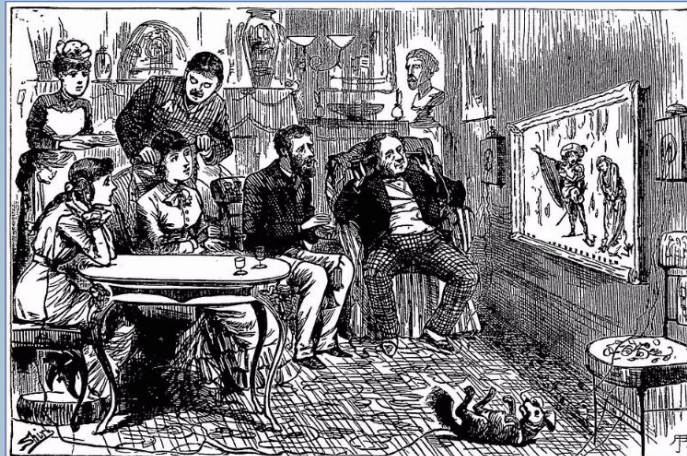
"The sights and sounds of beloved surroundings will be carried to distant places by a single gesture. This will mean the end of every form of exile and, consequently, the resolution of the social question. (...)

The wonders of the future, by bringing the living presence of the homeland to every part of the world, will reduce the proletariat's reluctance toward an emigration that will be only nominal—for human existence extends across the whole earth, not merely to one place or another."

The dioscope hoax (October 1881)

Wonders will never cease. By aid of the Diroscope, an ingenious instrument brought for the first time to public notice during the Parisian Electrical Congress, patrons of the drama who are reluctant to leave their comfortable firesides and temporarily revolutionise all their domestic arrangements in order to attend theatrical performances in boxes, will henceforth be enabled to see as well as hear their favourite operatic and histrionic artists without stirring a yard from home. The apparatus consists of a small "objective" lens, fixed up in a position commanding the stage of no matter what theatre, and connected by an electric wire with a diminutive white glass plate, which may be framed and set in the panel of a private drawing-room, however distant from the playhouse in question. Total darkness having been obtained in the room furnished with a Diroscope, a perfect picture of the stage, its scenery, actors, and so forth, faithful in colour and absolutely repeat-along the whole performance, will become visible upon the surface of the glass plate. Supplemented by a telephone communicating with the theatre, the Diroscope will therefore enable its owner to spend his evening at the opera in dressing-gown and slippers, if such be his ideal of comfort, seated in an easy chair within hail of his "bain de pieds et bouquet de nuit." To those, and their number is legion, who detest premature dinner, hurried dressing, and a couple of hours cabling "there and back," at the hitherto inevitable concomitants of a visit to the play, the condition of things rendered feasible by the invention of the Diroscope will present itself as a truly blissful addition to their pleasure resources.

"Wonders will never cease".
The Daily Telegraph, 6 October 1881



WHY GO TO THE OPERA? THE DE BEAUVILLES SIT IN THEIR DRAWING-ROOM, AND BY MEANS OF THE DIOSCOPE THEY CAN SEE WHAT PASSES ON THE STAGE, WHILE THE TELEPHONE ENABLES THEM TO HEAR THE SINGING. A GIRL WITH "ICES AND BOOKS OF THE WORDS" COMPLETES THE ILLUSION. IT IS FROM MERE FORCE OF HABIT THAT THEY CLAP THEIR HANDS AND CRY "ENCORE!"

Shirl, "The Opera at Home",
Funny Folk, 22 October 1881

An Aid for the Lazy.

By aid of the dioscope, an ingenious instrument brought to public notice during the Parisian Electrical Congress, patrons of the drama will henceforth be able to see as well as hear their favorite operatic and histrionic artist without moving a yard from home. The apparatus consists of a small "objective" lens, fixed in a position commanding the stage of some theater and connected by an electric wire with a diminutive white glass plate, which may be framed and set in the panel of a private drawing-room, however distant from the playhouse in question. Total darkness having been obtained in the room furnished with the dioscope, a perfect picture of the stage, its scenery, actors, &c., faithful in color, and absolutely reproducing the whole performance, will become visible upon the surface of the plate glass. Supplemented by a telephone communicating with the theater, the dioscope will therefore enable its owner to spend his evening at the opera in dressing-gown and slippers, seated at home in an easy chair.

Huntsville Weekly Independent (Huntsville, Alabama) - Thursday, January 26, 1882

In England, Bidwell's demonstrations also captured the public imagination and inspired the dioscope hoax launched by *The Daily Telegraph*.

The humorous magazine *Funny Folks* published a striking illustration showing a bourgeois family watching a theatrical opera performance on a flat screen.

The hoax soon reached the United States, where an Alabama newspaper suggested that the possibility of watching shows at home would encourage laziness. This already anticipates the theme of viewer passivity, which will crystallise in the 1970s image of the "couch potato".



Le Vingtième Siècle, written and illustrated by Albert Robida and published in 1882, is perhaps the best-known work of speculative fiction about television.

The telephonoscope made it possible to see one's family far away and to eliminate the feeling of absence. As with Du Maurier and Victor Hugo, the theme of distance is linked to that of the expatriation of settlers.

The telephonoscope also enables the expression of emotion, but creates opportunities for indiscretion: in one episode, a malfunction lets gentlemen witness an intimate scene of a woman undressing.

Robida further imagines the telephonoscope as a means of watching performances at home, anticipating subscription-based channel diversity and pay-per-view models.



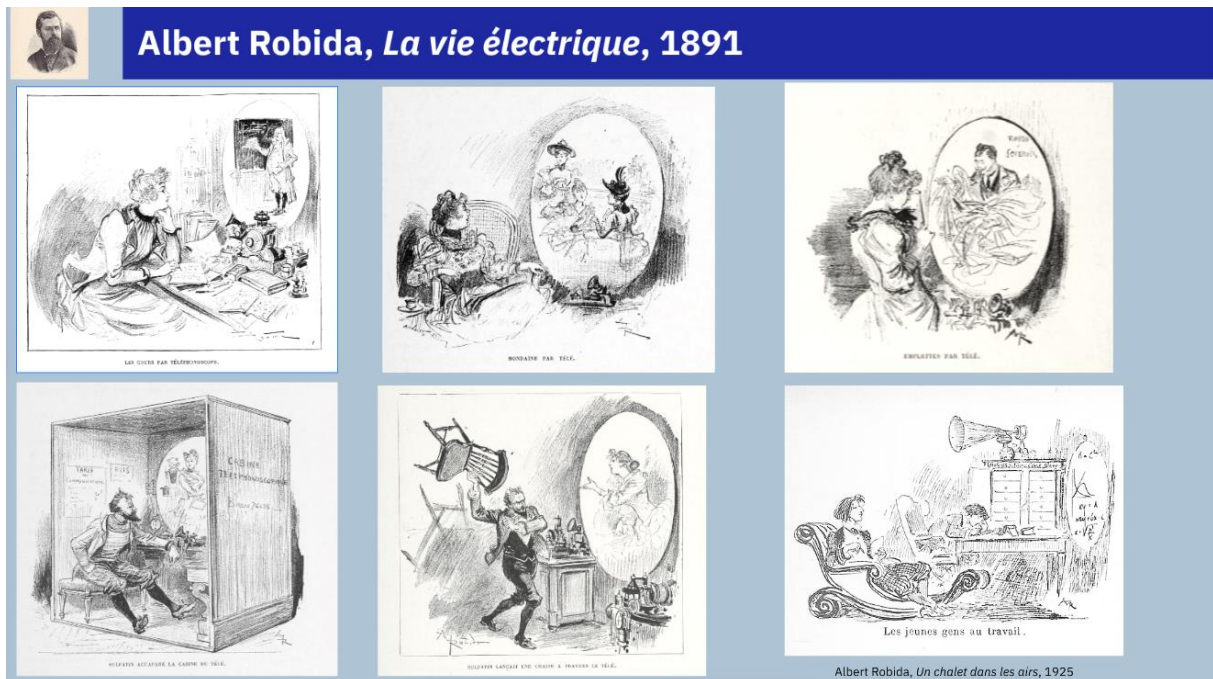
Robida also imagined that the telephonoscope would allow people to follow international news remotely: war in the desert, massacres in Beijing, and so on.

