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The Victorian internet

Without telegraphy – the ‘mother of all networks’ – it would not have been possible for Deutsche Bank to conduct the global business operations that it commenced immediately after it was founded in 1870. The ability to transmit messages in such a short time enabled the bank to coordinate its branches in London, Asia, Latin America and the United States from Berlin.

BREMER FILIALE
der
DEUTSCHEN BANK
Actien Gesellschaft.

Adresse für Telegram:
FILIALE BREMEN.

Deutsche Bank.
Eingezahltes Capital: 60 Millionen Mark.
Centrale: Berlin.
Filialen:
Frankfurt a. M., Bremen, Hamburg, London.

Frankfurter Filiale der Deutschen Bank.

Telegramm-Adresse:
„Deutschbank."

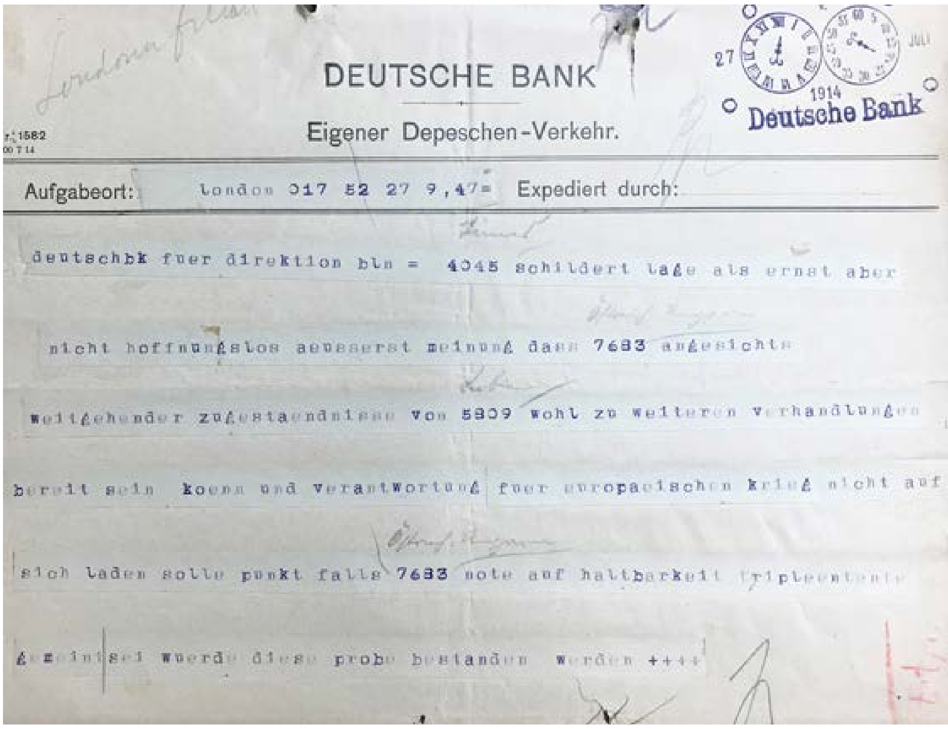
Letters to be Addressed
and Bills to be Endorsed
to the
Deutsche Bank (Berlin)
London Agency

Address for Telegrams
Deutsche Bank.

Must not lack in a 19th-century-letterhead: the telegram address

July Crisis of 1914: all eyes focused on London

The telegram from Deutsche Bank’s London branch that reached its head office in Berlin at 12.20 pm on 27 July 1914 offered hope that the crisis triggered by the assassination of the successor to the Austrian throne four weeks previously might still be resolved peacefully. Given the concessions made by Serbia in response to Austria-Hungary’s ultimatum, The Times described the situation as ‘serious but not hopeless’. According to the telegram, the newspaper was of the view that Austria-Hungary might well take Serbia’s far-reaching concessions as an opportunity to enter into further negotiations and should not become the one responsible for starting a war in Europe.[1]



DEUTSCHE BANK

Eigener Depeschen-Verkehr.

27 JULI 1914 Deutsche Bank

Aufgabeort: london 017 52 27 9,47= Expediert durch:

deutschbk fuer direktion bln = 4045 schildert lage als ernst aber nicht hoffnungslos aeussert meinung dass 7683 angesichts weitgehender zugestaendnisse von 5809 wohl zu weiteren verhandlungen bereit sein koenn und verantwortung fuer europaeischen krieg nicht auf sich laden solle punkt falls 7683 note auf haltbarkeit tripleentente gemeint sei wuerde diese probe bestanden werden ++++

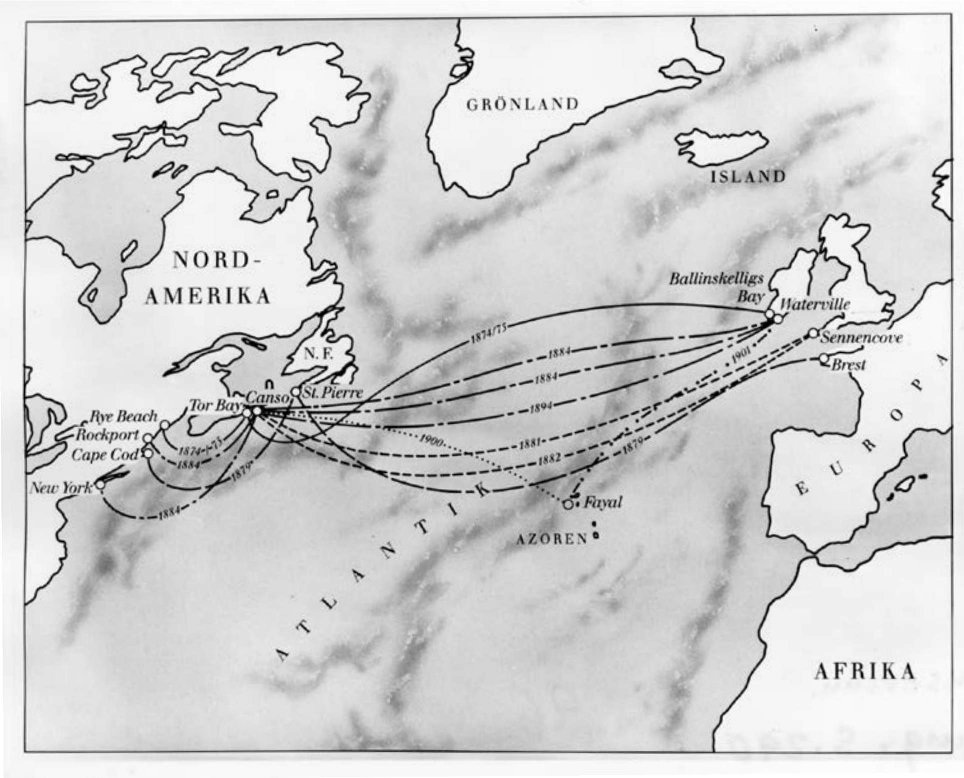
War or peace: a telegram sent from Deutsche Bank’s London branch to its head office in Berlin on 27 July 1914

Austria’s declaration of war on Serbia the very next day destroyed these hopes. The alliance mechanisms now swung into effect. Until then the directors of Deutsche Bank had hoped that a large-scale war involving the United Kingdom could be averted. Telegrams from the bank’s London branch had kept them abreast of the latest information as soon as it became available.

The era of the ‘speed revolution’

The swift transmission of messages by telegram was crucially important in the spheres of politics and business – and not just during the July Crisis of 1914. This was especially true of Deutsche Bank, which operated globally and, immediately after being founded in 1870, had opened branches in London, Shanghai, Yokohama and New York, soon followed by Latin America. The purpose of these representative offices was to help German trade and industry expand abroad.

