

From *tele-communicare* to *Telecommunications*

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Introduction

In 1904, John Ambrose Fleming invented the electronic diode and used it to rectify a wireless signal. Radio communications were about to establish the electronics industry. Today, telecommunications are one of the manufacturing sectors that make the greatest use of electronics.

This paper stresses the remarkable coincidence of the simultaneous birth of electronics and of the word *telecommunication* by Edouard Estaunié, who coined the term in 1904. Edouard Estaunié was a French writer, known for his novels of character, but he was also by profession an engineer and ended his career as inspector general of telegraphs.

Biography of engineer Edouard Estaunié

Edouard Estaunié was born in Dijon (France) in 1862. His father was a brilliant engineer, having graduated from *Ecole Polytechnique* the very best of the elite French *grandes écoles*. However, Estaunié's father passed away at the age of 32, before the birth of his son. Edouard Estaunié will be given the same Christian name as his father. As a child and pre-graduate, he attended catholic schools and colleges run by the *Jésuites* first in Dijon, and then in Paris.

He graduated in 1884 from *Ecole Polytechnique* and became *ingénieur des télégraphes* in 1886. Collaborating with another engineer (Brylinski), he designed and built an apparatus for the measurement of electric currents in telephone lines. For this invention, they obtained an award at the 1889 Universal Exhibition in Paris (the exhibition of the first centenary of the French Revolution, exhibition for which the Eiffel Tower was built). Visiting the exhibition, Thomas Edison (whose 493 inventions were on display at the exhibition!) declared that this apparatus was the only object worth to be shown.



Edouard Estaunié (by Paul Emile Bécot, wood engraving by G. Aubert)

In 1901 Edouard Estaunié succeeded Leon Thévenin (whose name is associated with the famous theorem on equivalent generator for analysis of linear electric systems) as director of the *Ecole Professionnelle des Postes et Télégraphes*. He then played a significant role in the development of this Institute. As a first measure, he dismissed 21 professors on a total of 23! He inaugurated a series of lectures or talks given by such well-known figures as Henri Poincaré, Paul Langevin or Pierre Curie. During his first five lectures, Henri Poincaré developed an original solution for the differential equation known as *telegraph equation*. Pierre Curie gave the first presentation in Paris about the newly discovered Radium.

Edouard Estaunié even introduced general culture classes taking his students to the Louvre on Sunday mornings. He was responsible for developing the Institute to the level of a top University, which it is today (in 1943 the Institute received its current name: *Ecole Nationale Supérieure des Télécommunications*).

In 1901, as a new director, Edouard Estaunié had unsuccessfully looked for a teacher in charge of the courses on telegraph and telephone apparatus. As will be explained below, he took finally himself the responsibility of those lessons.

In 1905, he left the school, and became *directeur du Matériel et de la construction des Postes et Télégraphes*. Then in 1909, he became directeur of *Exploitation téléphonique*. In 1911, he resigned to be able to work full-time on the writing of novels. However, during WWI, he is again on duty as an officer (*lieutenant-colonel*) of military telegraphy. First detached to the British Army in Flanders, he is, after 1918, in charge of reorganising the *Postes et Télégraphe* in Alsace-Lorraine province after its return to the French nation.

He had got married in 1916, but will have no child. He definitively retired in 1919; he was 57.

Biography of novelist Edouard Estaunié

Edouard Estaunié published his first novel *Un simple* in 1891: only 30 issues of this first edition will be sold! In 1908 he will be awarded *Le prix de la Vie Heureuse* (today *Prix Femina*): his career as a first rank writer known for his novels of character is then launched. In appendix 1, his main novels and essays are listed.

Edouard Estaunié was elected in 1923 to the *Académie française*. The *Académie française* was founded by Cardinal de Richelieu, and formally established by royal letters patent from King Louis XIV in 1635. The Academy, limited to forty members, has the task of acting as an official authority on the French language. A member is elected to a specific seat for life. Edouard estaunié was elected to seat 24, previously seat, among others, of Jean-Baptiste Colbert (minister of finance under King Louis XIV), Jean de la Fontaine (poet), Pierre de Marivaux (novelist). Estaunié's friend Henri Poincaré (mathematician, astronomer, engineer and philosopher) had been himself elected to this same seat before his early death in 1912. This seat is today (2004) that of Jean-François Revel (historian and essayist). Although many French Scientists have been elected to the Academy, it is clear that Edouard Estaunié was himself elected as a novelist.

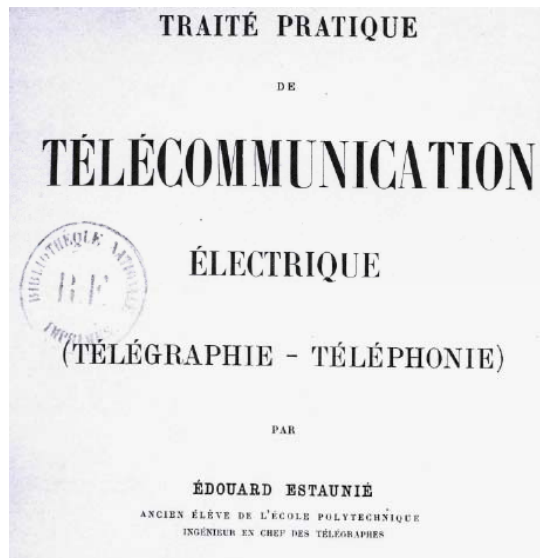
At the end of his life, illness prevented him from writing and from attending meetings at *Académie Française*. However, he managed to be present to vote in favour of Charles Maurras (major French royalist writer), who was elected in 1938.

Why did Edouard Estaunié coin the word *Télécommunications*?