This viewing could take place at home with family, but also in public squares, as the newspaper *L'Époque* had installed large screens.

The device itself is obviously not described technically. The screen—qualified as a "plate"—is consistently elliptical (a reminiscence of magic lantern projections), except in one drawing where it is rectangular.

Le Vingtième Siècle is just one of Robida's works in which the telephonoscope appears. Throughout his career, he explored communication technologies—photography, the phonograph, the telephonograph—and on several occasions, he mocked Edison.

Much analysis has been offered on the ambivalence of his humour, a blend of joyful lucidity and conservative pessimism.



In a further book, *La Vie électrique*, published in 1891, Robida gave the telephonoscope new functions, including distance learning, home shopping and group meetings.

He also imagined telephonoscope booths in the urban landscape and the marital dispute over telephonoscope.

As late as 1925, a year before his death, Robida published “Un Chalet dans les Aïrs”, in which a device called the Cine-Phono Universel gives students access to universal knowledge without relying on books—an anticipation of Wikipedia, and why not, of the IA.

John Harding, The hoax of Dr Gindrah's Electroscope (October 1882)

THE ELECTROSCOPE.
Incredible in their nature, and stupendous in their consequences, as have been the discoveries and inventions of the last few years in the domain of electrical science, it has, apparently, been reserved for this young century to attain the honor of placing the very coming-ages upon the pinnacle of fame in this department of scientific research and energy.

Indeed, so truly marvellous in itself, and pregnant with consequences which cannot at present be even estimated, is this latest development of patient scientific research and brilliant mechanical genius, that, even in spite of the testimony of one's senses to the contrary, it can hardly yet be realized that the great problem of the age has been solved, and electricity is now the servant of the eye as it has been for some short time past of the ear. Step by step "the splendid sciences," as it has lately aptly named, has reached on triumphantly, astounding, while it blessed, our race, till now a very climax seems to have been attained. Space and distance have been annihilated, and henceforth we are to see by the electric wire as well as men.

Worse, in 1877, Strada, the Italian Jesuit, in one of his *Professione Accademica*, with strange prevision, spoke confidently of "the instantaneous transmission of thoughts and words between two individuals over an in-

"The Electroscope", *The Herald*, Melbourne
31 October 1882

"The Electroscope", *The Globe*, Christchurch,
30 November 1882



Arrival of the Melbourne Cup

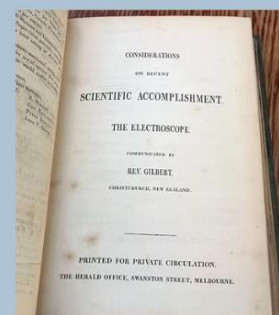
THE ELECTROSCOPE.—During the course of a lecture at Phillipsdown last evening, the Rev. Mr. J. C. Gilbert said that since the day when Galileo adapted the telescope to scientific purposes very marvellous had been the advancement made in that direction. They had probably heard of the man who, as first looking through a telescope at a distant church, exclaimed, "Wonderful! I can even hear the organ playing!" That was, of course, impossible, but the man's part. But since then it had been discovered how, by the use of a simple instrument and an electric current, to convey vibrations of sound from place to place. The telephone enabled us to speak with a friend at a distance. Would they be astonished if he were to tell them that it was now proved to be possible to convey in a similar manner vibrations of light—so that only speak with your distant friend, but actually to see him. The electroscope—the name of the instrument which enabled us to do this—was the very latest scientific discovery and to Dr. Gindrah, of Victoria, belonged the proud distinction. The trial of this wonderful instrument took place at Melbourne on the 31st October last in the presence of some forty scientific and public men, and was a great success. Sitting in a dark room, they saw projected on a large disk of white hornblende the race course at Flemington with its myriad hosts of active beings. Each minute detail stood out with perfect fidelity to the original, and as they looked at the wonderful picture through binocular glasses, it was difficult to imagine that they were not actually on the course itself and moving among those whose actions they could so completely scan.

The Latest Electrical Discovery.
The Rev. Mr. Gilbert, during an address at Christ Church the other night, remarks the *Optico-Thous*, while speaking of the telephone, asked his audience if they would be astonished if he were to tell them that it was now proved to be possible to convey by means of electric vibrations of light—to not only speak with your distant friend, but actually to see him. The electroscope—the name of the instrument which enabled us to do this—was the very latest scientific discovery, and to Dr. Gindrah, of Victoria, belonged the proud distinction. The trial of this wonderful instrument took place at Melbourne on the 31st October last in the presence of some forty scientific and public men, and was a great success. Sitting in a dark room, they saw projected on a large disk of white hornblende the race course at Flemington with its myriad hosts of active beings. Each minute detail stood out with perfect fidelity to the original, and as they looked at the wonderful picture through binocular glasses, it was difficult to imagine that they were not actually on the course itself and moving among those whose actions they could so completely scan.

Scientific American, 24 February 1883



"Une merveilleuse découverte",
Le Petit Parisien, 15 juin 1883



Rev. GILBERT, *Considerations on Recent Scientific Accomplishment. The Electroscope*, Printed for Private Collection, The Herald Office, Melbourne

Also in 1882, the electroscope hoax reappeared in two new versions, one in Australia and the other in New Zealand.

Its originality lay in imagining the transmission of a sporting event—in this case, the Melbourne Cup horse races. Both versions of the hoax were then taken up by the European and American press.

An interview with the inventor of the electroscope New York Star, April 1883

SCIENCE'S LATEST MARVEL. The Wonderful Things Accomplished by the Electroscope Photographs to be Taken by Means of Electric Wires with the Camera And the Subject Many Hundreds of Miles Apart. New York Star. "May I see the inventor of the electroscope?" The reporter who asked this question stood at the door of a dingy, ill-ventilated workshop in	inventor, leaping from the bench and waving his knot of wire dramatically. "The coral reefs, the hills and dales of the land under the water; the masses of strange, crawling things covering the firm, white sand; the monsters of the deep, looming out of obscurity to view the invaders of their domain, and occasionally the wreck of a ship, with the skeletons on her deck, grinning a horrid welcome, as though their dull sockets had eyes, to see the beings of their own race among them. Ah, the very thought repays all my work and struggles." He bowed his head upon his breast and folded his arms. Apparently he had forgotten his visitor. Now and then his lips moved slightly. In that attitude, with smiles and frowns changing each other across his face like sunshine and shadow over the side of a mountain, the reporter left him.	Functions of the New York Star electroscope : • The transmission of a photo of a fleeing thief to be quickly circulated throughout the country, making it easier to find them. • Facsimiles of documents can be sent to prevent forgeries. • Photos of events can be sent to newspapers, allowing their artists to take a break. • Officers at the front can send photographs to the general at headquarters.
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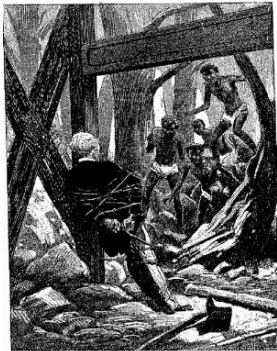
The New York Star, in April 1883, published a fourth version of the electroscope hoax, consisting of an interview with its supposed inventor.

This time, the invention was more of a telephotography device than a television.