The invention of the steam engine – on which the railway and the steamship were based – and the telegraph made the 19th century the age of the ‘speed revolution’.[2] Perceptions of time and space changed fundamentally. Conveying people and messages had for centuries proceeded at the pace of horse-drawn carriages and sailing ships. Both of these now accelerated. Whereas in 1835 it had taken a ship – and, thus, a letter – between four and six months to travel from London to Hong Kong, by 1860 the steamship had shortened this journey time to between 43 and 46 days. The telegraph reduced this to just a few hours. The ‘Victorian internet’ or the ‘mother of all networks’[3], as British journalist Tom Standage describes the first global communications technology – developed during the reign of Queen Victoria – shrank the world. Markets became integrated; the supply of goods and the prices charged in various regions of the world



Cables laid in the North Atlantic by 1900

became more transparent, and trade was given fresh stimulus. Within a quarter of a century the world was covered with telegraph cable networks. By the beginning of the 1870s the 'Victorian internet' had evolved transcontinental and intercontinental structures.

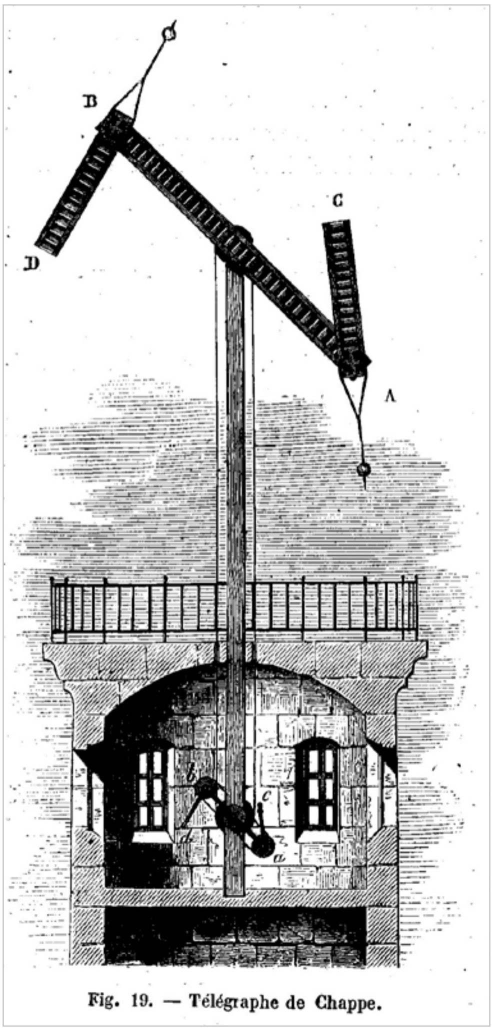
The telegraph and its more advanced cousin, the telex, remained the most important international means of communication for the business world and Deutsche Bank until well into the 20th century – especially when speed and advance information were crucial, as in the case of stock market transactions. But the bank did not just use the leading communications technology of the time purely for its own business affairs; it soon discovered the considerable amount of investment needed to construct new telegraph connections as an interesting field of activity for its own project finance operations.

Claude Chappe (1763-1805)

The development of telegraph technology

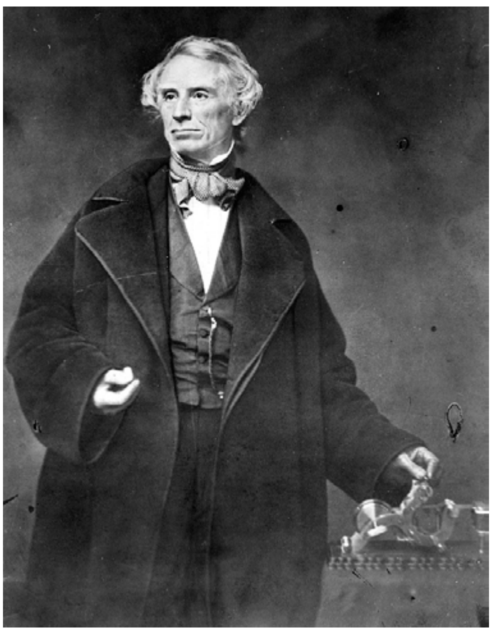
In the mid-18th century the Abbé Jean-Antoine Nollet conducted experiments to investigate the properties of an electric current and how it could be transmitted along wires. In doing so, he discovered that electricity could be transmitted over long distances without any discernible delay. This discovery led him to conclude that a signalling device could be used to send messages over large distances. The time needed to transmit a message, which for millennia had remained directly proportional to the distance covered, could thus be reduced to a minimum.

Before electricity was used to transmit messages, an optical telegraph was devised at the end of the 18th century. The breakthrough in the quest to use simple signals to send complex messages was achieved by the French engineer Claude Chappe with his semaphore telegraph. Chappe called his device a télégraphe, and the telegraph had thus been born. It consisted of two small rotating arms



The semaphore telegraph

Samuel Morse (1791-1872), inventor of the code named after him



fixed to the end of a longer rotating bar, with the arm positions corresponding to different letters. This allowed for many different combinations, which could represent roughly 8,470 words and phrases by using two codes. In 1793 work was begun on the construction of the first telegraph line from Paris to Lille. Covering a distance of 225 kilometres, this line gave rise to a totally new and, in many European countries, successfully applied form of communications technology that was primarily used for military purposes.

The telegraph system was regarded as a technological wonder of its time and fuelled a spirit of optimism in human progress, which was reflected in the following entry in the 1797 edition of the Encyclopaedia Britannica: "The capitals of distant nations might be united by chains of posts, and the settling of those disputes which at present take up months or years might then be accomplished in as many hours."[4] Over the course of time the idea arose that it might be worthwhile offering telegraphy as a profit-making service – much like the post – to a large number of paying customers. By the early 19th century, long lines of telegraph towers stretched across much of western Europe, forming "a sort of mechanical internet of whirling arms and blinking shutters"[5]. Although optical telegraphs had proven that they could transmit messages quickly, they did not bring about any changes in most people's everyday lives, even though the unusual wooden contraptions erected on hills often came into view.

The discovery of electromagnetism by the Danish physicist Hans Christian Oersted in 1820 provided a reliable method of detecting electricity. This gave rise to two further inventions: the galvanometer, which indicates the flow of current by the deflection of a rotating needle, and the electromagnet, a coil of wire that behaves just like a permanent magnet as long as current is flowing through it. This new electrical technology transformed telegraphy in the 1840s and saw a transition from optical to electric processes. In contrast to the optical mechanical telegraph, which used rotating signalling arms to transmit individual characters, the aim was now to use electrical devices and cable connections to convey messages.

The American Samuel F. B. Morse, a professor of art and design, considered the question of how the functions of an optical telegraph, whose arms or shutters could be arranged in a large number of different combinations, could be transferred to an electric operating system, since an electric current could only be switched on or off. He hit upon the solution of using short and long bursts of current – a so-called 'bi-signal' scheme. In 1838 Morse demonstrated his first working electric telegraph and the code named after him, which comprised a series of digits from zero to nine. Facing the problem of transmitting over long distances, Morse found technical support from the academic Leonard Gale and the engineer Alfred Vail. Working together, they managed to significantly improve Morse's prototype telegraph. The zigzag line drawn by the pencil was replaced by an ink pen which rose and fell to inscribe a line of dots and dashes. Morse's number system was also replaced with an alphabetic code, in which each letter was represented by a combination of dots and dashes, thus doing away with the need for numbered code books that were used to translate the transmitted numbers into letters and words. US railroad and telegraph companies used this American Morse Code until the 1960s. Morse believed that the electric telegraph would become established as a means of communication which, irrespective of distance and time, would ultimately become, as he put it, ‘a daily instrumentality in domestic as well as public life’. Right from the start he had visions of a wired world, with countries bound together by a global network of interconnected telegraph networks.

