

CONTENTS

<i>Preface</i>	2
<i>PART 1: HIS LIFE & COMPANY</i>	3
1.1. <i>How it started and evolved</i>	3
1.2. <i>Ericsson further on without Lars Magnus</i>	6
1.3. <i>International expansion</i>	7
1.4. <i>Catalogues</i>	9
<i>PART 2: ABOUT THE ERICSSON TELEGRAPHS</i>	12
2.1. <i>Introduction</i>	12
2.2. <i>Some of them in my collection</i>	12
2.2.1. <i>The four telegraphs that I know about</i>	12
2.2.2. <i>Morse keys</i>	15
2.2.3.. <i>Auxiliary equipment</i>	16
<i>PART 3: ABOUT THE ERICSSON TELEPHONES</i>	17
3.1. <i>An overview</i>	17
3.2. <i>Some of them in my collection</i>	21
<i>Appendix: A bit about Ericsson radios</i>	22
<i>Notes</i>	23
<i>References</i>	24

Lars Magnus ERICSSON

About his life, company, telephones and telegraphs

Fons VANDEN BERGHEN
July 2018

Preface



This article fits into the series of articles I have written about 19th century pioneers in the then-upcoming world of telegraphy, the first telecommunication technology. Those were about Samuel MORSE, Louis BREGUET, Werner SIEMENS and prof. Charles WHEATSTONE: their life, activities in the field of telegraphy, their instruments, and their companies. And now it is time to dedicate an article to Lars Ericsson. Let it be clear from the beginning: I did not do any in depth research regarding the historical facts; some talented people have already done this quite thoroughly. I found some useful general information in the three volumes “LM Ericsson 100 Years” (together 1.182 pages > see the Bibliography [1],[2],[3]) at the end of this article. Those books are fully devoted to telephony, with the exception of a few paragraphs on telegraphy (as I am a telegraph collector, this is somewhat unfortunate for me ;o). In those three volumes it



is stated “Reproduction of the contents of this book is permitted provided that the source is mentioned”. So I was able to copy some paragraphs out of these books, mainly to compile Part 1 of this article (his life and company). Part 2 then is about Lars Ericsson’s telegraph apparatus in general and about the instruments in my collection. And in part 3 it is the same for Ericsson’s telephones. Finally, I have mentioned in an appendix some information about the Ericsson radios.

Note: In the text I will generally abbreviate the name of Lars Magnus Ericsson to ‘Lars’; and when I refer specifically to the company I will often use ‘Ericsson’ or ‘LME’.



PART 1: HIS LIFE AND COMPANY.

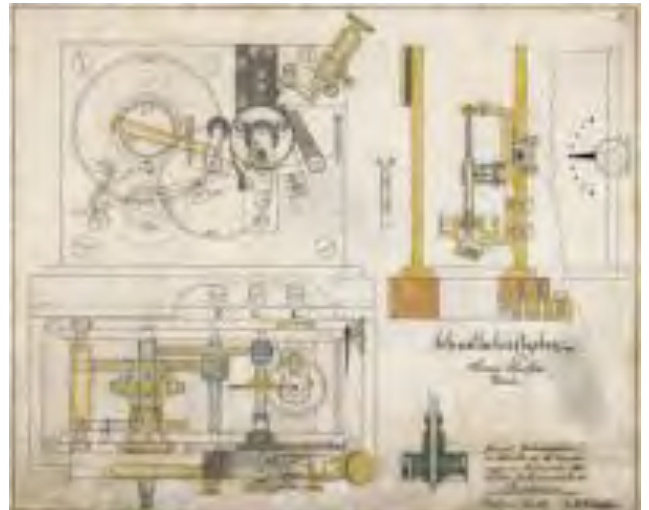
1.1. How it started and evolved.

Lars Magnus Ericsson was born on 5 May 1846. Having lost his father at the age of twelve, he began two years later as a smith's apprentice and smith at various foundries and forges. He also worked at times as a miner and as a labourer on the railways. In a letter written later in life, Lars observed that as a youngster he had longed for a



sounder training, above all in the mechanical field. In 1866, at the age of twenty, he moved to Stockholm, taking his small savings with him. There, after a trial period of a week, Lars was taken on as instrument-maker's apprentice by Anton. H. Öller who had founded his telegraph workshop the year before with the aim "to produce, repair and improve telegraph machines". Öller & C° was Sweden's first manufacturing company focusing on electrical equipment, and telegraph machines

in particular. In 1856, Öller had submitted a joint patent application, with a watch maker, for a Morse apparatus that the new company began producing. They manufactured, on a manual basis, instruments for Telegrafverket, the Swedish PTT (See note [1] at the end of this article. Öller's firm was partly financed by Government subsidies, since the telegraph authorities thought it important to have a Swedish workshop available for repairs, experiments and training. In 1869 Lars Magnus, still working for Öller, heard about an international exhibition planned for Moscow with the Swedish government offering assistance for eight workers from different industries to travel to the exhibition. "By this time, my self-confidence must have grown as I was bold enough to apply and also received a grant" he later wrote. Öller's warmest recommendations must also have helped. What Lars Magnus saw in Moscow and St. Petersburg revealed to him the necessity of setting off for a few years "out into the great wide industrial world". Moreover, like many other promising industrialists of his day, Lars, again on Öller's recommendation, obtained a Government travel grant, which provided for training, studies and work in some of the more industrially developed countries of Europe He spent the years 1872-1875 in Germany and Switzerland, studying electro-technology. In order to acquire practical experience, he worked for about two years in one of the most prominent electro-mechanical engineering companies in Europe, Siemens & Halske of Berlin. The drawing of a telegraph hereby was made by Lars during his stay with Siemens! In 1876, at the age of 30, he left his employment at Öller's, and in April he opened an engineering workshop 'to repair instruments', together with a fellow worker from Öller's, Carl Johan Andersson. The business had begun under modest circumstances in a 13 square meter kitchen in a courtyard



building in Stockholm. The firm was given the name "**L M Ericsson & Co Mekanisk Werkstad Stockholm**". Carl Johan Andersson remained a part-owner until 1886. The job consisted mostly of the repair of instruments and various kinds of apparatus, and of simple manufacture. Soon the major tasks were the repair of "pointer" telegraphs (were this needle telegraphs or dial/ABC ones?) for the railways as well as Morse instruments for the public network. When 'L.M. Ericsson 'mechanical engineering workshop' opened its doors, the first customer was the Stockholm Fire Department, which, on April 6 paid the sum

of a mere SEK 2 (Swedish crowns) for some repair work. But this laid the foundation for a global company, although Lars Magnus Ericsson himself had obviously no such ambitions when he started his company. The Swedish State Railways quickly became the largest customer. For the first fiscal year, the company's profits amounted to SEK 298. In 1876, an instrument maker earned about SEK 18 per week for 65 hours work.

In 1877, Ericsson obtained his first contract with Televerket [1], the Swedish "PTT", and began to compete with his former employer Öller, particularly in the new telephone technology. In 1878 Lars married Hilda Simonsson. Hilda was 17 and still a minor, so they had to apply to the king for permission to marry... They had three children within three years, the marriage was a long and happy one. It is known that she played an active role in both his practical and theoretical work. He talked to her about his creations in the making; from her came the encouragement to continue his exertions, he confessed his difficulties to her, he sought her criticism.