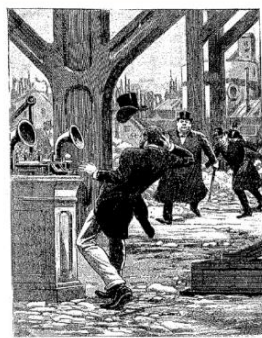
The article imagined using the electroscope to send photographs from the front of a battlefield to headquarters. This is the first known instance of the use of electrical image transmission in military applications.

Didier de Chousy, *Ignis*, 1883

"The **tetroscope**, a mirror of the distant, a channeled mirage reflecting the absent spectacle, allows administrators to follow, even during the session, the smallest details of the proceedings, and to discuss with a competence unknown to administrations that lack a tetroscope and cannot see far away."



Tetroscope. — On observe M. Huchet au travail.



Tetroscope. — Tout à coup, de l'extremite opposée à son oreille il sent un cri si formidable....

"The **telechromophotophonotetroscope**, invented at the same time by the same physicists, eliminated absence in an even more radical way. Telechromophotophonotetroscopy is, as is known, an almost synoptic succession of instantaneous photographic prints, which electrically reproduce the figure, speech, and gesture of an absent person with a truth that is equivalent to presence, and which constitutes less an image than an apparition, a doubling of the absent person."

"This very simple device consists of a **chromophotograph** that produces the print in color, a **megagraph** that enlarges it, a **stenophonograph** that collects and records the subject's words, aided by a **microphone** that amplifies them, and a **telephone** that connects to a **tetroscope** to transmit the image and sound. The various parts of the instrument combine their efforts and pour the resulting product into a common container called a **phenakistoscope**, an acoustic spyglass through which one sees and hears. It goes without saying that by suitably modifying the system's operation, one can at will summon the absent or make oneself appear."

Published also in 1883, *Ignis*, a novel by the French aristocrat Didier de Chousy, imagines the drilling of a geothermal well by the "Central Fire Company" in the crazy attempt to domesticate the earth's fire.

It is less a work of speculative fiction than a fantastic novel opposed to the dominant ideology of progress.

Two viewing devices appear in the novel: the tetroscope and the telechromophotophonotetroscope.

The tetroscope adds a new function to electrical remote vision: the ability to monitor a construction site or workshop from afar, an idea later echoed in Marie-Louise Néron's 1901 hoax on Dr. Sylvestre's spectrographe and in Fritz Lang's *Metropolis* in 1927.

The telechromophotophonotetroscope functions more like a holographic device, electrically reproducing the figure, voice and gestures of an absent person with such fidelity that it appears less as an image than as an apparition—a double of the absent body.

One of the novel's most original features is the revolt of machines and communication devices, which ultimately seize power over human beings.



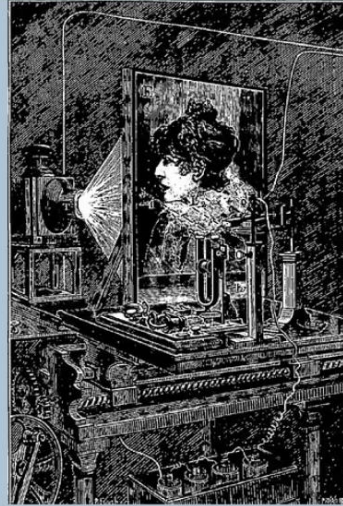
Anatole France, "Courrier de Paris", *L'Univers illustré*, 27 décembre 1890

Je dirai mieux : Selon le précepte philosophique que je vous donnais tout à l'heure, nous pouvons dès à présent jouer en imagination du téléphot et nous promener en pensée dans les villes de l'avenir où des cabines téléphotiques seront installées à tous les bureaux de postes.

Il faut convenir que ce sera une grande douceur pour les amants absents de se voir et de s'entendre. Mais l'absence restera toujours le pire des maux, et peut-être que les femmes ne seront pas jolies dans le téléphot. Ces prodigieuses inventions étonnent

"We can now enjoy the **telephot** in our imagination and stroll in our thoughts through the cities of the future where telephoto booths will be installed at every post office.

It must be admitted that it will be a great tenderness for absent lovers to see and hear each other. But absence will always remain the worst of evils, and perhaps women won't be pretty on the telephot."



Telephot transmitter and receiver
in Emile Desbeaux, *Physique populaire*, 1890

In 1890, the French writer Anatole France, in a chronicle on the telephot, returned to the familiar theme of the lovers seeing each other at distance thanks to the device.

Quote:

"It must be admitted that it will be a great comfort for absent lovers to see and hear one another. Yet absence will remain the worst of evils, and perhaps women will not look pretty on the telephot."

Known for his scepticism, France set himself apart from the rhetoric of wonder that had shaped much discussion of scientific progress in the 1870s and 1880s. In his view, technology did not transform human passions: it offered convenience, but not greater happiness.

As he put it: *"For my part, I am already used to the telephot: for the past two hours, having grasped its theory, I have been watching it without surprise. It does not yet exist, and I have already experienced it."*

He concluded: *"The wires that will soon cover the earth like a spider's web will not give us any greater meaning: electricity will make neither the flesh more exquisite nor the soul more subtle."*

**"Chronique bruxelloise",
Le Soir illustré littéraire et scientifique, 6 janvier 1894**



**Functions of the telephote
(on which Edison is supposed to be working) :**

- the remote transmission of smell, taste, and touch
- the bath with music playing
- the theatrophote with telephote
- remote afternoon tea, remote transmission of petits fours
- telefood
- remote medical consultation
- the remote masseur, hairdresser, and tailor
- the tele-slap

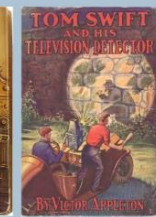
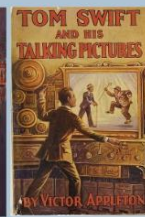
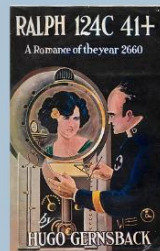
At the end of the 19th century, many jokes about seeing by electricity appeared in the popular press, the most frequent being those concerning spousal surveillance.

But the most original were those that went beyond remote viewing and imagined other forms of remote transmission: the transmission of smells, tastes, handshakes, and slaps.

Beyond television, telepresence and teleportation were envisioned.

Seeing by electricity devices in anticipation stories

- Leo Claretie, *Paris depuis ses origines jusqu'en l'an 3000*, (1887).
- Jules Verne, "In the Year 1889", *Forum*, 1889 ("La Journée d'un journaliste américain en 2890", *Journal d'Amiens*, 21 Janvier 1891
- Albert Robida, *La vie électrique*, 1891
- Camille Flammarion, *La fin du monde*, 1894.
- Edward Bellamy, *Equality*, 1897
- Paul D'Ivoi, *Voyages excentriques*, 1898-1908.
- H.G. Wells, *When the Sleeper Wakes: A Story of the Years to Come*, 1898
- Pierre Giffard, *La guerre infernale* (illustrated by Albert Robida), 1908
- Hugo Gernsback, *Ralph 124C 41+*, 1911-1912
- Victor Appleton, *Tom Swift and his Photo Telephone*, 1924; *Tom Swift and his Talking Machine*, 1928 ; *Tom Swift and his Television Detector*, 1933



Several other works of anticipatory fiction—by Jules Verne, Paul d'Ivoi, Edward Bellamy, H. G. Wells, Pierre Giffard and Hugo Gernsback—also introduced television-like devices.

By then, such devices had become a recurring motif in the genre, adding little to what earlier hoaxes and fictional works had already imagined.

All these documents related to the anticipation must be approached with epistemological caution: what did these anticipations, which may now appear to be accurate prophecies, mean in their own time? Should they be understood as a form of collective “specification” for inventors, or rather as expressions of disbelief and scepticism toward announcements regarded as absurd or unrealistic? Each of these imaginary references should be analysed within the context of the ideology of the work in which it appears, which I obviously do not have the time to do here.

The series of novels for teenagers about the adventures of young Tom Swift is a continuation of the hero inventor phenomenon that developed in the press at the end of the 19th century.