Morse tried, initially unsuccessfully, to introduce his telegraph in Europe. At the same time, his design for the construction of a telegraph line was rejected by the US Congress because its members were not convinced by his equipment. Finally, funding of 30,000 dollars at least was approved, and a line from Washington to Baltimore – a distance of roughly 64 kilometres – was constructed in 1844 as part of a collaboration with the Baltimore & Ohio Railroad Company, in which Deutsche Bank later held an investment. Yet even though the successful use of the electric telegraph was being praised as a miracle by the press, the general public still regarded it as a kind of curiosity. In newspaper articles it was portrayed merely as a quirky object rather than a ground-breaking new form of communication. Although by this stage the proceedings of Congress were being telegraphed to the press, the government showed a lack of interest in extending telegraph lines. Morse finally turned to private investors and, in May 1845, the Magnetic Telegraph Company was formed, enabling telegraph lines to be laid towards Philadelphia, Boston and Buffalo and westwards towards the Mississippi. Raising the fees charged for telegraph messages enabled their high operating costs to be covered.

Further electromagnetic telegraph devices were being developed simultaneously in several countries. In the United Kingdom, William Fothergill Cooke and Charles Wheatstone were working on the construction of a needle telegraph. This device featured a sending station and a receiving station, which were connected by a cable and were each equipped with an electromagnet, a needle driven by a cogwheel, and a letter board. When attempting to market their telegraph technology, however, the two inventors encountered the same difficulties as their competitors. They failed to persuade the British government to use telegraphy and, instead, sought a niche market for their product. They approached the railway companies, with Cooke trying to market the telegraph as a way of sending messages confidentially. The use of telegraph messages to order transportation of any kind at the destination of a railway journey was highlighted as a further selling point. It was not until August 1844 that the fame of the telegraph took a giant leap, when it was used to announce the birth of Queen Victoria’s second son.

Queen Victoria with her children. The telegraph was used to announce the birth of her second son in 1844

Telegraphy achieved further popularity after telegraph messages had been instrumental in enabling the police to apprehend notorious criminals.
When the British Admiralty became aware of the benefits of telegraphy, Cooke persuaded it to sign a contract for the construction of a 125-kilometre electric telegraph line between London and Portsmouth. Following plans to link London with the key industrial centres of Manchester, Birmingham and Liverpool, Cooke managed to sign further contracts with railway companies to lay hundreds of kilometres of wires. Cooke became so financially successful that in September 1845 he and John Lewis Ricardo, a Member of Parliament and financier, set up the Electrical Telegraph Company, which bought out Cooke and Wheatstone's patent rights.

Dial telegraph invented by Werner von Siemens in 1847

The electromagnetic telegraph began to catch on in other countries as well. In Prussia, Werner von Siemens developed a dial telegraph based on the needle telegraph devised by Wheatstone and Cooke. After a contract had been signed with the Berlin workshop of the precision mechanics firm Bötticher & Halske, the first Siemens dial telegraph was completed at the end of June 1847 and was successfully tested on the railway line between Berlin and Potsdam.

Werner von Siemens (1816-1892)

By 1852, Prussia had built a 2,390-kilometre wire network radiating out from Berlin. Given the introduction of the dial telegraph developed by Werner von Siemens, the production of high-quality insulated telegraph lines ensured that cables could be laid underground. Siemens had received a tip from his brother Wilhelm in London that gutta-percha – a rubber-like substance from Malaysia – was more suitable than rubber for insulating copper wires. In London there was already a company that had a monopoly on the sale of gutta-percha. This provided Werner von Siemens with a significant competitive edge, which formed the basis for further initiatives in the expansion of his telegraph technology. International competitors had to take on board the fact that Prussia had discovered a method of laying cables underground in a way that protected them better against damage. In October 1847, Werner von Siemens and Johann Georg Halske set up the company Telegraphen Bau-Anstalt von Siemens & Halske in Berlin, which eventually became the multinational corporation that we know today as Siemens. The firm focused on the production of telegraphs, railway

Johann Georg Halske (1814-1890)

Letterhead of Telegraphen Bau-Anstalt

signal bells, water meters and wire insulation. Owing to the excellent results achieved by the equipment and cables supplied by Siemens & Halske, the company won contracts to construct large overland lines from Berlin to virtually all northern German cities and to build an extensive telegraph network.
The fact that this new technology had replaced optical telegraphy within just ten years had solely been made possible by the construction of the railways, which had spread from the United Kingdom to continental Europe and the United States. The railway companies laid telegraph cables alongside their tracks and used them for time signals to transmit their recently introduced national standard times to all stations. The establishment of many telegraph companies in the mid-19th century enabled the nascent communications industry to emerge from the shadow of the railways.

As more and more telegraph networks sprang up in various countries, cross-border connections were planned. The first interconnection treaty was signed in October 1849 between Prussia and Austria. Instead of cables being laid across the border, however, a joint telegraph office was constructed, which was connected to the respective national networks. When a message arrived, it was transcribed onto paper and then physically handed over to the other country's department. Soon such interconnection agreements had also been signed by France, Belgium, Switzerland, Spain and Sardinia.

Two-thirds of the world's telegraph lines in existence in 1890 were owned by the UK-based Eastern Telegraph Company and other private firms that had been granted licences by the government. In second place came the United States, while Germany possessed just two per cent of the world's telegraph lines. In those days London lay at the centre of the telegraph network and the financing of the global cable business.

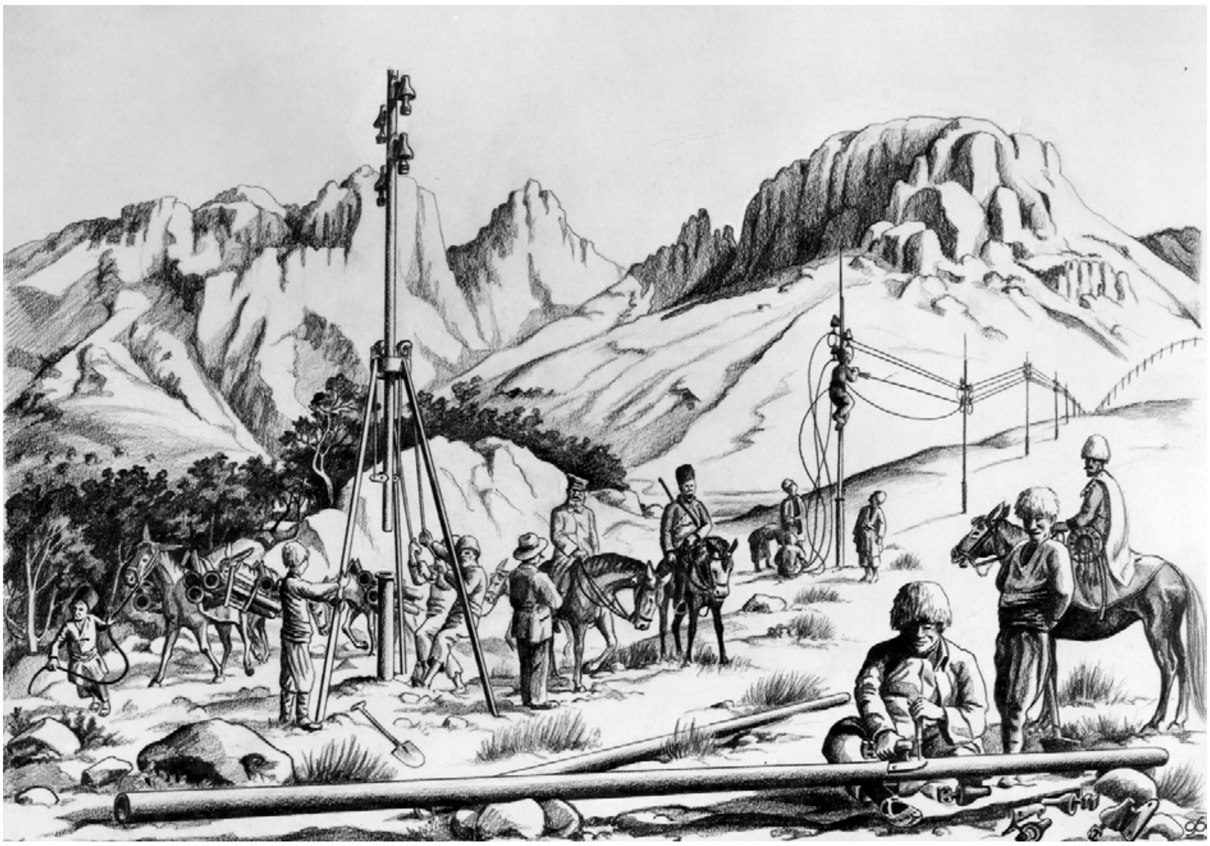
Telegraph lines as large-scale technical and financial projects