In 1877, Öller had quickly incorporated the telephone into his range, producing the first model in the same year. But after that, LME took the lead. In 1886, the competition from his former employees became too much for Öller, and he decided to phase out most of his production. Not only had Lars succeeded in making cheaper and better devices than Öller & Co, but he had also won over Öller's most highly-skilled employees by offering them higher salaries. Amongst them we can mention J.A. Lindholm and John Wikstrom (I return to them later in chapter 2.2.2.). Anton Öller died in 1889, whereupon Öller & Co was shut down after 33 years of operation.

So by 1877 the telephone had come to Sweden. The first demonstrations were held in Stockholm in August of that year. One of the first customers was Henrik Thore Cedergren, who installed telephones connecting his jewellery store and his residence on the same street. Cedergren was the man who a few years later would start



Stockholms Allmänna Telefonaktiebolag (SAT). We will meet this company later in this story.

No one knows exactly when Lars Magnus Ericsson himself first came into contact with the new invention. It may have been at the end of 1877 or in early 1878. It is clear, however, that he soon received telephones for repair and that he not only immediately realized the telephones possibilities, but also discovered

weaknesses in Bell's design that he subsequently began to correct. The first time a telephone is mentioned in Ericsson's business records was on March 4, 1878, when he received SEK 4 for the repair of six telephone sets. The first telephones manufactured by Ericsson were presented later that year. The first two telephones with "ear trumpets" were delivered to a customer on November 14 at a price of SEK 55 per pair. As early as 1879, the telephones bore an elegant and image-enhancing label in the form of the name "L M Ericsson & Co Stockholm" embossed in gold against the background, in a style typical of the times. By 1880, Ericsson's workshop had ten employees. Production now consisted of telephones, telegraphs and various types of electrical instruments. By 1882, there were 50 employees who worked 65 hours a week. The company now supplied complete wall phones in a model that soon became known throughout the world as the "Swedish pattern" and that were using the 'helical' transmitter (the spiral microphone).



In 1884, a technician named Anton Avén at Stockholms Allmänna Telefonaktiebolag (SAT) combined the earpiece and the mouthpiece of a standard telephone into a handset. It was used by operators in the *exchanges* where operators needed to have one hand free when talking to customers. Lars picked up this invention and incorporated it into his *regular* telephones. At the time of incorporation in 1896, Lars Magnus Ericsson's company had grown into a major enterprise and manufacturing plants had to be erected. There were more than 500 employees, and the major share of production was exported. By June



1, 1896, his workshop had produced 100,000 telephones. The company was transformed into a limited liability company and Lars Magnus Ericsson was appointed as both president and chairman of the board. The new company was named "**Aktiebolaget L M Ericsson & Co**"[3]. The share capital amounted to SEK one million. Of the one thousand shares, Lars retained 900. The others were distributed among his oldest and most worthy employees. Lars Magnus Ericsson resigned from the presidency of LME in November 1900, and from the chairmanship of the board in February 1901. He saw fit to retire from LME- in spite of the fact that he was still, at the age of 55, in his prime. He preferred to spend the rest of his life on the Alby estate, which he had bought in 1895



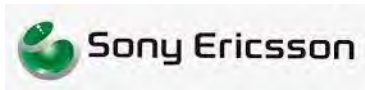
That he should have left his company this early, just at a time when it was expanding, may seem remarkable in that he still, as far as can humanly be judged, had a great deal to offer it. But Lars Magnus Ericsson had a sense of proportion, and once the increasing scale of the business prevented him from following and controlling every detail as he had been wont to do, he decided to hand over the responsibility to others. Also he may have been thinking of his father, who died at the age of 54. Part of the answer is certainly that he wanted to do something else with his life. He had been working hard from the age of 12, first to earn a living and then for his company. And there may have been another reason. Members of the family later said that he was sick and tired of trade union demands... Lars Magnus Ericsson died at the age of 80 on December 17, 1926, the year in which the company he created celebrated its 50th anniversary.

1.2. ERICSSON further on without Lars Magnus.

During the first decades of the 1900s, there were several changes in Ericsson's ownership structure. The first of these was a strategically important transaction at the turn of the century, when Ericsson acquired AB Telefonfabriken from Stockholms Allmänna[2] Telefonaktiebolag (SAT). Payment was effected with Ericsson shares, meaning that SAT with its major shareholding gained direct influence in Ericsson. At the same time, Lars Magnus Ericsson's importance for the company declined, due to a reduction in his ownership share and his resignation from both management and the board of directors. This transaction created significant mutual interests between Ericsson and SAT, which was one of Ericsson's largest customers, and led to a merger of the two companies in 1918. In 1920, the name of the Company *became* **Allmänna Telefon AB LM Ericsson**. The acquisition of other telecommunications companies put pressure on Ericsson's finances; and in 1925, Karl Fredric Wincrantz took control of the company by acquiring most of the shares. In 1926 the company was renamed **Telefon AB LM Ericsson**. Financial difficulties in the early 1930s (it was caught in the machinations of Ivar Kreuger, the notorious Swedish financier and confidence man.), contributed to the signing of an agreement with the International Telegraph & Telephone Corporation (ITT), in which the American company gained a majority ownership share of Ericsson. After the turbulent ownership changes during the 1920s, Ericsson's ownership structure from 1932 onward was remarkably stable. Apart from ITT, which during the 1930s owned about a third of Ericsson's (A series > voting right) shares, Handelsbanken had a shareholding of slightly more than 20 percent. while the Wallenberg family sphere held just under 7 percent. These last two groups remained the major shareholders until the mid-1990's. In 1960, the Wallenberg family arranged with ITT to buy its shares in Ericsson, and has since controlled the company. In 1976 Ericsson introduced its AXE switching system. The AXE was the first fully digital switching system, converting speech into the binary language used by computers. This system was an immediate success, winning virtually every major international telecommunications project.

Ericsson got caught up in the 'Dot-com bubble' of the late 1990s. But then came the telecom crisis of 2000.

The company issued a profit warning in March 2001 and launched several rounds of restructuring, refinancing and job-cutting. During 2001, staff numbers fell from 107,000 to 85,000. A further 20,000 went the next year, and 11,000 more in 2003. Fortunately the company had survived as mobile Internet started growing. With past record profits, it was in better shape than many of its competitors. The major fund administrators pointed both to the seriousness of the crisis and the failure of Ericsson's cell phone operations, which by October 2001 had been merged



with Sony. "Sony Ericsson" remained in operation until February 2012, when Sony bought out Ericsson's share. As from 2003 the emergence of full mobile Internet began a period of growth for the global telecom industry, including Ericsson. Ericsson started a series of acquisitions to strengthen its position in key technologies and market segments.¹ The first of these was Marconi (as we know well, a company dating back to the dawn of radio), whose assets included a strong portfolio in transmission, fiber optic and fixed network services. Further acquisitions included for instance Redback Networks, Entrisphere, Tandberg TV, ... These are just a few examples. It is impressive what has happened from the early 2000's up to now in several restructurings, acquisitions, mergers, joint ventures, co-operation agreements, partnerships, as well as sales of own divisions and daughter companies, divestments,... In May 2018, SoftBank partnered with Ericsson to trial new radio technology!