Early representation of television in films



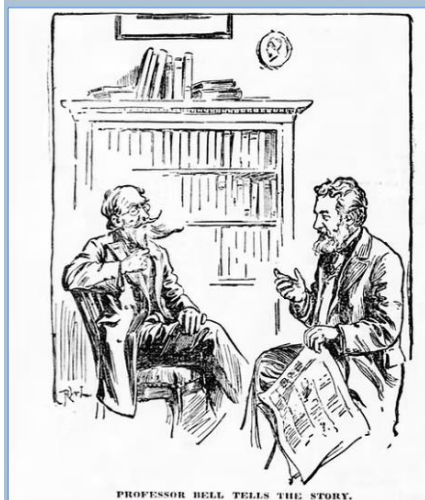
Segundo de Chomón,
Le diable s'amuse, 1907



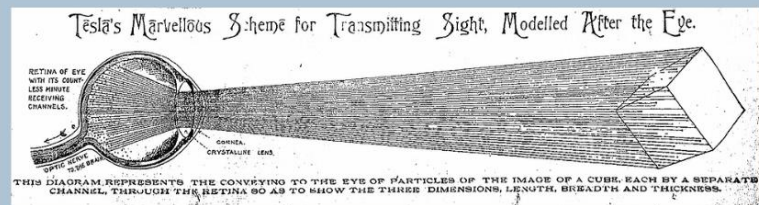
George Méliès,
Photographie électrique à distance /
Long Distance Wireless Photography, 1908

I mention—merely as a reminder—the depictions of television in cinema. On this subject, I refer you to the outstanding work of our colleague Doron Galili. Note the motif of the female dancers, who would feature prominently in early television programs.

The leading inventors and the transmission of pictures



Dr. H.F. Jokosa, "Graham Bell talks, Inventor of telephone tells the story of an hoax", *Evening Star*, 30 May 1896.



"Transmission of Light Tesla believes he is about to solve", *The World*, 6 September 1896

MANIFOLD USES FOR WIRELESS TELEGRAPHY

Among Other Marvelous Achievements Marconi Announces That He Can Send Pictures by the System.

"Could wireless telegraphy be applied to the sending of pictures?"
"Certainly. Given time sufficient for the installation of plants, I would guarantee to transmit through the air a picture, perfect in outlines, of the finish between the Shamrock and -columbia."—Extract from an interview with Signor Marconi.

"Manifold Uses for Wireless Telegraphy. Among Other Marvelous achievements Marconi Announces That He Can Send Pictures by the System", *San Francisco Call*, 9 October 1899.

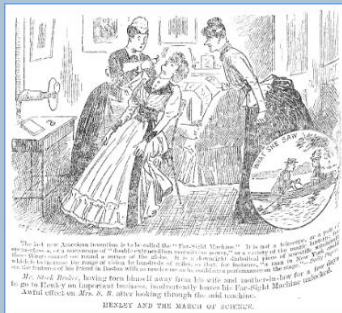
The mass press, rapidly expanding in the late 19th century, frequently used the heroic figure of the inventor as a draw.

I already mentioned that in 1880, French journalists spread the rumour that Graham Bell had invented the telectroscope. Fifteen years later, Bell was still joking on this.

The United States press published numerous articles on Nikola Tesla's ambitious theory of transmitting not only images but sight itself.

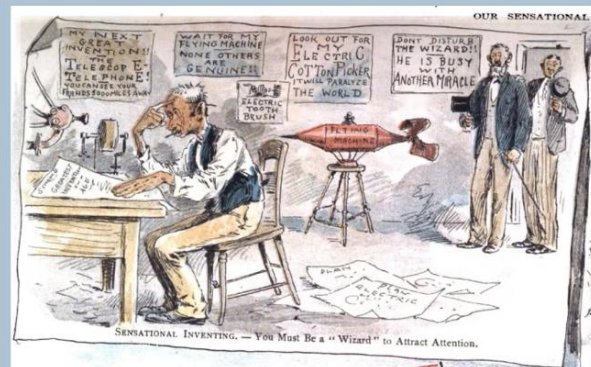
In 1899, several newspapers rushed to reproduce a statement by Marconi announcing that his wireless telegraphy system allowed the broadcasting of images.

Edison and the announced far-sight machine (May 1889)



Punch, 9 August 1889

"Conversations for the Times. Professor Goahedison's latest", Fun, London, June 3 1889



Frederick Burr Opper, "Sensational Inventing", detail of "The age of Sensation", Puck, 25 September 1889.

The most famous media-star inventor was, of course, Edison. The US dailies had a regular chronicle "Edison's latest". His stance on seeing by electricity remained highly ambiguous. In 1892, in an interview with the French journalist Octave Uzanne, he declared that the telephote was an invention of newspaper men.

Several of his acquaintances testified in the same way.

Still, it seems clear to me that he considered the possibility of inventing a system. On May 12, 1889, in a statement to the *Boston Journal*, he declared he was working on a "far-sight machine": With this device, he hoped to be able to extend the range of vision by hundreds of miles, so that a man in New York could see images of his friends in Boston with similar ease to seeing a live performance.

This announcement spread very quickly, and *Punch* seized the opportunity to create a fanciful story in which the classic theme of spousal surveillance appeared. An article in *Fun* magazine took up this theme, but also, for the first time, that of remote medicine.

The telephot attributed to Edison and to the French Henri Courtonne during the Paris International Exhibition (1889)

A SEEING MACHINE.
Entering into the realm of science, I ventured to ask Mr. Edison if it was true, as generally believed, that he had invented a machine by which a man in New York could see what his wife was doing in Paris.
"I don't know whether that would be such a great boon to humanity or not," laughed the inventor. "The ladies might object. Seriously, though, I am and have been at work at an invention which will enable a man in Wall Street not only to telephone to a friend near Central Park, say, but to actually see that friend while speaking to him. That would be a practical and useful invention and I see no reason why it may not soon become a reality. One of the first things I shall do on my return to America will be to establish such an apparatus between my laboratory and the phonograph works. I have already had satisfactory results in reproducing images at that distance, which is only about one thousand feet. Of course, it is ridiculous to talk about seeing between New York and Paris; the rotundity of the earth, if nothing else, would render that impossible."

"Edison's Millenium", Parisian edition of the *New York Herald*, 13 August 1889.



Henri Courtonne
Source : Gallica

Un inventeur français, M. Courtonne, a déposé un pli cacheté contenant la description d'un *téléphote*, appareil permettant de voir à distance, comme le téléphone permet d'entendre à distance.
Edison a fait annoncer une pareille découverte qu'il tient encore secrète, et l'inventeur américain a déclaré qu'il lui faudrait encore deux ans pour aboutir.
L'inventeur français fera connaître ses résultats et fera des expériences publiques avant la fin de l'année 1889.
Les vibrations lumineuses seront transmises par un fil à travers tous les obstacles, pouvant s'étendre indéfiniment, à des distances de centaines et de milliers de kilomètres.

Le Figaro, 23 juillet 1889

Enfoncé, Edison !
Le célèbre électricien a annoncé que, dans deux ans, il doterait le siècle d'une nouvelle invention pour la vue à longues distances, mais M. Courton, chimiste, a déposé, hier, sur le bureau de l'Académie un pli cacheté contenant la description d'un appareil qu'il appelle *téléphote*, au moyen duquel on pourra voir, à grandes distances, les vibrations lumineuses transmises par un fil.
Avant six mois de grandes expériences publiques auront lieu.
Edison sera donc en retard de dix-huit mois sur son concurrent.
Pends-toi, Edison !

La Petite République,
24 juillet 1889

The news reached France before Edison could even travel to the Paris International Exhibition, and a young French chemist, Henri Courtonne, pre-emptively submitted a sealed envelope to the Academy of Sciences containing a proposal for a telephot device.