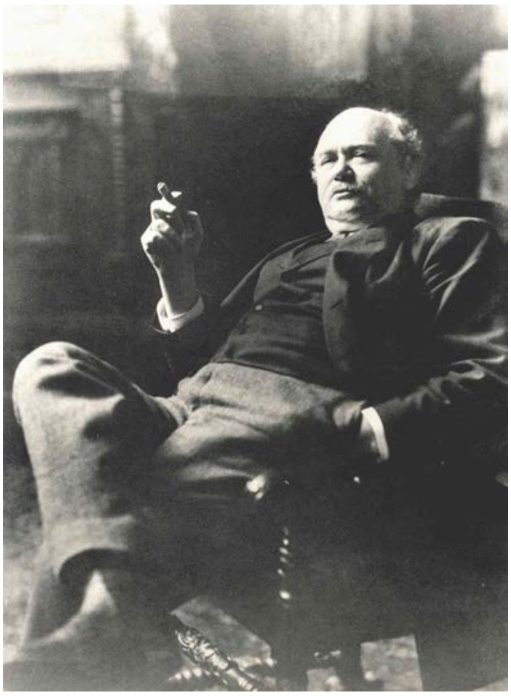
Given the speed at which telegraph cables were being laid, The Times of London reported in 1869: "There can be no doubt that the most popular outlet now for commercial enterprise is to be found in the construction of submarine lines of telegraph."[6] Experiments with sending messages along underwater telegraph cables had been going on almost since the earliest days of electrical telegraphy. This required the use of specialised ships that laid thick undersea cables over many thousands of kilometres of ocean. There was a further problem in the fact that the telegraph cables were coated with rubber and encased in a lead pipe; this rubber coating rapidly deteriorated in water and had to be replaced with gutta-percha as an insulating material. The first cable was laid by the UK-based General Oceanic and Subterranean Electric Printing Telegraph Company in August 1850. It crossed the English Channel and headed for France in a small steam tug boat, lowering the cable – which had weights clamped around it to make it heavier – into the water. Although the cable worked, the messages were garbled because the surrounding water changed the cable's electrical properties. What's more, the cable became caught in the net of a fisherman, who thought that it was a hitherto unknown form of seaweed with a gold centre and hacked off a piece.

Matthew F. Maury, a US naval officer and hydrographer, had compiled readings from the logs of many ships into highly accurate charts of the Atlantic. These charts had revealed the presence of a large raised plateau on the seabed between Newfoundland and Ireland. Maury therefore used these to plot the route along which to lay a cable. The link between New York and St John's, Newfoundland, was completed after two-and-a-half years of hard work. This raised hopes that work could soon be started on a telegraph connection between Europe and America.

After several attempts during which a total of 3,800 kilometres of cable had been laid, cable lines were landed in Newfoundland and Valentia Bay in August 1858, thereby connecting the telegraph networks of Europe and North America. Queen Victoria exchanged lengthy telegraph messages with US President James Buchanan, who described the new technology as " a triumph more glorious, because far more useful to mankind, than was ever won by a conqueror on the field of battle"[7]. Unfortunately the reliability of the cable steadily deteriorated and it eventually stopped working altogether less than a month after it had been laid. A subsequent enquiry revealed that the conducting cable core had been made too small and that the use of high-voltage induction coils had gradually destroyed the wires' insulation. An article of the time in the Boston Courier asked: "Was the Atlantic cable a humbug?"[8] The news that the cable had failed caused a great deal of public scepticism. William Thomson, Professor of Natural Philosophy at Glasgow University, rectified the cable's defective design by using a larger conducting core, a sensitive mirror galvanometer as a detector and low voltages to send messages along the cable. The link between Europe and North America was restored in 1866 after a new cable had been carefully laid. The telegraph cable was now described as "the nerve of international life, transmitting knowledge of events, removing causes of misunderstanding, and promoting peace and harmony throughout the world."[9]

Constructing the Indo-European telegraph line



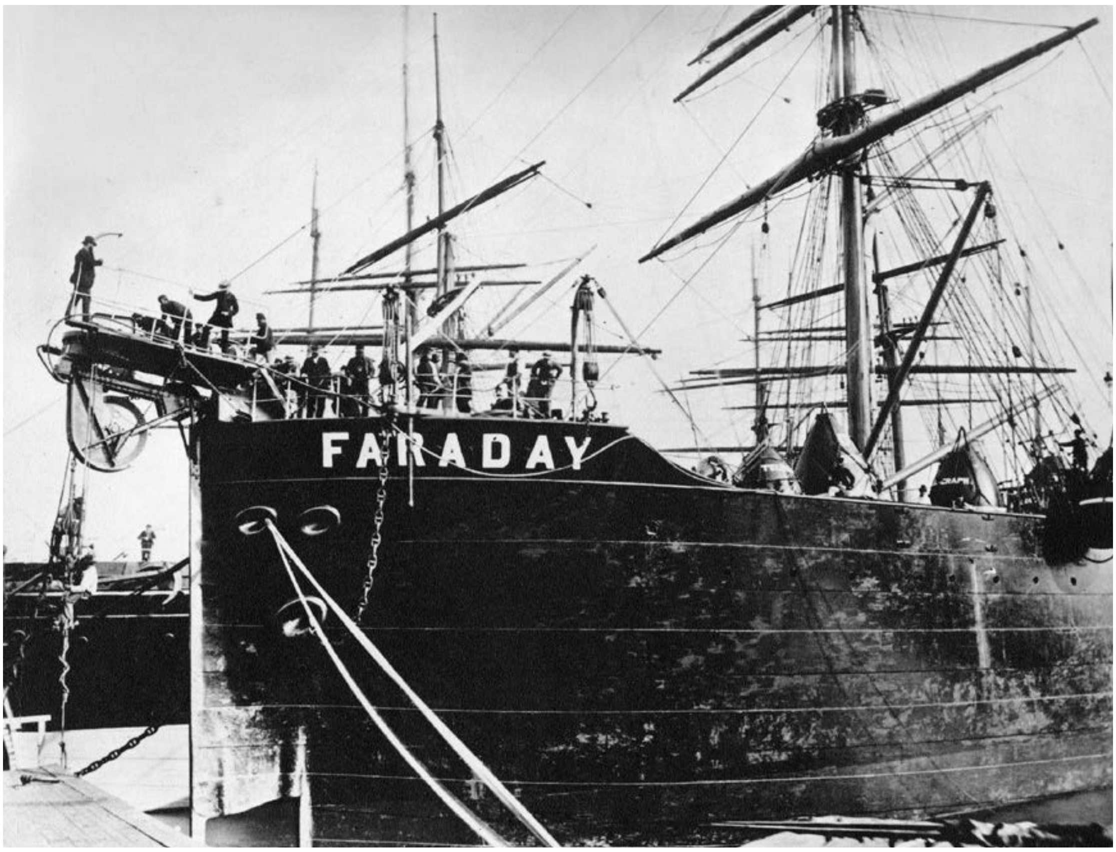


Georg von Siemens (1839-1901)