Today (2018) the company employs around 100,000 people and operates in around 180 countries. Ericsson holds over 42,000 granted patents as of December 2016, including many in wireless communications



1.3. International expansion

The real growth of the company started in the 1880s in the form of an expanding export market. In 1881, the company's international business was very small and limited to other Nordic countries. By the end of the decade, however, its telephones were appearing in western Europe, Great Britain, and Russia. If LM Ericsson's export business expanded in the 1880s, it exploded in the 1890s. The company began selling telephones in Australia and New Zealand. Late in the decade it sold telephone exchanges that switch calls, as well as telephones in South Africa. During the Boer War, LM Ericsson supplied field telephones to the British armed forces. In 1899, LM Ericsson opened its first foreign factory, in St. Petersburg, Russia; by the turn of the century it had begun selling telephones in China and the South Pacific. In 1900, exports accounted for about 90 percent of LM Ericsson's total sales. As we have seen, Lars stepped down as chairman in 1901. Even without the guiding hand of its founder, Ericsson continued to conquer international markets in the years leading up to World War I. It began selling equipment in Egypt and set up manufacturing subsidiaries in Great Britain, the United States, France, and Austria-Hungary. It also began installing telephone exchanges, joining with SAT to set up a network in Mexico in 1905. Ericsson suffered during World War I as hostilities cut off most of its foreign markets. Exports were limited to Russia and neutral countries. The outbreak of World War II did not make things any easier. The German invasion of Poland eliminated a foreign market that had been an important source of revenue. The company lost about a third of its export sales during the war as well as foreign assets that were destroyed or nationalized. On the other hand, Ericsson did benefit from Sweden's military build-up and manufacturing of telephones, aircraft instruments, machine-guns, and ammunition for the military. Despite the nationalization of its Mexican subsidiary in 1958, sales in Latin America and Australia boomed in the 1950s. Profits grew, and the company expanded steadily throughout the post-war years.

Here follows a few more details for a limited number of countries where the Ericsson company was active in its earlier years.

***Scandinavian countries.** It is obvious that the company soon became a major supplier of telephone equipment to the Scandinavian countries.

***UK.** During the 1890s LME developed important markets in certain non-Nordic countries in Europe. These included primarily Great Britain and secondly Russia. LME had entered the British market in the late 1880s, and in the following decade this became LME's most important sales region, by a wide margin. Orders came mostly from the large British telephone operating company, the National Telephone Co., through its sales office in London that was opened in 1898. Since there was no major telephone manufacturer in Britain, telephone equipment was imported, to begin with from the USA, but from the end of the 1880s also from Sweden. The General Post Office bought LME's products. In October 1903 negotiations with the National Telephone Co. resulted in the formation of the British LM Ericsson manufacturing Co. Ltd. ('British LME'), each party holding 50% of the shares. Production began in the factory in Beeston in 1904. After 1911, when National Telephone handed over the telephone network to the British Post Office, the latter became British LME's biggest customer.

***Russia.** At the end of the 19th century, there were many Swedish entrepreneurs active in Sweden's eastern neighbour, which was also the largest country in Europe. Scandinavians were particularly well represented in the Russian capital, St. Petersburg, where they formed an expatriate community who also met privately and discussed business. Among Ericsson's competitors, Siemens & Halske had already set up a telegraph factory in St. Petersburg. In the summer of 1896, Ericsson decided to buy a site in St. Petersburg for a factory and accommodation. Production started a year later in rented premises; this included assembling telephones from parts supplied by the parent factory. In 1900, these operations moved to the new factory. Lars Magnus took a deep interest in the Russian company and often visited St. Petersburg. The Russian operations, however, were abruptly terminated by the Revolution in 1917.

***France.** The first order in France came in 1909 to replace the telephone exchange that was burned down in the autumn of 1908 in the rue Gutenberg in Paris (6.300 lines). In May 1911 a French limited company, the Société des Téléphones Ericsson (STE) was formed, in order to acquire further markets in France. And already in 1912 a factory was completed in Colombes, outside Paris. The production started in 1913 but it was only after the war that this factory began to produce telephone equipment in earnest. In 1927 Ericsson sold the majority shareholding in STE to the Compagnie Générale d' Electricité (CGE).

***The Netherlands.** The N. V. Nederlandsche Telefoonfabrieken was established in Rijen in 1920. An engineering works, in which LME had taken over two-thirds of the share capital, was reorganized to produce telephone equipment for the Dutch market, including the colonies. The factory developed slowly, and with great difficulty.

For the whole of the period up to 1931, the Group lacked its own sales organization in Holland, its products being sold instead through the firm of Koopman and Co. in Amsterdam.

***Austria-Hungary.** In 1910 the company Deckert & Homolka, well established in this dual monarchy with factories in Vienna and Budapest, began negotiations with LME Stockholm. This resulted in November 1911 in the formation of a Hungarian company and in 1912 of an Austrian one. LME subscribed to rather more than half of the share capital. Here World War I brought about an increase in orders and full employment for the two factories.

***Czechoslovakia** In the early 1920s, LME was involved in Czechoslovakia through its branch factory in Prague. A partnership company was subsequently organized, in which the Austrian company had the majority shareholding. The factory was not profitable, and Ericsson was compelled to reorganize its operations in Prague. In January 1929, 'Ericsson Elektrizitäts Kommandit-Gesellschaft Scholta & Co'. became a partner in 'B., K. Prachalové a Spol' , a family company with a factory in Kolin.

There is a telegraph instrument of this company in my collection that can be seen in 2.2.1.

***Spain.** Ericsson was established in **Spain** in 1922 and opened there its first factory in Getafe (Madrid) in 1924. In 1926, Ericsson made its first contribution to the Spanish telephone network with the installation of a central AGF exchange in San Sebastian. Until the late 1960s, Ericsson had a presence in areas such as telex and strategic networks for the military, and in 1969, Ericsson was chosen by Telefonica as a supplier of transmission equipment.

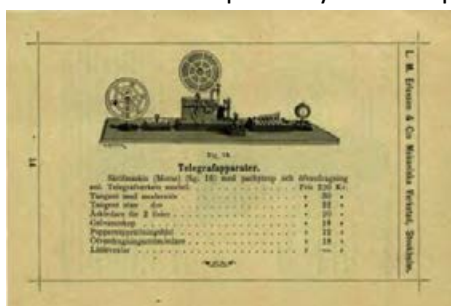
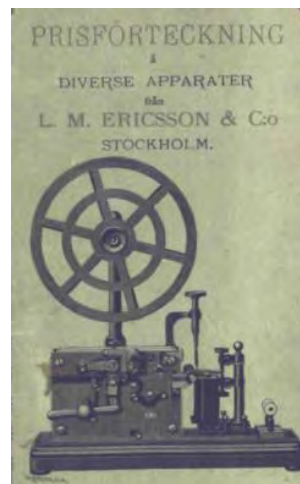
***USA.** At around the turn of the century, LME's agent in New York had developed a certain market for LME's exchange equipment and telephone sets amongst telephone companies outside the Bell Group, the so-called "independent telephone companies". In order to create better prospects for an increased flow of orders the LM Ericsson Telephone Manufacturing Co. was formed in 1904. It proved not to be a success and the production of telephones was replaced by the production of electrical ignition devices for cars. Due to bad business the production was stopped in 1920 and all assets were sold early in 1923.

***MEXICO, AUSTRALIA, BRAZIL:** I mention these three big countries briefly just to say that these overseas markets came to be of a prime importance to LME during the post-World-War II period.