The French press rejoiced: "Edison is out!" "Hang yourself, Edison!"

The description of the device, published two year later, remained quite basic, but Courtonne became an international star for two years, even more in the US than in France.

The first plea against television : Edmond Lepelletier, "L'oeil au fond", *L'Echo de Paris*, 27 juillet 1889

SOMMAIRE
L'ŒIL AU FOND. — Edmond Lepelletier.
HÉROÏQUE. — Bénédictine.
LE PARLEMENT D'UNE ÉPOQUE. — Gratinier.
LA VIE DE LA RUE. — Jean de la Roche.
Ouvrages de la semaine de la librairie. —
Paris. — Fernand X.

DEMAIN MATIN
CHRONIQUES DE ARMAND SILVESTRE, EUGÈNE
MORIS LEBLANC, GASTON, P. X.

L'ŒIL AU FOND

On annonce l'arrivée prochaine à Paris d'Edison. Un genre bien intentionné, mais singulièrement obscur, de mandant déjà qu'on organise une réception royale à ce souverain des inventeurs. Moi, je ne serais pas éloigné de proposer tout simplement qu'on protège du passage à Paris de cet homme de génie pour le tuer.

Il doit y avoir encore des escarpes sans ouvrage. La Boulange n'a pas tout embauché. En leur offrant un prix respectable, ces hommes de courtoisie pourraient peut-être nous débarrasser de ce dangereux grand homme. Savez-vous qu'il apporte dans sa main une invention encore plus redoutable que la lumière électrique, son téléphone et son phonographe? Il nous importe, le merveilleux soldat, un féru scientifique, que tous les prétendants à la République, c'est un appareil avec lequel on renouvellera la fabuleuse expérience de Lynce, l'Argonaute si clairvoyant qu'il se servirait de cailloux comme nous de monnaies, et l'autre à l'ère d'aujourd'hui, avant même que la lecture et les livres fussent inventés. Cet instrument, qui sera pour l'optique ce que le téléphone est pour l'acoustique, permettra à l'homme de voir à des distances invraisemblables, on parle de deux cents lieues, pour les courtes vues. Les presbytes liront leur journal à l'étranger.

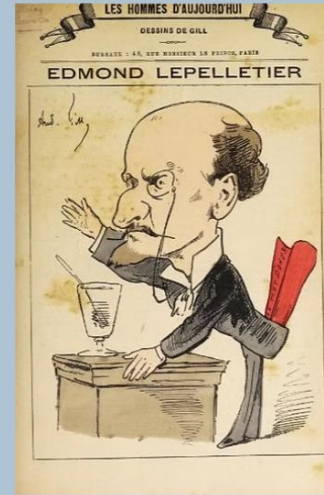
Eh bien! si la découverte est vraie, n'y a-t-il pas à assassiner celui qui l'a faite?

masqué toujours. Ça se dépose quand on est chez soi et qu'on n'est pas le prisonnier des îles d'Hydra. C'est l'instant que choisit l'ami, l'amant, le patron, le chef, le rival, l'ennemi pour diriger sur votre intimité l'espion électrique d'Edison. Il n'y aura plus de société possible. Adieu les charmantes subterfuges, les délicates tartufferies, les courtois mensonges. Nous serons à jamais plongés dans l'enfer du réel!

Ah! laissez-nous regretter, tandis qu'il en est temps encore, le paradis de l'illusion, qu'on voudrait nous enlever! A quel bon voir de trop près, voir trop bien? L'homme n'est que trop clairvoyant. Les plus méchants sont les plus heureux. Il est à plaindre celui pour qui les choses et les choses n'ont rien d'obscur, rien de trompeur, rien de caché. L'épave rose de la plus jolie créature, observée sous une loupe, devient une monstrueuse difformité, avec des rugosités, des cavités, des aspérités des bosses, des poils entrecroisés, des lacs de sécheresse et des piéces, le tout animé, remuant, grouillant... c'est horrible! Mieux vaut, certes, ne pas avoir la vue si pénétrante et se contenter d'admirer et de convoiter ce tissu fin et gracieux comme l'aile du papillon que l'imperfection de notre regard et l'indistinctivité de notre œil ordinaire nous permettent seuls de connaître. Nos sens ne peuvent rien percevoir d'excessif et c'est là ce qui nous rend l'existence supportable. Ah! par pitié, s'il vous plaît, ne nous rendez pas semblables à des dieux! L'ignorance et l'illusion sont le projet de l'homme, et tous les maux de l'humanité viennent peut-être de ce qu'elle voit trop, de ce qu'elle voit trop loin. Ne faites pas de nous le bon dieu des gravures naïves d'église, le vieux monsieur barbu, qui voit tout, ce qui doit quelquefois le bien gêner, car la terre n'a pas que de beaux spectacles à offrir à la torpente universelle.

"If the discovery is true, then the one who made it should simply be assassinated. (...)

To allow man to see at a distance, to pierce the barrier of kilometers with my ocular arrow, to eliminate distance, to bring everything closer, to create ubiquity through sight, to convert the globe into a house of glass, to focus an omnipresent telescope on the works of men, to assimilate the map of the world to the one the prefecture distributes to its agents—do you not consider this a crime of which none of those despots whose more or less successful murders we were once taught to glorify in more or less Latin verses has been guilty?"



Edmond Lepelletier by André Gill

Upon arriving in Paris, Edison confirmed his far-sight machine project in a statement to the Parisian edition of the *New York Herald*.

This sparked considerable commentary. Many journalists believed the invention had been completed.

Reactions were not necessarily positive. The French journalist Edmond Lepelletier published the first argument against television.

In an ironic tone, he wrote, *"If the discovery is true, then the one who made it should simply be assassinated. (...)"* *To allow man to see at a distance, to pierce the barrier of kilometres with my ocular arrow, to eliminate distance, to bring everything closer, to create ubiquity through sight, to convert the globe into a house of glass, to focus an omnipresent telescope on the works of men, to assimilate the map of the world to the one the prefecture distributes to its agent would be a crime* as serious as those committed by the Roman Emperors.

(Paul Nadar), "Entrevue photographique",
Le Figaro. Supplément littéraire, 23 novembre 1889

Tout se renouvelle. En ce temps de tour Eiffel, de fontaines lumineuses, de téléphone et de téléphot, le journalisme doit suivre les progrès de la science. Il ne peut plus se contenter des vulgaires procédés à l'emploi desquels la plume, l'encre, le papier et la mémoire suffisent. Pourquoi le reportage ne se servirait-il point des moyens perfectionnés qui sont mis à sa disposition?

"Everything is changing. In this age of the Eiffel Tower, illuminated fountains, telephones, and **telephot**, journalism must keep pace with scientific progress. It can no longer rely on the crude methods for which pen, ink, paper, and memory suffice. Why shouldn't reporting make use of the sophisticated tools at its disposal?"

Another interesting example of the 1889 conviction of the arrival of the telephot is the publication by *Le Figaro* of a "photographic interview" of General Boulanger, 15 photographs of the politician were taken in his salon by Paul Nadar.

This was a new format, highlighting the intimacy of a political leader, presented as a way for the press to prepare for the impending competition from the telephot.



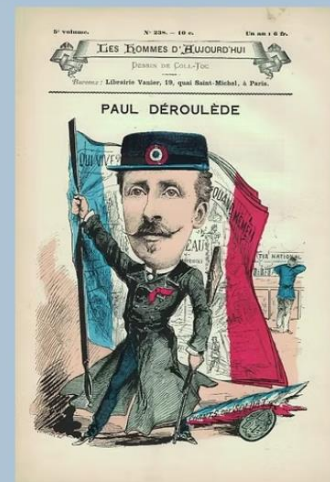
An early socialist reflection on communication technologies and the perception of politicians

Marius, "Mutuellisme et communisme", *Le Prolétaire*, 9 août 1890

"A speech can be played hundreds of times on the **phonograph**, hundreds of years apart. With the **telephonograph**, from Marseille, and then from much farther afield, one could hear the speeches of the traitor Jules Simon calling for a reduction in the number of schoolteachers to just a few, replacing the others with supervisors.