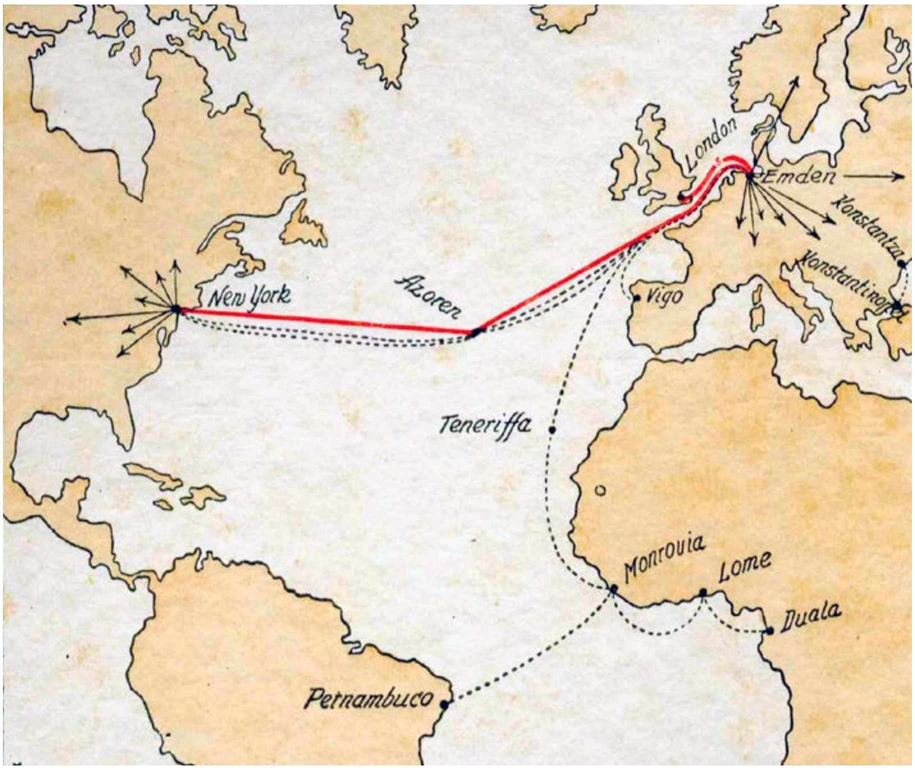
While gradually developing his own company's cable business, Werner von Siemens recognised the dominant importance of the UK market. He wrote to his brother Karl on 12 November 1860: "Our business here (in Berlin) cannot survive without the UK market because our sales elsewhere are too small. Our UK telegraph business on its own has a future – potentially a really significant one."[10] The UK therefore became a key partner on further Siemens projects, such as the construction of a cable link with Persia. The British were interested for both economic and political reasons in creating a link with India via a direct land route. Consequently, Werner von Siemens acted as a driving force behind the formation of the London-based Indo-European Telegraph Company set up to build a cable network. The firm constructed overland and undersea lines, provided technical support and supplied further equipment. The main commercial challenge was first of all to sign agreements with the UK, Russia, Turkey and Persia specifying telegram charges and user rights, which were essential to the survival of the company's nascent operations. In order to negotiate these contracts, Werner von Siemens appointed Georg Siemens, his cousin once removed, as executive vice president of the relevant Siemens firms in Tiflis (Tbilisi) and Tehran. After a three-year construction period the Indo-European telegraph line – covering a distance of more than 10,000 kilometres from London via Tehran to Calcutta – came into operation in 1870 and continued to demonstrate its technical and economic effectiveness right up until 1931.

Georg Siemens (ennobled in 1899) retired from Siemens & Halske following the success in Persia and in 1870 became one of the founding directors of Deutsche Bank, where he acted as its Management Board spokesman until 1900. In this role he remained closely associated with the companies comprising Siemens, which continued to operate in the international cable line market. Several attempts to build a cable link between Spain and Algeria failed owing to the unfavourable nature of the seabed and incurred heavy losses for Siemens.

Cable steamer Faraday



After their competitors had managed to restore a working cable connection between Europe and North America in 1866, the Siemens brothers founded the Direct United States Cable Company in 1873 with the aim of using the firm's own cable steamer Faraday to lay a further telegraph line between the UK and the United States. For this purpose they employed their recently developed cable structure, which improved on the signal speed of the transatlantic connection completed in 1874. Although Georg Siemens argued that Deutsche Bank should finance this entire project, it was involved to only a limited extent. His fellow directors rejected the loan exposure on the grounds that it was too large. The project was in danger of failing because it was not possible to place all of the shares with investors despite the fact that they had been fully underwritten by the Siemens firms. At the very last minute Georg Siemens used his own personal wealth to purchase shares, thereby enabling the company to be duly established. Although this project had been carried out extremely successfully, this company subsequently fell victim to its strong British competition and had to be wound up, incurring heavy losses for its investors, including Georg Siemens.



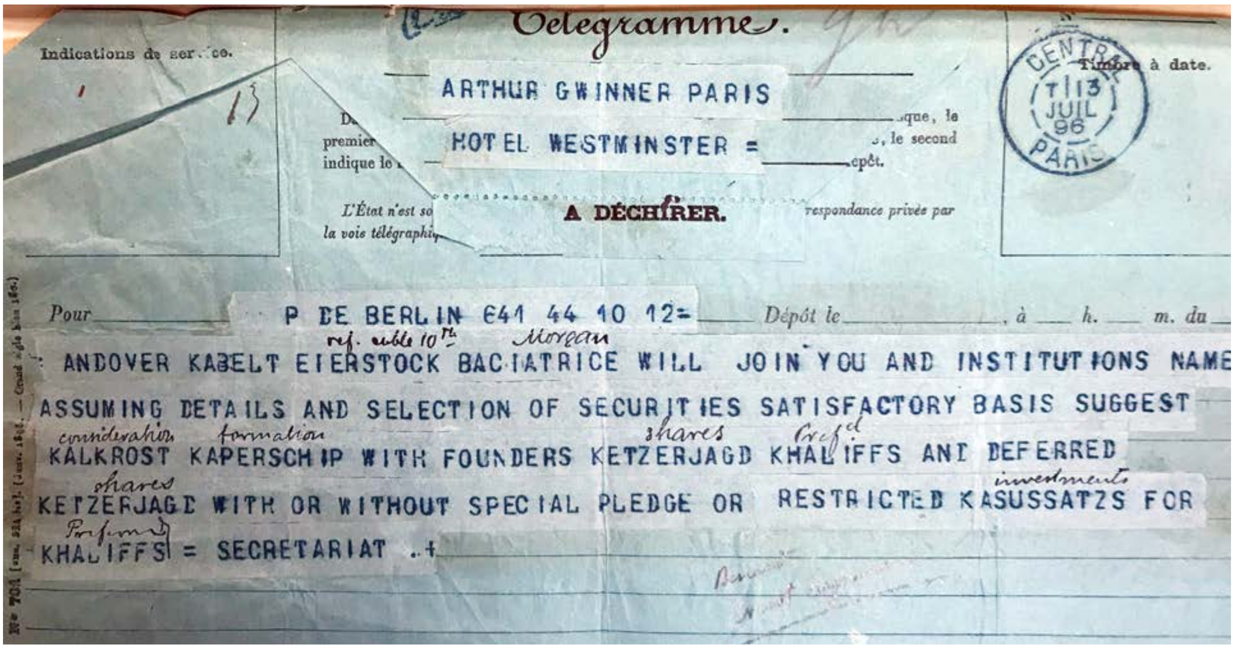
The Emden-Azores-New York telegraph line, which came into operation in 1900