1.4_Catalogues

The Ericsson & Co company had the good idea of putting a lot of catalogues (about 70, including a few leaflets) on one of its websites; see ref. [3]. That is certainly good news for collectors. As I mentioned regarding the books, here also the material is mainly about telephones. For me and my fellow telegraph collectors there is only one catalogue that completely deals with that subject, and in others there are a few pages dedicated to telegraphy. Here I list the most important catalogues, and add a few comments. Note that this LME list does not include all the catalogues that were published over the years; far from it, and there are many gaps. So, dating an item based on the date of the catalogue in which it first appears has its risks, as it might be some years older.

1886: On the right-hand side you can see the cover of a 24-page catalogue issued in June. As it is most probably the company's very first catalogue, showing the earliest



products, I will enlarge upon it. The photo on the cover shows the typical Ericsson telegraph (cost: 220 SEK). I believe it is the first one that Lars had made. On page 15 (image on the left) we find the complete (but limited) family of telegraphy items that was in production at that time. The next photos show the then-available telephones: the first two wall models and the first desk set model. This desk set has a microphone that is fixed on a movable arm, with the microphone and earpiece separated. Further on this catalogue showed some small switchboards and a large one,

galvanometers and a special fire-alarm telegraph. Somewhat remarkable: Lars did not make his own morse key at that time. My surmise is that he bought them from Öller. The language in this catalogue is Swedish.



1889: (48 pages) This one had the same telegraph and also a very nice portable one (it can be seen in the 'telegraph group photo' out of the catalogue of 1892-2 hereunder). I will present it later in detail in Part 2. This time there are three different wall telephones (labelled No 1, 2 and 3 in a further image) and the same desk telephone. Swedish language.

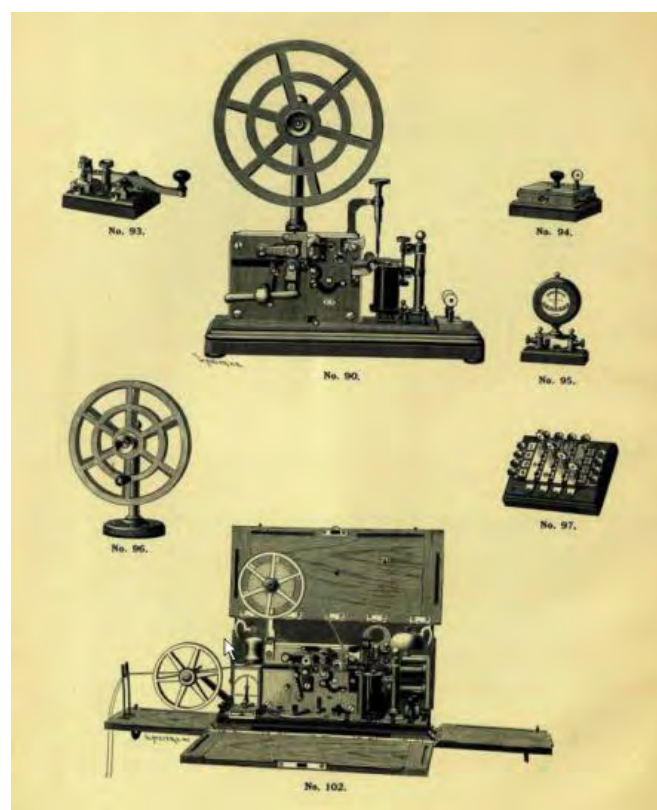
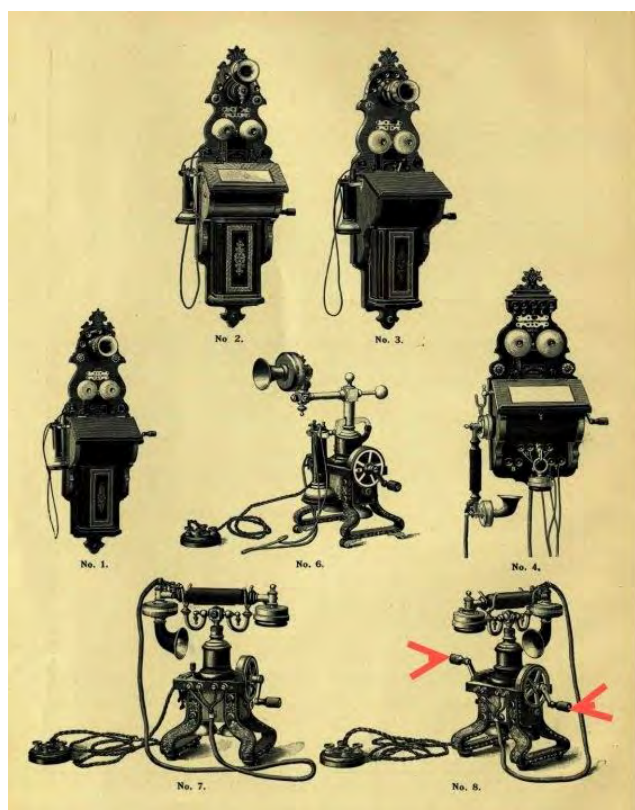
1892-1: (67 pages) Same situation on the telegraph front. Regarding the telephones, as well as the

forementioned desk set, this catalogue also showed the common "Skeleton": the one with a 'handmicrotelephone'. And there is also this Skeleton that has two handles (to ring the opposite person). The idea was that in that way the apparatus was particularly suited for writing tables and desks at which two persons were sitting opposite each other (a telephone was expensive). Besides the five different wall telephones there was also a portable telephone model in a wooden box available. Compared with the 1889 catalogue there was one change regarding the telegraph items: the addition of a fire-alarm one. And this catalogue showed more switchboards. In Swedish.

1892-2: A supplement of 4 pages. Here appeared the nice table telephone with the bell. In Swedish.

1892-3 (30 pages) A limited telephone catalogue with 3 pages on telegraphy. It has some group photos of which two are very useful, which is why I am putting them hereafter in full glory. In English, German, French.





1897: (131 pages) -4th. Edition - Telephony, fire alarms and 5 pages on telegraphy. It includes the 'standard' and the portable field telegraph station and now also a single morse key... In English, French , German.

1901-1(Swedish), -2(English) & -3(German). Here appears the table telephone that encloses all the working parts in a black metal box .

1902: (253 pages!) - 5th Edition – It has a lot of good descriptions, including schematics. Still the two known "Skeletons" from 1866 and 1892. Here appears the elegant model nicknamed 'the Spider'. It even includes 8 (eight!) pages on telegraphy, showing the old model, the 'German' model (see Part 2) and also the portable telegraph. In English, French & German.

1910-1: (42 pages) – Section S – 3rd edition –Line protection (lightning protection &c... In German-

1910-2: (39 pages) – Section M – 6th edition – Portable telephones and the one portable telegraph of above.