With Courtonne's **telephot**, or with the one Edison studied in his lavish Llewellyn Park laboratory, one could, from Bagnères-de-Bigorre, not only hear Déroulède's trifles, but also see his legendary, equally green frock coat."

Telephonograph
Le Parisien, 11 mai 1890



Paul Déroulède

A few months later, the socialist newspaper "Le Prolétaire" mentioned the imminent arrival of the telephonograph and of the telephot. It expressed the concern that the telephot would allow for remote viewing of the famous nationalist leader Paul Déroulède.

To my knowledge, this is the first socialist text to address the need to consider new electrical communication technologies.

Misinformation on the first announcement of Edison's Kintograph (*The Philadelphia Times*, 13 April 1890)

SEEING BY WIRE.

Edison is Perfecting a Most Curious Invention

CALLED THE KINTOGRAPH.

One May See Patti While He Hears Her in the Phonograph.

GREAT PROBLEMS IN ELECTRICITY

than steam. But at a certain point in my experiment I apparently run against a stone wall, around which I cannot get and which offers no loophole that I can see. The same thing happens with me about once a month.

IT WILL NOT DOWN.

"The problem haunts me night and day and I get back to it; I get just so far and then I run into my stone wall, and after bumping my head against it until I have a headache I drop the thing for two weeks, when the tremendous possibilities in it, and the certainty that the thing can be done, bring me back to it. Of all the problems in science I know of, this is the most interesting. It will be a discovery of more value than anything we have now, and I do not give up hopes of getting at it."

Edison also carries a note book devoted to this problem, and one for whatever may occur to him in the electric light field. At the laboratory I saw yesterday some hundreds of glow lamps burning night and day, each one numbered and possessing some slight peculiarity. A number of men do nothing but watch these lamps, recording their behavior, and the result of such tests, are of use in guiding the manufacturers. The Edison lamps are now made in Newark.

SPECIAL CORRESPONDENCE OF THE DISPATCH.
NEW YORK, April 12.—Edison is about to astonish the world with a new invention more wonderful than the phonograph. I

Pittsburgh Dispatch, 13 April 1890

EDISON'S latest, the kintograph, enables one to produce his picture at the other end of the wire, just as he now reproduces his voice through the telephone. Thus do terrors multiply for those who are liable to be suddenly called up when far away from home.

Boston Globe, 18 April 1890

EDISON HAS AN IDEA.

His Latest Happy Thought is to Make a Companion Piece to the Phonograph.

He Calls It the Kintograph—Its Mission Is to Instantaneously Reproduce Distant Scenes.

New York is to have this week in the Lenox Lyceum, one of the big halls up town which has been made over from a panorama building (panoramas having ceased to pay), a splendid electrical exhibition in aid of an enterprise to help workingwomen, and as I

The Minneapolis Tribune, 17 April 1890

Forest Ray of Ohio claims to have invented Edison's kintograph long before Mr. Edison ever thought of it. The man who has a claim to having invented the world long before the Lord did hasn't turned up yet, but he is expected.

Buffalo Courier Express, 15 July 1901

"AMUSEMENTS AT HOME."

The "kintograph" is the name of Edison's latest wonder, the aim of which is to enable a man to sit in his own parlor and see reproduced on a screen the forms of players in a distant theatre, and also to hear their voices at the same time. The machine is a combination of phonograph, camera, and stereopticon, by which 40 photographs are shown each second thus presenting, apparently, a continuous movement of the actors and a perfect reproduction of their voices. The principal mechanism for taking and reproducing the photographs consists of a narrow film of gelatine, of great length, wound upon a spool. When the machine is set in motion this film is unwound from one spool, passes behind a lens, and is wound up on another. The photographs are taken on this rapidly moving strip of gelatine and afterwards reproduced by the stereopticon.

EDWIN ARRLINGTON.

The Sentinel (Utah), 9 June 1890

As soon as April 1890 some newspapers, misinterpreting a statement by Edison published in *The Philadelphia Times*, announced that the new inventor's device, the kintograph (not kinetograph), will allow "seeing by wire", that "its mission is to instantaneously reproduce distant scenes".

Some commentators believed it to be the realisation of the far-sight machine announced in 1889.

The misinformation circulated during several months and was reinforced by Edison's statements in May 1891 on the forthcoming Chicago Exhibition. From further announcement in 1891 most understood that it was a device not for transmission but for recording, and important shift in the idea of possible circulation of moving pictures.

The kintograph became the kinetograph. Ernesto Mancini, Chancellor of the Italian Academy of Sciences, immediately expressed his disappointment in an Italian magazine.

**The transmission must be accompanied by recording
Maximilian Plessner's proposal of the hyaloscope (1892)**

Edison's Kinetograph with a Phonograph,
The Sun, 28 May 1891

The victory parade at the Brandenburg Gate (Berliner Siegesparade), on June 16, 1871, which Maximilian Plessner would have seen archived by a hyaloscope.

Less than a year later after the announcement of the kinetograph, a Prussian inventor, Commander Maximilian Plessner, published a book in Berlin entitled *Die Zukunft des elektrischen Fernsehen*.

Among other considerations, Plessner proposed supplementing a television device with a recording system. He argued it would have been interesting, for example, to record the Prussian army's return parade to Berlin after the victory at Sedan, with a view to using it for the patriotic education of younger generations.

This is probably the first idea of the possible use of recorded moving pictures for nationalist propaganda.

Plessner concluded his publication with an addendum devoted to Edison's kinetograph, indicating that this device converges with his own proposal.



Leon Vidal's proposal (August 1893): connecting telegraph, telephone and kinetograph

by the aid of an electric current. Edison is at work to construct an instrument intermediate between the phonograph and his kinetograph, which will enable us simultaneously to see the motions of a person, to hear his voice, his words, put in immediate harmony with his gesture, his attitude, the play of his lips and eyes, etc.

This has not only been taken into consideration but can be realized—probably it is realized—at this hour. But this is not all. By electricity similar effects may be and are, (why not speak affirmatively, since such is our opinion?) transmitted over a distance.

Thus, using the electric telegraph at the same time as telephone, and as kinetograph, we will be able to communicate the complete effect of form, motion and sound to points far distant from the scene of action.

Leon Vidal. "Present and Future Possibilities of Photography", The World's Congress Auxiliary of the World's Columbian Exposition. Congress of Photographers, August 1893



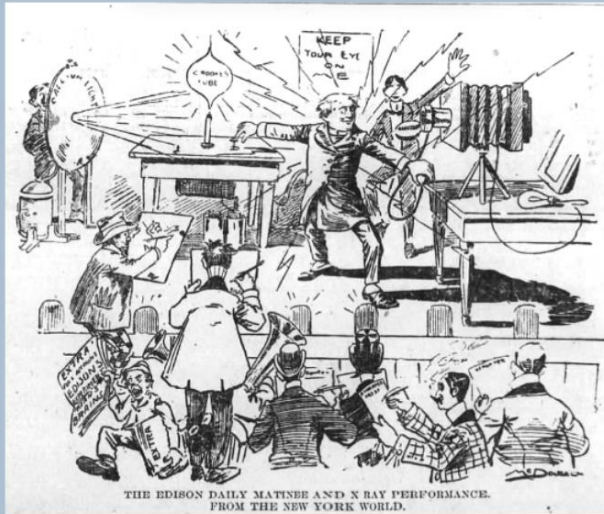
Interior of Kinetoscope parlor at 1355 Broadway, near 28th Street, New York, operated by THE KINETOSCOPE Co., controlling the United States and Canada. The first Kinetoscope exhibition started in the world: opened April 14, 1894.