Other German companies were also involved in laying cables across the Atlantic. Deutsch-Atlantische Telegraphengesellschaft was founded by private investors in 1889 in Cologne, because this was also the location of the headquarters of Felten & Guilleaume, a subsidiary of Clouth Gummiwerke AG, which at the time was already emerging as a specialist cable manufacturer. The major project launched by Deutsch-Atlantische Telegraphengesellschaft to lay an overseas cable – independently of foreign service providers – from Emden to New York was implemented in collaboration with the recently founded firm Land- und Seekabelwerke AG in Cologne. Because the direct route across the Atlantic was too far for messages to be electrically transmitted, the cables were initially laid from the North Sea to the Azores and then from there to New York. The first cable became operational in September 1900. By 1904 a second cable was being laid and went into operation in response to the growing volume of messages transmitted.

Deutsche Bank's telegraph traffic

As networks of telegraph cables increasingly spanned the globe, this rapidly gave rise to extraordinarily high concentrations of commercial information, which made business news – such as stock exchange data – available with just a minor delay between when it was announced and then transmitted in London.

Deutsche Bank's archives contain a number of telegrams documenting the correspondence between departments at Deutsche Bank Berlin and its New York representative Edward D. Adams. Many of these messages concern stock market prices, securities issuance and US economic data, which were provided as the basis for international investments. Even in those days the time advantage with respect to business information was significant. Once the line operated by Deutsch-Atlantische Telegraphengesellschaft had been completed, the bank tested the speed of the German telegraph link compared with the British one. On 8 November 1900 the bank simultaneously sent telegrams down both lines from Berlin to New York. The result was that the German line was slightly quicker, so the bank decided to use this line for all future telegram correspondence with Adams.[11]


Télégramme.

ARTHUR GWINNER PARIS
HOTEL WESTMINSTER =

A DÉCHIRER.

P DE BERLIN 641 44 10 12=
ANDOVER KABELT EIERSTOCK BACIATRICE WILL JOIN YOU AND INSTITUTIONS NAME
ASSUMING DETAILS AND SELECTION OF SECURITIES SATISFACTORY BASIS SUGGEST
KALKROST KAPERSCHIP WITH FOUNDERS KETZERJAGD KHALIFFS AND DEFERRED
KETZERJAGD WITH OR WITHOUT SPECIAL PLEDGE OR RESTRICTED KASUSSATZS FOR
KHALIFFS = SECRETARIAT ..+

Arthur Gwinner received this telegram about preference shares in the Northern Pacific Railway Company while staying in Paris in July 1896

The format of telegrams varied from lengthy letters to linguistically concise texts similar to today's short messages. Because this new service was initially subject to high costs and a laborious procedure, it was only used to transmit urgent messages. Anyone who wanted to send a telegraph message had to go to a telegraph company's office and fill in a form. The texts were kept brief because fees were charged per word and according to distance. The logistics of telegraph landlines were not simple because it was necessary to build numerous short-distance connections between the towns that each ran a telegraph office. Telegraph lines then radiated outwards from a central telegraph office in each major town or city. The lines were routed via several branch offices, while the central offices in cities were connected by long-distance lines.

A Gold Room with a 'gold indicator' consisting of rotating drums was established at the New York Stock Exchange specifically for gold trading. This device was later installed directly into the offices of traders and brokers, and a subscription fee was charged. After several enhancements the system generated continuous reports of the fluctuations in the prices of any number of stocks and printed this information on a paper tape. Because this machine made a chattering sound, it was nicknamed the 'ticker'. The subsequent increasingly widespread use of automatic telegraphs, whose messages were pre-punched on a paper tape, dispensed with the need for a large number of telegraphers and enabled unskilled operators to be recruited. Improvements in telegraph wires also substantially increased the amount of traffic that could be sent along a telegraph line. However, the use of this new technology soon caused the telegraph networks to become overloaded and, at the telegraph offices, messages that had been transcribed on slips of paper started to pile up instead of being immediately retransmitted. More than 80 per cent of these messages consisted of stock market data and business correspondence. In order to reduce these substantial delays, especially those affecting inner-city telegraph traffic, the decision was taken to install a steam-powered pneumatic tube system to link up the telegraph offices, which were developing into vast information-processing centres. Pneumatic tube networks eventually became extensive enough that many local messages could be sent from transmitter to recipient entirely by tube and messenger. Berlin's main telegraph office, which was constructed between 1910 and 1916 in close proximity to Deutsche Bank's head office, was equipped with state-of-the-art telegraph technology and was seen as a centre for developing German radio communications. In addition, the central municipal pneumatic tube system, which was located in the basement and on the ground floor, went into operation in 1919.

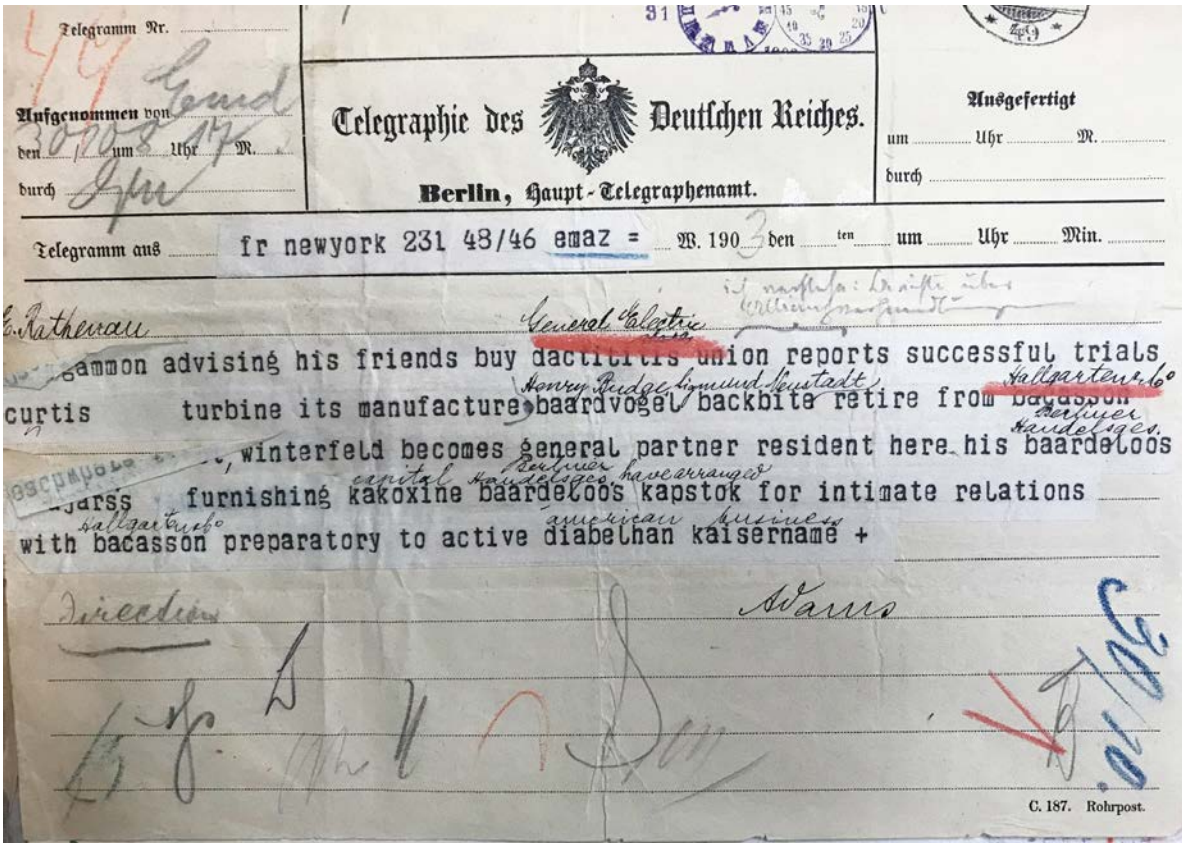
In 1910, Max Fuchs, an archivist at Deutsche Bank, described an internal pneumatic tube system – to which the overseas department, among others, was connected – as part of his efforts to document the premises and operations of the bank's head office in Berlin. The bank also had a teleprinter department, via which its telegrams were sent directly to and from Berlin's main telegraph office. Subsequently the start-stop teleprinter – a telegraph with the keyboard function of a typewriter – was used to transmit messages between various locations within the company; this eventually developed into the telex.