1910-3: (42 pages) – Section S – 6th edition - Line protection (as in 1910a) - English, French, German

1911-1: (171 pages) – Section A-C – 6th edition – Only telephone instruments – The 'barrel' telephone makes its appearance. English, French, German

1913-1: (35 pages) – Telephone switchboards and accessories

1913-2: (180 pages) – Section O - 6th edition – Switchboards - English, French, German

1913-3: (157 pages) - Section O - 6th edition – Switchboards – Swedish

1914-1: (19 pages) – Telephone accessories - English

1914-2: (117 pages) - 6th edition – Telephones – Swedish

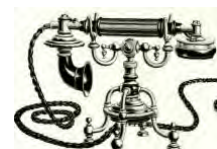
1914-3: (45 pages) – Section TA-TF – 6th edition – **Telegraphy!!** - Hurrah, fully devoted to telegraphs; at last! A real titbit (for me). Unfortunately, there is no other vintage of such a catalogue on the LME list. It covers: the 'classic' models TA100 and TA110, the 'German' ones TA200, 210 and 220, a sounder, several keys, galvanometers, paper tape wheel, relays, repeaters, spare parts,... Most of them will 'come to life' in Part 2 . The texts are in Swedish.

1922 -1,-2 and -3: Price tables, respectively #8; #9 and # 10 – Swedish

1923-1: (59 pages) –Section A-C - 7th edition –Telephones - Swedish

1923-2: (51 pages) - Section H - 7th edition –House exchange telephones

1928: (53 pages) – Section H – Telephones for multiple connections – Swedish



- 1930-1:** (162 pages) – Section A-D, H - N°128 – 7th edition – Telephones: in French & Spanish
- 1930-2:** (283 pages) – N°122 – Telephony – A lot of items, but the description is in Swedish. It has still four versions of the Skeleton: AC110, Ac120, AC 130, AC 200. Five pages on telegraphy, including the TA100, the 'original' telegraph – In Swedish
- 1934-1:** (63 pages) - Telephones > no longer the Skeleton, Fire alarm, ...-In Swedish
- 1934-2:** (139 pages) Telephones & signalling equipment, alarm systems - #188
- 1934-3:** (139 pages) N°188 - Telephony and signalling equipment, fire alarm,... Here appear the classic telephones from the 1940s and 1950s, made of bakelite/plastic – In English
- 1935-1:** (217 pages) – N°189 – Main catalogue – Telephony & alarm systems – In English
- 1935-2:** (208 pages) – N°190 – #ditto – In Spanish
- 1935-3:** (181 pages) – N°195 - ditto – In Swedish
- 1935-4:** (209 pages) – N°197 – about the same as 1935-3 – In Swedish
- 1935-5 up to 1935-12:** - about alarm systems and promotion leaflets
- 1935-13:** (209 pages) - N°200 – General catalogue – Same as 1935-1 – In French
- 1935-14:** Identical to 1935-13
- 1935-15:** (304 pages) – N°132 - Telephones and also five pages on telegraphy with the typical old-style telegraph, including spare parts
- 1937:** (28 pages) – N°601 – Switchboards for LB systems – In Swedish
- 1938:** (9 pages) – N°606 – Alarm systems – In Swedish
- 1939:** (425 pages!) – N°610 – Main catalogue – again nothing about telegraphy... In Swedish
- *Further catalogues (from **1942 till 1969**) These are of no interest here as they deal with other areas or are leaflets, with the exception of
- 1945 1&2:** resp. N°646 in English (375 pages) and N°648 in Spanish (376 pages) which deal with telephone spare parts

PART 2: ABOUT THE ERICSSON TELEGRAPHS

2.1. Introduction

As we have seen in the overview of catalogues, the range of LME telegraphs and accessories is rather limited. This is in strict contrast with the plentiful information that is available about their telephones, and is the reason that from time to time I have to put a question mark in my text. At first sight it may seem remarkable that the basic design has lasted from the very beginning (1878?) for about seven decades (end of the 1940s, I suppose). But we have seen this before. First I have to note that the design of Lars's **first model** (catalogue from 1886, but probably older) corresponds almost perfectly with the one of the much earlier telegraphs designed and made by Digney in Paris in the 1860s. I am pretty sure that Lars acquired a license or just copied the design. But he is not alone; the same also happened, for example, here in Belgium. Our most typical telegraphs here -signed Richez, Van Hulle, Devos,....- are also a 1-to-1 copy from the Digney ones. In those I have found parts inside them signed Digney... Telegraphs of the second half of the 1900s were very solidly made. And all what they had to do, they did rather well: print dots and dashes on a paper tape. So there was no need for changing the basic functions and design. That also happened with Digney telegraphs in other countries, and with Lars's third model. This is the typical governmental German model from made by Siemens & Halske in the late 1860s. It is the one that I noticed in the LME's catalogue from 1902. So this brings me to the point where I have to state that the third morse telegraph from Lars was a copy of this German model. Like the German ones it had the spring mounted on the outside, and later on the spring was inside the housing. The **second telegraph** (catalogue from 1892) that Lars brought out, the portable one, was also a Digney look-alike, but all the other elements that made it a complete transportable station were certainly designed and made by Lars. Further on I will refer to them as model 1, 2 and 3. I am not aware of any other morse telegraph by Lars, nor of telegraphs with a different technology

2.2. Some Ericsson telegraph items in my collection

2.2.1. The four telegraphs (that I know of)

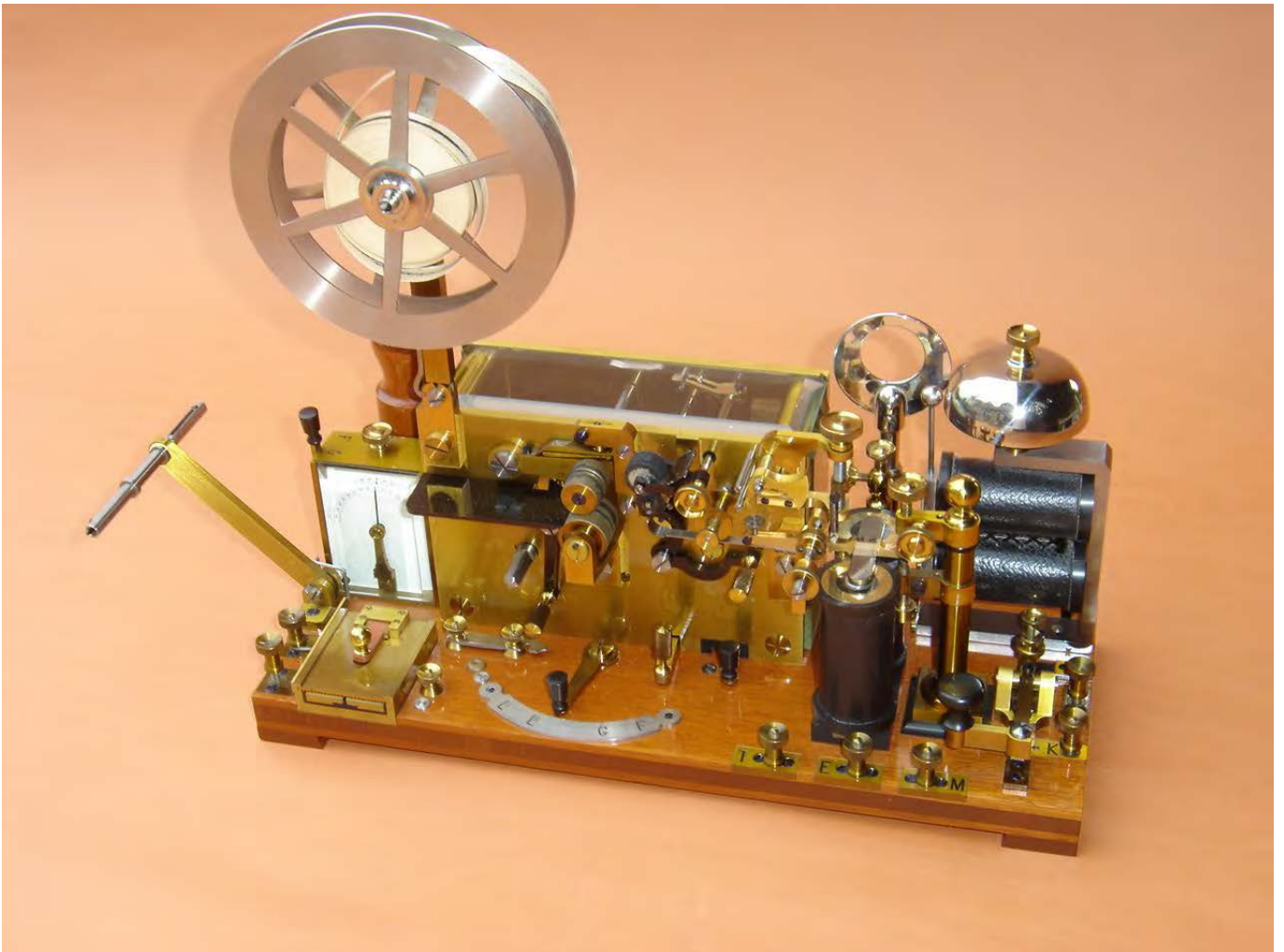
*Telegraph 'model 1'