Kinetoscope Parlor, Broadway, 1894

Edison's kinetograph was presented in Brooklyn on 9th May 1893. Three months later, at the Congress of Photographers held in conjunction with the Chicago Exhibition, the French photographer Léon Vidal, president of the French Federation of Photographers, proposed combining the telegraph, the telephone, and the kinetograph.

He found his proposal so audacious that he raised the possibility of Edison being the target of a witch hunts.

Edison's experiments with X-Rays (February 1896)



The Brooklyn Citizen, 13 February 1896

MORE ABOUT ROENTGEN RAYS.

Edison Perfects a Tube for His Birthday Present.

PICTURE BY TELEPHONE.

Interesting Experiments With the New Energy Made Abroad and at Home.

St Louis Dispatch, 12 February 1896

CHICAGO TRIBUNE

YOUR PICTURE BY 'PHONE.

LATEST POSSIBILITY IN THE USE OF THE ROENTGEN RAY.

Edison Continues His Experiments and Expects to Produce a Practical Device for Photographic Transference by Wire—Important Discovery Is Made and Preparations for Photographing the Brain Are Nearly Ready.

Chicago Tribune, 13 February 1896

PICTURES BY TELEGRAPH.

Wizard Edison Working on the Problem.

It is Believed He Has Succeeded in His Trials.

Boston Globe, 12 February 1896

'X-RAYS' MAY SEND PICTURES BY WIRE

"WIZARD" EDISON, AFTER EXPERIMENTING, SAYS IT IS WITHIN THE RANGE OF PROBABILITY.

TESTS WITH A PHOTOGRAPH

He Is Not Quite Ready to Turn the Mysterious Rays Into a Human Brain—Making Discoveries About the New "Force" Every Day. Other Jersey Matters.

INVENTOR EDISON IS STILL EXPERIMENTING with Roentgen's wonderful cathode rays, but he is not yet ready to try the experiment of photographing the brain of

Philadelphia Enquirer, 14 February 1896

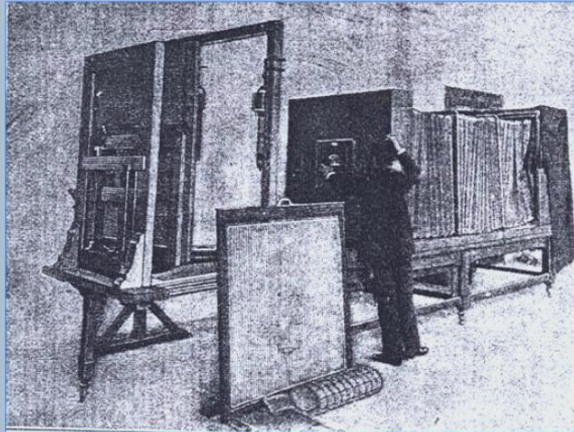
Another little-known aspect of Edison's activities in the field of image transmission is the experiments he conducted in mid-February 1896 using X-rays.

These experiments, of course, were very limited on time and remained unsuccessful.

But they had a massive press coverage.



Jan Szczepanik, the "Austrian Edison"



Jan Szczepanik in front of his loom.
Photo published in C. Moffett, "Seeing by wire",
Pearson's Magazine, 1899

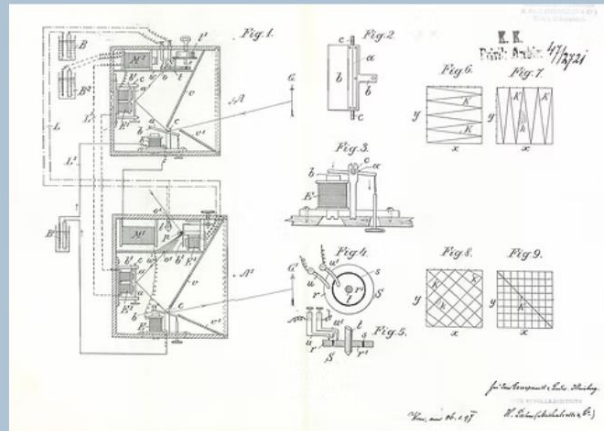


Plate from Jan Szczepanik's Austrian patent for his
electric television apparatus (1897)

(Source: Austrian Patent Office)

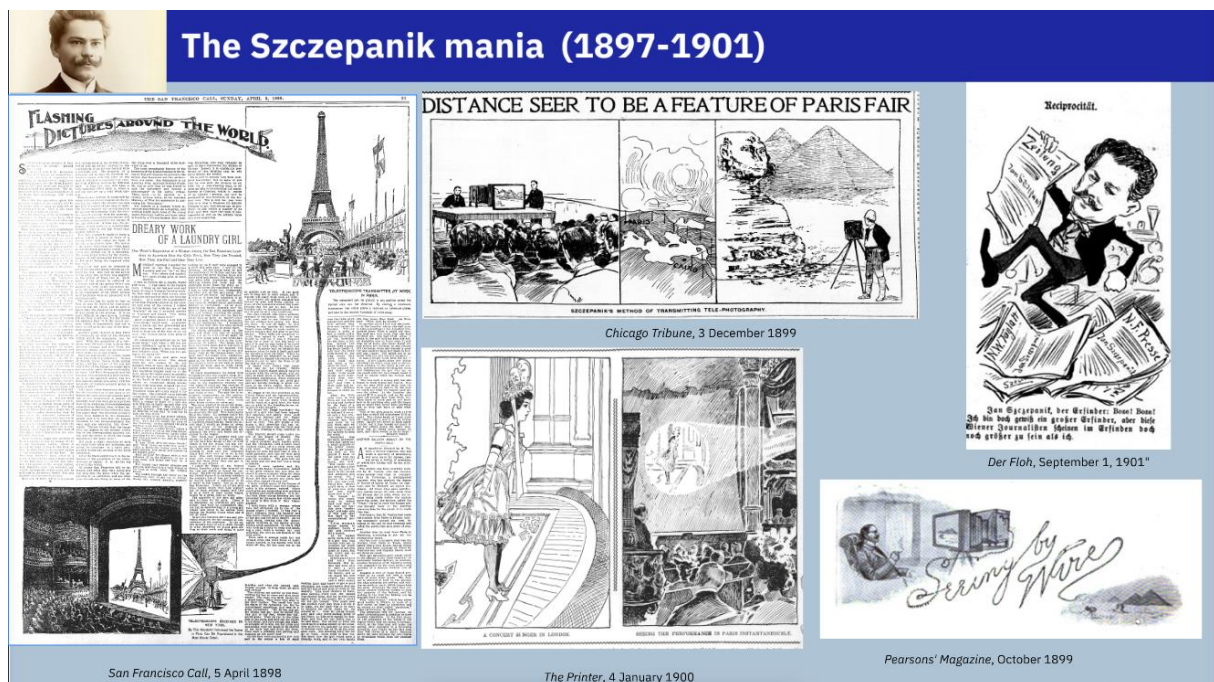
Another remarkable case of a media-star inventor is the Pole Jan Szczepanik. Mark Twain, who knew him in Vienna, nicknamed him the Austrian Edison.

In 1897 and 1898, he obtained patents in several European countries for a telectroscope using the oscillating mirror method.

According to somewhat tenuous accounts, he managed to transmit an image of St. Paul's Cathedral in Vienna via cable.

The British trade press was very sarcastic, somewhat unfairly, as Szczepanik was a genuine inventor.

He had notably developed a system for transmitting photography of Jacquard loom patterns, which was patented and used in Germany. He would later become one of the pioneers of wireless telegraphy in Austria, as well as of colour photography and colour film.



Szczepanik's marketing strategy was quite similar to Edison's: advertising in advance to raise funds.

A lively and engaging man, he enjoyed chatting with journalists. He gave numerous interviews to the press, with information released sparingly.

The *Neue Freie Presse* published a sarcastic article, likely by the renowned satirist Karl Kraus, describing the impact of the telectroscope on daily life, the profession of journalism, and the war.