The gradual centralisation of the telegraph system enabled telegram addresses to be assigned to companies and individuals. Deutsche Bank, for example, used 'deutsche bank bln' as the general address for its head office in Berlin and individual departmental addresses such as 'deutsariat bln' for the investment banking department, which was the department responsible for the issuance of securities, among other things.

Start-stop teleprinter at Deutsche Bank's head office in Berlin in 1929

Private cable code

The use of telegraphy created demand for codes and ciphers. It was seen as a serious flaw of telegraphs that the secrecy of messages was not guaranteed. Although some of the messages transmitted were publicly available, certain information was confidential and therefore had to be protected by encryption. The encryption process involved using a specified coding procedure to convert plain text into a series of encoded characters. This usually meant encrypting entire words, phrases or sentences rather than individual plain-text characters or short combinations of characters. The code words generally consisted of letters, numbers and combinations thereof, as specified in code books. However, most European countries forbade the use of codes by anyone other than governments. Twenty states founded the International Telegraph Union (ITU) in 1865, drawing up a set of rules under which the ban on the use of codes was lifted.



Telegramm Nr.

Aufgenommen von

den ... um ... Uhr ... M.

durch

Telegraphie des Deutschen Reiches.

Berlin, Haupt-Telegraphenamt.

Ausgefertigt

um ... Uhr ... M.

durch

Telegramm aus fr newyork 231 48/46 emaz = W. 190 den ... um ... Uhr ... Min.

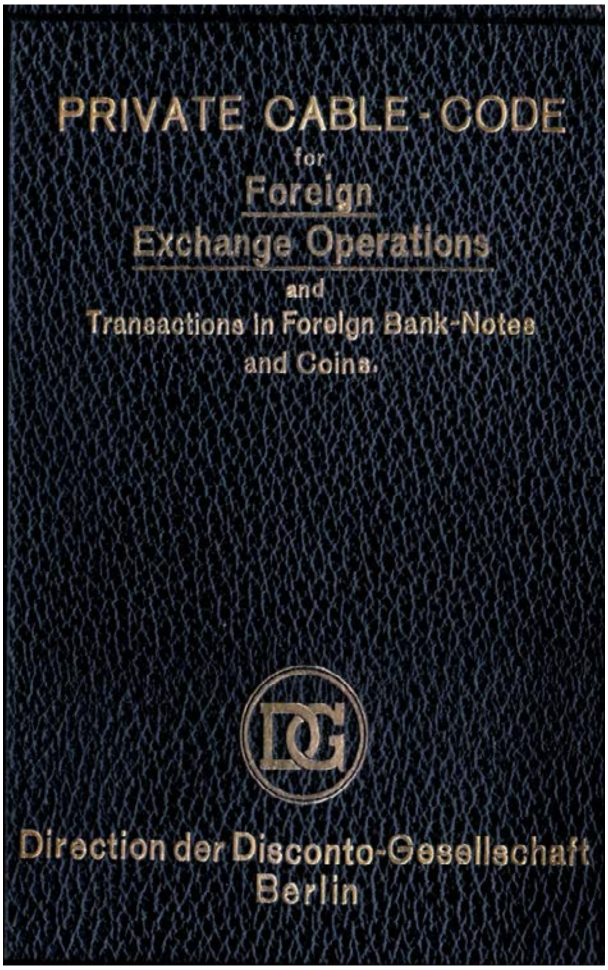
...gammon advising his friends buy dactilitis union reports successful trials
curtis turbine its manufacture baardvogel backbite retire from bacasson
..., winterfeld becomes general partner resident here his baardeloos
...jarss furnishing kakoxine baardeloos kapstok for intimate relations
with bacasson preparatory to active diabelhan kaisername +

C. 187. Rohrpost.

Encoded telegram sent to Deutsche Bank's head office in Berlin on 30 October 1903: encoded terms have been deciphered by hand

Initially these codes were not secret because the code books were widely available to everyone. The codes even reduced the cost of telegram charges because a code replaced several words with a single word. Those for whom greater security was paramount preferred to use ciphers, which were harder to crack. As codes were in such common use, many companies decided to develop their own codes for their correspondence in order to meet the need for specialist and technical vocabulary. Encryption was particularly important for banks because they needed secure codes to conduct their business.

The Private Cable-Code for Foreign Exchange Operations issued by Disconto-Gesellschaft in 1927 stipulated that the use of codes depended on the type of transactions, delivery and payment terms & conditions, currencies, precious metal weights, and amounts. Because the general use of commercial codes was getting out of hand, however, the International Telegraph Union had finally imposed a limit of ten letters per word; in addition, code words had to be



Miscellaneous.

Alphabetical Index	Code Words	Phrases
Branch (continued)	AKJYO	Your branch (in)
Brazil	AKKUP	Brazil
	AKLER	Brazilian
British-India	AKMLO	British India
	AKOJA	British Indian
Broker	AKPLU	Broker(s)
	AKRYG	Brokerage
Bulgaria	AKSJI	Bulgaria
	AKTYA	Bulgarian
Business	AKUEF	Business
But	AKVUT	But
Buy	AKWRU	Buy
Buyers	AKXLA	Buyers
Bought	AKYMT	Buying
(see also "Discount" and "Forward")	AKZYS	Bought
	ALAMB	To be bought
	ALBOT	Buying rate(s)
	ALCEJ	Buying order(s)
	ALCOR	Buy at best for our account
	ALDJA	Buy for our account ...... at ......
	ALEPS	We are buyers (of......) at ......
	ALFET	We buy from you ...... (at ......)