Compare with this much older Digney one. It appeared in the catalogue of 1886 (the first catalogue listed in 1.4.

*Telegraph 'model 2'

This is really a fine telegraph. I noticed it the first time in the catalogue of 1892. You can see the morse key, the galvanometer, the lightning protector, the ink bottle, the paper wheels, the rotating switch, the winding key, the nice case...,all so beautifully made with great craftsmanship. It is my favourite morse telegraph and therefore I am devoting the rest of the page to its photos ;o)



*Telegraph 'model 3' and 'model 4'



These are look-alikes of the 'standard' German models: the oldest model can be seen on the left; the same as the one in the catalogue from 1902.

The second model, below, was made in the factory in Kolin in Czechoslovakia by the ERICSSON & SPOL company (see 1.3.).



Have there been other models? I don't know (apart from a few not-so-interesting alarm telegraphs).

2.2.2. Morse keys

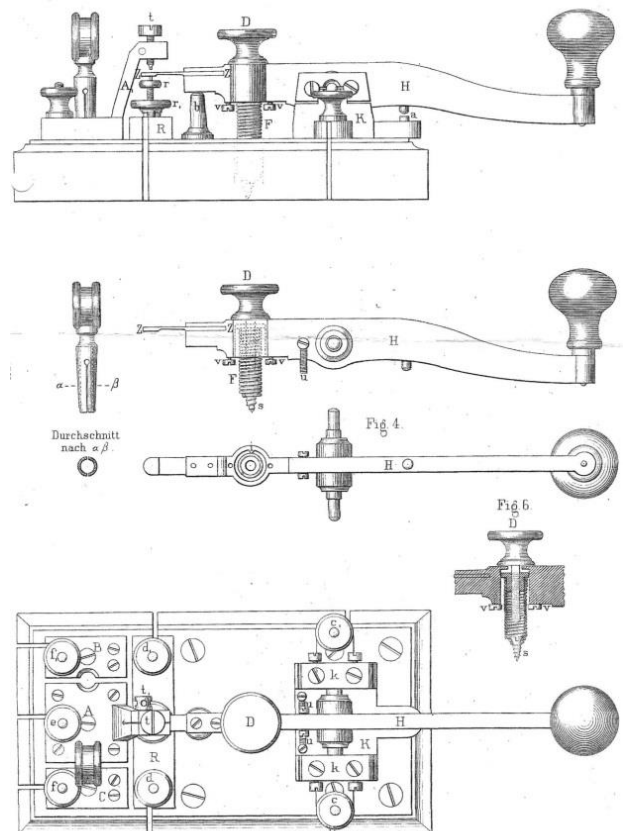
*The 'mother key' (as I call it) from Öller.

As we have seen in Part 1, Lars was very late in making keys. He most probably bought them from his first employer, Anton Öller, who built the first key in Sweden (in 1857?). The design is rather unusual; just one example: the contacts are at the rear of the key. Not only had Lars left Öller's workshop, but also two of the most highly-skilled employees: J.A. Lindholm and John Wikstrom. As Lars had done in 1876, they set up their own shop in 1878. Amongst others, they made this particularly well designed key, so the chance is high that LME bought keys from them. Later on LME manufactured this key and other models using the basic design of the first one. My key on the left is an Öller's one from 1865 or earlier. LME was not the only one; several other companies worldwide copied this famous key. Even the Marconi company had a similarly designed key for wireless use, the model PS-213, and this after 1950!

While my old camelback key is on the cover of my first book (1998), this fine key is on the cover of my second book (2002).

*LME's first key

In the LME catalogue from 1879 appears for the first time a key (only one) clearly derived from the one above. It is a less complicated version, labelled No. 810 in this catalogue and Type TA 610 in the catalogue from 1914. Here appears also the key Type TA 620. The image below shows my TA610 at the left-hand side and the TA 620 at the right. The 'mother key' –bottom, middle- had in this catalogue the number TA 660.





*2.2.3. Auxiliary equipment

The photos below show two galvanometers, a paper tape rewinding wheel, a “repeater” and a ‘Key On Board’. The repeater allows regeneration of the battery signals in both directions, using a local battery. And a ‘K.O.B.’ is a simplified telegraph that consist of a key and a ‘sounder’. The sounder makes two different sounds depending whether a morse dot or a dash is received (positive or negative current); so it allows receiving ‘by ear’.



PART 3: ABOUT THE ERICSSON TELEPHONES

3.1. An overview

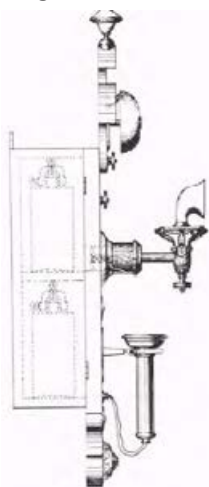
-1876: The first private telephone lines in Stockholm were set up in December 1877 by a business man, Hendrik T. Cedergren (who later played an important role in the telephone world of Sweden).

And Lars Magnus Ericsson left Anton Öller and set up his modest workshop in Stockholm.

-1878: **The beginning.** As early as in March 1878 one of the first telephone importers in Sweden, Numa Peterson, who was an importer of telephones from the USA, had Lars repair a number of telephones from the batch which he had purchased. During the same period Lars got also acquainted with the large magnetic telephones from Siemens & Halske. So Lars acquired a natural introduction to telephony through his study and the work of repairs and adjustments. On 1 April 1878 he started producing telephones. His first 'production line' concerned models like the Siemens& Halske ones (photo right); they were manufactured from 1878 to 1880. He had also begun in 1879 to make a new model of the telephone, and in the following year the Company's first really independent invention in telephony, the so-called helical microphone was complete.



-1880/1881: 1880: **The helical microphone.** The production of the large magnetic microphones was therefore discontinued, in all probability in the course of 1880. It was also in 1880 that the focus of the company had shifted from telegraphy to telephony. In 1881, Telegrafverket [1] had installed a telephone network in Stockholm and from then on began to develop its nation-wide "Rikstelefon" network. LME became their main supplier of telephone equipment. Under Telegrafverket's auspices, the development of telephony was fairly modest in the early 1880's. Indeed, for a long time they considered its main function to be telegraphy. They regarded the telephone simply as a means of facilitating correspondence by telegram; they thought that telephony would have a negative effect on telegram traffic...