As already mentioned, while director of the *Ecole Professionnelle des Postes et Télégraphes*, Edouard Estaunié took the responsibility of a course of lectures on telephone and telegraph apparatus. The two fields, telephone and telegraph, had always been considered as separate disciplines, but Edouard Estaunié got rapidly the feeling that time had come to combine these two fields, which he considered both mature enough and part of the same discipline. He then decided to publish in 1904 his lecture notes in the book *Traité Pratique de Télécommunication Electrique (Télégraphie, Téléphonie)* which table of contents is summarized in appendix 2.

He built the new word *télécommunication* from Greek *τελε* (*télé*) "far", and Latin *communicare* "to make contact". *Télé* was introduced in French during the XVIIth century with *télescope*, and then used to forge *télégraph* in the late XVIIIth. *Communicare* itself had been used in French in various forms, including *communication*, since the XIVth. While in use

in French for a long time, the vocable *communication* is then (1904) a newcomer in the field of wire line and wireless transmission. In that field, the term will demonstrate a flourishing use, culminating during the second half of the XXth century, with the advent of cybernetics and information theory.



First appearance of *Télécommunication* (Bibliothèque Nationale de France)

Edouard Estaunié defined *télécommunication(s)* as "remote transmission of thought through electricity". *Télécommunications* were thought by Edouard Estaunié as a new discipline, embracing telegraph and telephone together with radio communications, despite the fact that the novel technique of wireless telegraphy was not much discussed in the above book (three pages on a total of 670). Nevertheless, Edouard Estaunié was reluctant to coin the new vocable: "I needed to add a new word to an already too rich glossary". Nevertheless, this small action will have an ever-expanding reach.

Conclusion

Language is a means of communicating ideas and feelings by the use of conventional symbols. When the symbols are transmitted only inside the brain, we are thinking in language. Language is therefore a tool to think, and it may be considered that Estaunié's contribution to technical vocabulary, far from being anecdotal only, has helped shaping a new domain and developing unifying theories. Thus, at the 1932 Madrid Conference of the *International Telegraph Union*, this new word was chosen to properly reflect the full scope of the Union's responsibilities, which by this time covered all forms of wire line and wireless communication. Consequently, the *International Telegraph Union* (created at the Paris conference in 1865) decided to change the name of the Union to *International Telecommunication Union* (ITU), which came into effect on the 1st of January 1934. Full recognition was therefore given to this new term, initially suggested by a man who simultaneously was an engineer, a novelist and a teacher.

A handwritten signature in dark ink, appearing to read 'E. Estaunié', written on a light-colored background.

Edouard Estaunié's autograph (author's private collection)

Edouard Estaunié died in Paris on Thursday the 1st of April 1942, during the Holy Week. In his uncompleted memoirs, he confessed that one of the sadnesses in his life was that he had been forgotten as the father of the term *télécommunications*.

Appendix 1: Edouard Estaunié's bibliography

Electrical engineering:

Les sources d'énergie électrique, collection Bibliothèque des sciences et de l'industrie, Librairies – imprimeries réunies (ancienne maison Quantin), Paris 1894.

Traité Pratique de Télécommunication Electrique (Télégraphie, Téléphonie), Vve Ch. Dunod éditeur, Paris, 1904.

Main published novels and essays:

Un Simple (1888), *Bonne Dame* (1891), *Petits Maîtres* (1889-93), *L'Empreinte* (1895), *Le Ferment* (1899), *L'Epave* (1901), *La Vie Secrète* (1908), *Les Choses Voient* (1912), *Solitudes* (1917), *L'Ascension de M. Baslèvre* (1919), *L'Appel de la Route* (1921), *L'Infirme aux Mains de Lumière* (1923), *Le Labyrinthe* (1924), *Tels qu'ils Furent* (1926), *Madame Clapain* (1932), *Roman et province* (1943), *Souvenirs* (1973 – see general bibliography).

Appendix 2: table of contents of *Traité Pratique de Télécommunication Electrique (Télégraphie, Téléphonie)* – the book is 670 pages long.

Notions préliminaires, généralités sur les courants

Première partie – étude des organes constitutifs d'une télécommunication électrique

Chapitre I Production d'énergie électrique

Chapitre II Transformation de l'énergie électrique

Chapitre III Transmetteurs

Chapitre IV Récepteurs

Chapitre V Application des principes précédents à l'étude des appareils télégraphiques usuels

Chapitre VI Rendement des appareils

Deuxième partie – organisation des bureaux

Chapitre I Organes de protection

Chapitre II Organes de permutation

Chapitre III Organes d'essai

Chapitre IV Montage des bureaux téléphoniques

Chapitre V Montage des bureaux télégraphiques

Chapitre VI Installations de mesure

Bibliography

While all references below bring valuable informations, it is no doubt that the most comprehensive sources are the two books from Georges Cesbron.

Le Monde Nouveau, 15 juillet 1924, article de Clément-Janin.

Discours de réception de M. Edouard Estaunié, séance de l'Académie Française du 2 avril 1925, Librairie académique Perrin et Cie.

Edouard Estaunié, Daniel Rops, librairie Félix Alcar, 1931.

L'Ecole polytechnique, préface d'Edouard Estaunié, Gauthier Villars, Paris, 1932.

Regards sur l'œuvre d'Edouard Estaunié, Camille Cé, librairie Académique Perrin, Paris, 1935.

Un académicien de chez nous : Edouard Estaunié (1862-1842), Dr Louis Timbal, L'Autre que bufo un cop cado més, n°144, août 1943, pp 99-101.

Souvenirs, Edouard Estaunié, texte établi, présenté et annoté par Georges Cesbron, Librairie Droz, Genève, 1973.

Edouard Estaunié, par Georges Cesbron, librairie Droz, Genève, 1977.