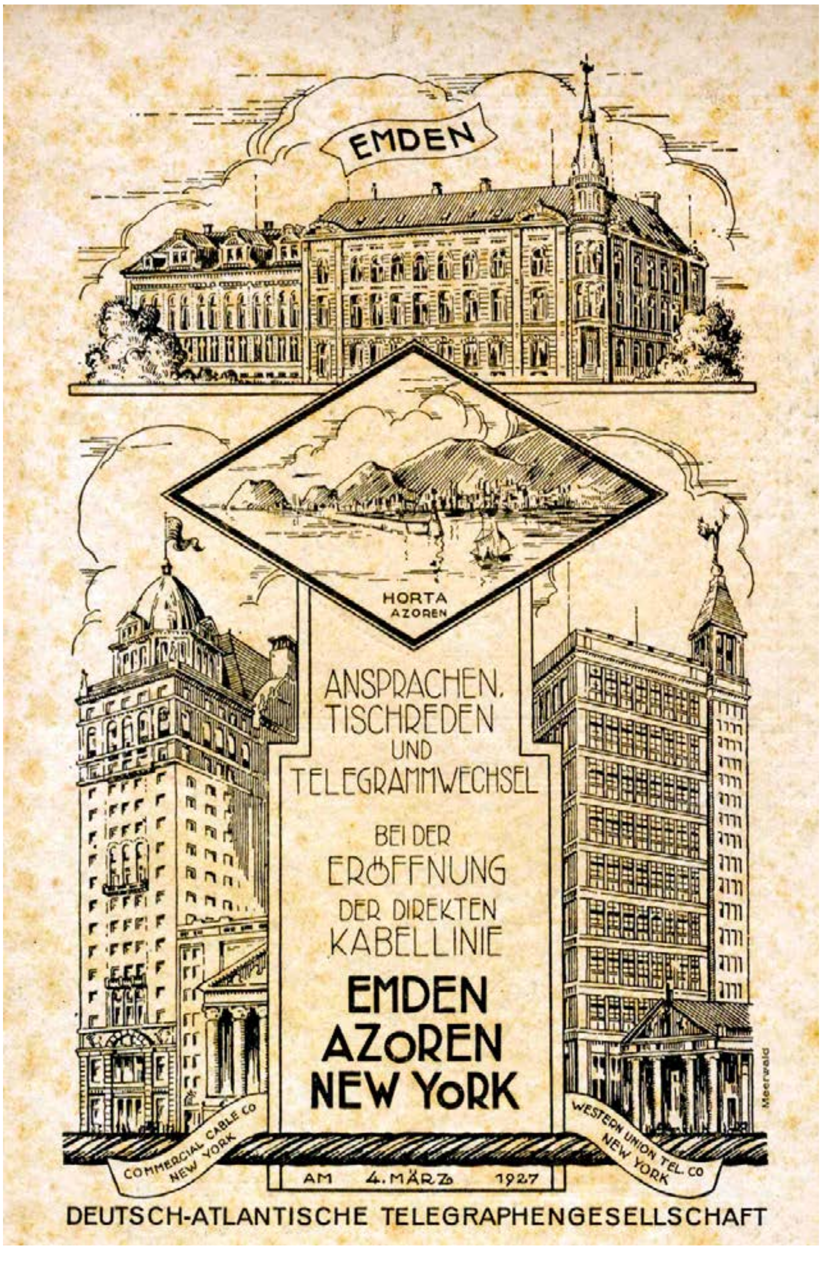
List of telegraph codes issued by Disconto-Gesellschaft in 1927

genuine words in the language concerned. But every attempt the telegraph companies made to try to restrict the rapidly growing use of codes was neutralised by the industriousness of code compilers. Merchants suffered countless losses as a result of the many misunderstandings that arose from the transmission of messages. The existing procedures were insecure and depended on a high level of trust between those involved. Western Union – by then the dominant telegraph company in the United States – introduced code books containing words and special passwords that were used consecutively and were only known to selected telegraphers.

Integration of the world economy and end of the first wave of globalisation

The use of steamships on the high seas and the spread of telegraph cable networks across all continents were accompanied by significant advances in chemistry and electricity, with science and industry becoming increasingly integrated. In conjunction with the railways, which provided an efficient way of transporting goods, the rapid transmission of information brought lasting changes to all types of business. The more industry and trade became interconnected by telegraph networks, the more profitable these communication services became. The benefits of this new technology were clearly evident: faster communication enabled companies and municipalities to improve their organisational processes, while the financial sector in particular was able to deliver more sophisticated services within the framework of increasingly complex market mechanisms. At the same time, these technical and industrial advances triggered a quantum leap in the integration of the global economy. The export of capital across the Atlantic, from eastern to western Europe and to colonies such as South Africa and India as well as to nominally independent countries such as China and the Ottoman Empire grew sharply and was supported by globally operating banks.

Simultaneously, telegraphy also underpinned the activities of news agencies. The newspapers established networks of reporters whose dispatches were telegraphed back to a central office and then made available to all member newspapers for a fee. In the United States the first and one of the best-known of these organisations was the New York Associated Press, which was set up in 1848. In Europe, meanwhile, Paul Julius von Reuter had founded the first news agency with a global reach. By 1861 he had established a network of correspondents covering the whole of Europe, India, China, Australia, New Zealand and South Africa. Where no telegraph link was yet available, Reuter resorted to sending express mail by steamship. The agency sold its information to newspapers which, unlike the globally operating Times of London, were unable to maintain their own teams of international correspondents. These newspapers were now able for the first time to print a daily summary of the most important events from around the world. The telegraph, for example, now transmitted the



Brochure produced by Deutsch-Atlantische Telegraphengesellschaft in 1927

Georg Solmssen (1869-1957) helped to re-establish Germany's transatlantic links

latest news from war zones. The slow wheels of diplomacy had to adapt to the new speed of information offered by telegraphy.

The First World War constituted a watershed in the evolution of global telegraph connections. The telegraph line laid by Land- und Seekabelwerke AG was severed by the British and did not become fully operational again until 1925. Georg Solmssen – one of the proprietors of Disconto-Gesellschaft and, following its merger with Deutsche Bank in 1929, a member of the merged institution's Management Board – played a key role in helping to re-establish Germany's long-distance telegraph links. Deutsch-Atlantische Telegraphengesellschaft put two further cables between Emden and the Azores into operation in January 1926. German telegraph lines were severed once again at the beginning of the Second World War and did not resume full operation until 1954. However, the era of these cable connections had soon passed because the new media such as the telephone, satellite broadcasting and the internet no longer needed insulated copper wires. Although the telegraph eventually disappeared from everyday life, its legacy lives on in the form of telex and fax machines as well as modern-day messaging formats such as email and texting. Without telegraphy – the Victorian internet – the first wave of economic globalisation that occurred prior to the First World War would not have been possible.

Ingrid Rold-Saez

[1] Telegram from Deutsche Bank's London branch to its head office in Berlin, 27 July 1914, HADB, S4191

[2] Quoted from Jürgen Osterhammel: Die Verwandlung der Welt. Eine Geschichte des 19. Jahrhunderts, Munich 2009, p. 126

[3] Quoted from Tom Standage: The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's Online Pioneers, London 1998, p. 1 f.

[4] Standage, p. 16 f.

[5] Standage, p. 19

[6] Standage, p. 113

[7] Standage, p. 90

[8] Standage, p. 93

[9] Standage, p. 101

[10] Karl Helfferich: Georg von Siemens. Ein Lebensbild aus Deutschlands großer Zeit. 2nd volume, p. 83.

[11] Deutsche Bank Berlin to Adams, 22 October 1900; Adams to Deutsche Bank Berlin, 9 November 1900; Deutsche Bank Berlin to Adams, 4 December 1900, HADB, A30, sheets 3, 13, 15

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