With Francis Blake's microphone (in 1878 an improvement of the one from Graham Bell) as a starting point, LME made his first original contribution to the telephone field with the design of the "helical microphone". With it, he was able to design his first complete telephone set in 1880. In 1881 he gained his first success with a delivery (to the 'GT Association'), in competition with the Bell company subsidiary, after his telephone set had proved superior to the American set. This success paved the way for new orders from both other Swedish telephone associations and from abroad. More than 500 telephones were sold in 1881. The photo on the left is the patent drawing for this 1880 telephone. On the right is the real wall telephone with 'helical transmitter' (later called microphone).



-1882: **The wall telephone**

The increasing demand stimulated Lars to improve his telephones and to create new designs. In 1882 he had completed the wall set which, with its characteristic form, became the basis for a number of LME's wall sets for more than two decade. Because of its high quality it was sold in large numbers, at home as well as abroad. It was marketed under different names, one of which was "Swedish pattern". This telephone was later more or less successfully copied by other manufacturers.

-1883: **S.A.T.** In 1883 Hendrik Torren Cedergren founded "Stockholms Allmänna Telefonaktiebolag" (SAT). Hendrik Cedergren was in 1877 one of the first customers from Lars, so they were close friends. This company opened his first exchange on October 31 and by the end of the year 785 subscribers were connected to the network.



Cedergren and Ericsson collaborated extremely closely from the start and the high-quality and low-priced telephone equipment from Ericsson's workshop contributed to SAT's rapid success. The first order that Lars received from his friend Hendrik was for switchboards and no less than 500 telephone sets. SAT was and remained LME largest customers. (Early 1900 LME acquired SAT...)

-1884: **The desk set.** LME also worked on the creation of a practical desk set. In 1884 appeared the first version of the unique instrument that in due course was to become the symbol for LME telephones all over the world. Lars designed it as a purely mechanical construction without protective case. The generator magnets served as base for the set and its other components. At that time, the set still had a separate receiver and microphone. The microphone was fitted in an elegantly arm that could be pivoted 360 degrees.



-1888: **The star microphone** (carbon granule microphone) The wall telephone became a major LME product. It was improved in the course of the years by the introduction of new and better components. The main improvement was the "transmitter". David Hughes had already introduced in 1878 the arrangement with loose carbon rods which he called "microphone".



And in 1881 Hunnings invented the carbon granule microphone. LME designed a carbon rod microphone, which replaced the helical one for a few years in the mid-eighties. He followed this up with a carbon granule microphone patented in 1888. To prevent the granules from becoming too closely packed together, the granule chamber was divided into a number of smaller chambers. In 1903 the star microphones was designed. This contained six-shaped chambers and remained

LME's standard microphone for nearly half a century.

-1892: **The handset** . LME's next major contribution to telephone-set development was the handset. The idea of combining receiver and microphone through a handle into a 'handset' came up in Sweden in the early eighties.



See the many models in the enclosed image and in the photo from the 1892 hand set hereunder.

The first ones that Lars made were intended for switchboards. But he was all the time working on the development of a handset suitable for subscribers. This he produced in 1892, using a new designed receiver (the earpiece) with ring magnet in an ear cap and a granule microphone. As the handset lay in a cradle-shaped hook, the telephone had a natural structure and was convenient to use. It was the world's first subscriber's telephone with handset and proved an outstanding success.

-1892: **The Skeleton** > nick name for the 1892 (1890 in Sweden?) desk set which became to be the symbol for LME's telephones for several decades. It was later reproduced in LME's trademark. It was the world's first *subscriber's* telephone with handset and proved an outstanding success. Other nick names are/were the less-fitting Taxen (Swedish for Dachshund), Eiffel tower, Sewing machine, ... A book can be



written about this telephone. E.g. Bob's website (ref. [2]) gives already a comprehensive and excellent overview:

-1893: **The coffee-mill** with its very special design (photo left).



-1901: **The desk set** (photo in centre). At the turn of the century telephone exchanges abroad were increasingly being made on the central battery (CB) principle.



LME's first installation of this kind was the exchange at The Hague (the Netherlands) in 1903. The desk sets were adapted to those exchanges.

-1905: **CB telephone in wooden case** from 1905 (photo right).



-1909: **CB telephone with black enamelled steel case** suited for serial production (photo hereunder left).

-1910: **House exchange telephones**. A house exchange phone ("intercom") requires no switchboard for internal communication. Connection to the desired extension is effected directly from the calling telephone by a simple manual operation. LME's first house exchange telephones (1890) were of wall type with a revolving wiper for connection up to 20 lines. Soon came also the desk top ones (the two mages below on the right).



-1921: **The 1909 telephone with dial** is shown here above (second from the left). When the conversion to automatic operation started in the early twenties a dial was added to the CB set. LME's first modern dial was designed in 1915. Since then new designs have appeared roughly every tenth year in order to reduce production costs and to produce more durable dials.

*It is worth mentioning here that LME's sales, which in the 1910's had reached a peak of more than hundred thousand telephones per annum, fell steeply during the twenties. Competitors were using new materials permitting a more modern design and cheaper production methods. An example was the Siemens & Halske desk telephone with die-cast metal case and Bakelite handset.



-1931: **Dial telephone of entirely new design in black Bakelite** By 1931 LME was ready to start marketing its dial telephone in 'plastic' case: both handset and case were made of Bakelite (a thermosetting resin invented by the Belgian Leo Baekeland). Also all technical parts were of a new technological design: the LME telephones were fully on a level with the best foreign types. One can say that this LME telephone founded a school and became the prototype for the plastic-case dial telephones that have been manufactured in different countries for several decades

.It may be mentioned that it early became one of the standard telephones of the British Post Office.

-1947: **A second generation of bakelite sets** with softer lines and improved transmission characteristics was put on the market. These sets had a newly designed microphone and a more sensitive receiver. The dial, too, was newly designed, and had a plastic finger wheel.



-1956: **The ERICOFON**. It was not until the mid-fifties that a new telephone, the ERICOFON, could be marketed after several years of prototype production and practical tests. A radical change: from now on the subscriber could hold all 'components' in one hand. Success was immediate and this new

telephone spread rapidly around the world. Its styling was highly praised and in 1972 the Ericofon set was nominated by The Museum of Modern Art in New York as one of the best industrial designs of the twentieth century. See the 1976 model further down.

-1962: **The DIALOG**. At the beginning of the sixties, in cooperation with Televerket, LME developed an entirely new looking model, the DIALOG. It has a thermoplastic casing available in several colours for modern environments. The handset is very light. The loudness of the bell can be varied by the subscriber. The components have been divided into easily replaceable units-bell, transmission unit and dial-unit in order to facilitate installation and maintenance. The casing is held by a single screw. The transmission unit consists of a printed circuit board on which the components, hook-switch and line terminals are mounted. The handset weighs only 250 g. In 1968 a simplified model was marketed in order to make it even more competitive. In another model the carbon granule microphone has been replaced by an electromagnetic microphone with transistor amplifier to produce a better sound quality.