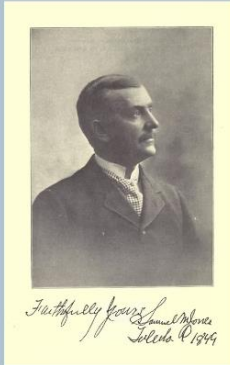
It was prematurely announced that his device would be presented at the 1900 Paris Exhibition. A projection of images of the French fleet in the Toulon harbour was announced. But the affair turned into a fiasco. The Szczepanik device was not in Paris, except in Perskyi's survey

The American daily press gave the project considerable credence. Two newspapers featured illustrations of projections in theatres. One other featured a TV screen in a conference room. In this country, *Pearson's magazine* came up with a more accurate idea by imagining a home television receiver.

Szczepanik committed suicide on April 18, 1926, three months after John Logie Baird's first demonstration.

"The world will be at our feet"

- Franck Parsons, "The telephone", 1899
- Samuel "Golden Rule" Jones, *The New Right: A Plea for Fair Play Through A More Just Social Order*, 1899.



Samuel "Golden Rule" Jones

"If the trunk lines ran freely across the Rhine, and every town in France could communicate, at a reasonable cost, with any part of Germany, it is probable that, in spite of the limitations of race and language, the telephone would be found a potent means of healing the breach between those two great peoples, which, more than any other thing, except, perhaps, the Turkish and Egyptian questions, threatens the peace of Europe."

*If the new **telectroscope** can be practically applied at low cost, so that we may see the face of a distant person while we speak with him over the telephone wire, distance will, indeed, be vanished. Friends may talk with each other face to face in spite of intervening mountains and seas. Niagara may be seen and its thunder heard without leaving our homes. The world will be at our feet."*



Franck Parsons

An example of the impact of the Szczepanik telectroscope project is a text by the US economist Frank Parsons.

Parsons imagined that the telectroscope, once its cost became affordable, like the telephone, would facilitate dialogue between nations. His text is remarkable for its lyricism: *"Niagara may be seen and its thunder heard without leaving our homes. The world will be at our feet."*

The use of this text by Samuel "Golden Rule" Jones, mayor of Toledo and humanist republican theorist, is one of the few identified texts by a politician on viewing by electricity during this period.

The invention of the cinematograph inspired rapidly the research into seeing by electricity

Etienne et Marcel Belin, 1896

En 1896, après avoir assisté à une des premières expériences publiques du cinématographe de M. Lumière, l'idée nous vint de recourir à la chronophotographie pour résoudre le problème de la vue à distance par une série d'images se succédant en un temps plus court que celui de la perception de l'œil. La question se trouvait ainsi réduite à celle-ci : transmettre à distance des images optiques réelles en un temps plus court que celui de la perception de l'œil.

"The Picture-Transmitter",
Daily Telegraph, 8 March 1898
Jan Szczepanik's telescoposcope.

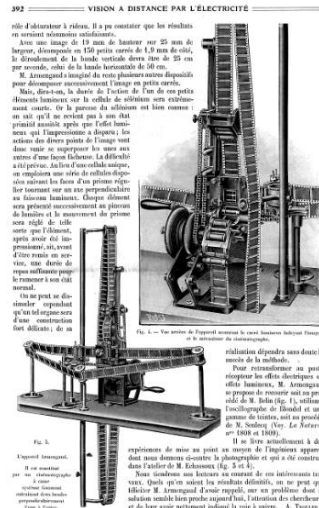
in vogue. The successively transmitted pictures must, of course, correspond to different phases of motion of the object, and the eye forthwith receives the impression of a moving picture, just as in the cinematograph.

French patent of Alexandre Polumordvinov
Appareil pour la transmission des images
à distance, dit "téléphote", 9 July 1900

ORGANISATION DU TÉLÉPHOTE OU DU PHOTODIAPHRÈME ou du CINÉMATOGRAPHE :-

Il paraît être très important dans certains cas de communiquer les images transmises. Cela peut être obtenu par la photographie, mais cela, pour la possibilité de reproduire des images successives, il faut adapter dans ce cas le cinématographe, en faisant des copies sur trois ou sur un ruban cinématographique. Dans le premier cas, sur chaque ruban se trouvent des images d'une seule couleur simple, et on obtient toutes les nuances colorées exactement de la même manière que l'on obtient la photographie à trois couleurs entières, c'est à dire par la combinaison sur l'écran des images positives techniques de couleurs simples.

Armengaud Jeune's device, 1908



Arthur Korn,
"Über telegraphische Übertragungen kinematographischer
Aufnahme", 1913



To conclude, I would like to briefly touch upon two themes that have not yet been fully explored.

The first concerns the impact of the invention of the cinematograph on research into television. This impact is clearly discernible in the early research conducted by Édouard Belin starting in 1896, in Szczepanik's *Telectroscope* (1897), in the French patent filed in 1900 by the Russian inventor Alexander Polumordvinov, as well as in a device proposed by Armengaud Jeune (1908) and in experiments conducted by Arthur Korn (1913).

In 1924, Hugo Gernsback envisioned pilotless fighter planes remotely controlled by television

The Experimenter for November, 1924
Television Plane
 Member of American Practical Society

The Experimenter, November 1924

"It is conceivable that a radio-television transmitter installed in an airplane might be useful in transmitting a direct image of the enemy's terrain, thus enabling a greater accuracy in gunfire."
 David Sarnoff, Army War College, 31 January 1927

There we see the television-controlled plane in flight. It has no crew but is entirely directed via radio and direct sight, by the ground crew, down to the direction of fall. They see the plane carrying the fighter plane down to enemy territory. If necessary, such a plane can deliver atomic bombs without falling time. Note the smoke screen.

The radio-television controlled plane (shown at right) needs the television operator down to earth, whose observation in screen picture plane, can lead into its direction of view. As the plane has no crew it is wholly directed by radio, whatever it may be. The enemy ground radio observer and operator can follow the plane visually at all times. It can be destroyed in flight as it will not fall into the hands of the enemy, should such a device become necessary.

40 Years OF TELEVISION
 By HUGO GERNSBACK

H. Gernsback, "40 Years of Television", Radio-Electronics, March 1949

The second theme is on the relation between television and military research. I will just give one example of striking relevance.

In 1924, journalist and publisher Hugo Gernsback, a leading figure in radio and television forecasting, envisioned the use of pilotless aircraft, guided by television, to bomb enemy targets.

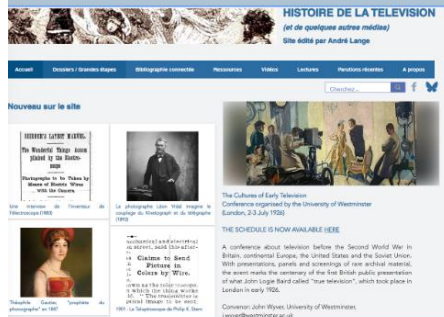
Remote-controlled weapons had already been designed by other inventors such as W.J. Clarke or Archibald Low, but, to my knowledge, Gernsback was the first to consider the possibility of using the forthcoming television to identify targets.

The idea was taken up again in 1927 in a presentation to the US Army by David Sarnoff, who would later become the major promoter of Zworykin's electronic television system at RCA.

This was already the idea behind drones, whose formidable effectiveness is demonstrated in the current war between Russia and Ukraine.

It is by evoking today's grim reality that I will conclude the story of that old dream of viewing at a distance.

Thank you !



More on :

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histv.net@gmail.com



Manoel de Oliveira, *Viagem a o Principio do Mundo*, 1997

In 1999, Friedrich Kittler, a guru of media archaeology, asserted that television was never dreamed up by so-called humans, but was solely an invention of the electronics industry.

I hope I have demonstrated the contrary and apologize for being somewhat lengthy.

I will gladly answer your questions.