-1975 **Integrated circuits**. Now the speech circuit consist of an integrated microcircuit placed together with an electromagnetic microphone in the handset. The Dialog family includes a special circuit in which there is a pushbutton-operated transistor generator for the ringing signals instead of a magneto generator.

1969: **Pushbuttons**. It was not until the 1950's that pushbuttons instead of dials for telephone sets began to be seriously discussed. LME had a small experimental keyset in 1956. PTT administrations , however, were not prepared to invest in keyset telephones until the seventies. In 1969, LME brought out a keyset for automatic telephones with multifrequency dialling. It is incorporated in the Ericofon and Dialog models.



1976: **The Ericofon 700**. LME is marketing a second Ericofon generation, making use of all possibilities offered by the electronics *of the time*. It uses the newly 'capacitor microphone' and the speech circuit is fully electronic, the induction coil being replaced by an integrated circuit. And now the keypad sits in the bottom. It makes use of the printed circuit board technology as can be seen in the photo at the right. All circuits are powered over the telephone line from the exchange.

Well, this covers exactly 100 years since Lars Magnus Ericsson opened his electromechanical workshop in Stockholm in April 1876. At that time he did not know that the telephone had been invented a month or so earlier in the U.S.A. (In order not to complicate things, we forget here Antonio Meucci and also Elisha Gray and other telephone pioneers).

And we have seen that in this period the ERICSSON company has entered into the area of modern electronic techniques. The sequel is certainly also interesting (let alone for what they did in the world of mobile telephony/cell phones), but not so much in the eyes of most people in the telephone collector's community; that's why I am stopping here this overview.

3.2. Some of the Ericsson telephones that once were in my collection



↑↑And now about your homework: with all the wisdom in this article,
you should be able to date some of my telephones (put here out of order)...↑↑
;o)

APPENDIX

Ericsson (the company, not Lars+...) made also radios.

Telephone- and/or telegraph collectors sometimes also collect radios; I was one of them. But I have never had an Ericsson radio in my collection. Never mind, here is a short overview of what the Ericsson company was doing in the first half of the 20th century. As Lars retired in 1901 and died in 1926 (at the age of 80), he was obviously not involved in this activity.



It was not such a difficult step from manufacturing telephone equipment to manufacturing radio equipment (this step had been taken by several of LME's competitors abroad). In 1919, LME acquired a minority shareholding in the newly formed Svenska Radio-aktiebolaget (SRA), which manufactured radio equipment of various kinds. In 1921 the British company Marconi Wireless Telegraph Co. Ltd. invested capital in SRA. This gave SRA access to the technology of the prominent Marconi company. During the 1920s, the most important products in terms of volume were radio sets for the home market. Radio sets became increasingly common in Swedish households after 1920, and they were often made by SRA. In 1927, L M Ericsson acquired the majority shareholding in SRA. The Radiola brand was brought in by SRA, and Radiola remained a household word in Swedish homes for several decades. Products included its first broadcast receiver in 1922, and the first commercially manufactured TV was introduced in the market in 1954. The first Radiola with a built-in loudspeaker was launched in 1928, and was an immediate hit. If technical improvements were prioritized in the 1920s, the following decade focused on design. The first portable Radiola was introduced in 1939. In the 1950s, a radio-gramophone became a living room fixture. Its first transistor radio in the Radiola series was launched in 1958. Radiola was associated with outstanding quality and advanced technology. Production of radios and TVs ceased in 1964, when SRA decided to focus its resources on communications radio. The same year, radio and TV production was sold to AGA which also acquired the Radiola

NOTES

[1] **Telegrafverket/Televerket**, was a Swedish State authority acting as a state-owned corporation (public enterprise), responsible for telecommunications in Sweden between 1853-1993. Originally it was named Kongl. Elektriska Telegraf-Verket (literally: Royal Electric Telegraph Agency), which was founded in 1853. Its name changed to Kongl. Telegrafverket in 1871, Kungl. Telegrafverket in 1903, the prefix Kungl.(English: Royal) was dropped in 1946 and the name was further modernised to Televerket in 1953. Televerket continued on with its telecommunications monopoly until corporatisation in 1992-1993 when it was renamed Telia, now part of Telia Company. Televerket network, branded Rikstelefon, was supplied with telephones produced by Ericsson.

[2] The word **“Allmänna”** (“General”) gave rise to misunderstandings on several occasions, particularly in French and Spanish-speaking countries where it was confused with Allemagne (Fr) and Alemania (Sp), both meaning “Germany”, so that the Company’s name was thought to be of German origin. At the suggestion of the board, the LME General Meeting of 7 June 1926 resolved to delete the word “Allmänna” from the first of the Company’s articles of association and after this the name of the Company became Telefonaktiebolaget LM Ericsson, abbreviated Telefon AB LM Ericsson.

[3] **Aktiebolaget** means ‘limited company’, abbreviated AB. (bolag = company)

[4] **Early company name changes:**

1876 LM Ericsson & Co

1896 AB LM Ericsson & Co (Aktiebolaget LM Ericsson & Company)

1920 Allmänna Telefon AB LM Ericsson

1926 Telefonaktiebolaget LM Ericsson (in short: LM Ericsson Ltd.)

[5] **Logos**

(Compiled from <http://logos.wikia.com/wiki/Ericsson>)



1876-1883



1883-1918



1918-1942



1942-1982



1982-2009



ERICSSON

2009-2018



ERICSSON

2018-present

REFERENCES

Useful Internet links

- [1] <http://www.telephonedcollecting.org/>
- [2] Bobs%20phones/Pages/Skeletal/Skeletal.htm
- [3] <https://www.ericsson.com/en/about-us>
- [4] www.ericsson.com/history-explorer
- [5] <https://en.wikipedia.org/wiki/Ericsson>
- [6] www.telegraphy.eu

Bibliography

- [7] **LM Ericsson 100 years** - Volume I - **THE PIONEERING YEARS - STRUGGLE FOR CONCESSIONS CRISIS**; Artur Attman, & Jan Kuuse & Ulf Olsson – 1977
- [8] **LM Ericsson 100 years** - Volume II - **RESCUE, RECONSTRUCTION, WORLDWIDE ENTERPRISE**; Artur Attman & Ulf Olsson –
- [9] **LM Ericsson 100 years** - Volume III - **EVOLUTION OF THE TECHNOLOGY**; Christian Jacobæus & collaborators – 1977
- [10] **TELEGRAFI och TELEFONI** - Ivan Bodstedt och Ivan Heiner – 1917
- [11] **PRISLISTA** – AB L.M. Ericsson & C° - 1897
- [12] **HET INTERNET VAN DE 19-de EEUW** – Fons Vanden Berghen – 436 pages – Text in Dutch but with 650 photos!
<http://www.telegraphy.eu/pagina/boek/TELEGRAFIE%2025%20APRIL%20Fons.pdf>

ACKNOWLEDGMENT

Bill Burns, for revising and correcting my ‘Flemish English’. Bill is the leading world authority regarding submarine cables and everything related to this subject > see his <http://atlantic-cable.com/>

And allow me to end with a tribute towards my two grandchildren. Jonas is speaking into a Bell telephone of the first generation, while Lisa is listening via a first generation telephone from Siemens & Halske (both being from about 1878). These phones gave Lars Magnus the inspiration to start up his telephone business. I took this photo back in July 2003...



Fons VANDEN BERGHEN
Halle (B), in July 2018