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ARAŞTIRMA MAKALESİ – RESEARCH ARTICLE

### INTERNATIONAL SUBMARINE TELEGRAPHIC COMMUNICATION FROM THE EASTERN MEDITERRANEAN TO THE INDIAN OCEAN DURING THE 19<sup>TH</sup> CENTURY: ACCORDING TO THE BRITISH ARCHIVAL DOCUMENTS\*

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#### ABSTRACT

The telegraph is a good example of the concretization of scientific and technical developments, which has been increasing since the beginning of the 19<sup>th</sup> century, and its transformation into technological devices. Thanks to the invention of the telegraph, communication over long distances became possible for short periods. Telegraph lines, which previously ran across the continents via copper cables laid on poles erected on the ground, provided the opportunity for communication on land and submarine, with the addition of submarine telegraph lines to these lines in a short time, in parallel with technological transitions. However, the development and regular maintenance of the lines were vital to the global communication network. By the 1850s, a strong communication network consisting of telegraph lines and hundreds of telegraph stations had been established in many European countries such as England, France, Spain, Italy, Switzerland, and Germany, with telegraph lines of over 4000 km. This infrastructure, used effectively in both world wars, starting from the Crimean War, also formed the basis of military communication. Industrialized countries such as Great Britain have dramatically increased their global influence by using these technological developments, thus gaining a great military, political, and economic advantage by directing the logistical support provided by communication to the real political field. The brilliant ideas developed on telegraphy during this time would be significant for today's digital communication infrastructure.

This study, employing the document analysis method, distinguishes itself from previous research on land and submarine telegraph lines that primarily rely on Ottoman archive documents. It focuses on the subject of submarine telegraph lines, especially in the Eastern Mediterranean, based on British archive documents.

In this context, in our study, using British archival documents, we tried to reveal, in parallel with the technological development of telegraphy, scientific studies carried out to lay submarine telegraph lines, established submarine telegraph companies, and their activities, the process of laying submarine telegraph lines in the areas from the Eastern Mediterranean basin to the Indian Ocean and Australia especially during the second half of the 19<sup>th</sup> century and finally how this communication network infrastructure contributed to the construction of the contemporary today's world.

**Keywords:** Submarine Telegraph Systems, Submarine Telegraph Companies, International Telegraphic Communication, Eastern Mediterranean, Late Ottoman Period.

#### 19. YÜZYILDA DOĞU AKDENİZ'DEN HİNT OKYANUSUNA ULUSLARARASI DENİZALTI TELEGRAF HABERLEŞMESİ: İNGİLİZ ARŞİV BELGELERİNE GÖRE

#### ÖZ

Telgraf, 19. yüzyılın başlangıcından itibaren artarak devam eden bilimsel ve teknik alanda yaşanan gelişmelerin somutlaşarak teknolojik cihazlara dönüşmesine güzel bir örnektir. Telgrafın icadıyla çok uzak mesafelerle iletişim kısa süreler için mümkün hale gelmiştir.



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Önceleri yeryüzüne dikilen direkler üzerine döşenen bakır kablolar aracılığıyla kıta üzerinden ilerleyen telgraf hatları teknolojik gelişmelere paralel olarak kısa bir süre içerisinde sualtı telgraf hatlarının da bu hatlara eklenmesiyle karadan ve denizden haberleşme imkânı sağlanmış oldu. Bununla birlikte hatların geliştirilmesi ve düzenli bakımının sağlanması küresel iletişim ağı için hayati öneme sahipti. 1850'lere gelindiğinde İngiltere, Fransa, İspanya İtalya, İsviçre, Almanya gibi birçok Avrupa ülkesinde 4000 km'nin üzerinde yüzlerce telgraf istasyonundan oluşan güçlü bir haberleşme ağı tesis edilmişti. Kırım Savaşından başlamak üzere iki dünya savaşında da etkin bir şekilde kullanılacak olan bu altyapı askeri haberleşmenin de temelini oluşturmaktaydı. İngiltere gibi sanayileşmiş ülkeler bu teknolojik gelişmeleri kullanarak dünya üzerinde nüfuzlarını dramatik bir şekilde artırmış, böylece haberleşmenin sağladığı lojistik desteği reel politik alana kaydırarak askeri, siyasi ve ekonomik açıdan büyük bir avantaj sağlamışlardır. Bu süre zarfında telgraf üzerine geliştirilen parlak fikirler günümüz dijital haberleşme altyapısı için oldukça önemli olacaktır.

Doküman analizi yönteminin kullanıldığı bu çalışmanın daha önce yapılan Osmanlı arşiv belgelerine göre kara ve denizaltı telgraf hatları üzerine yapılan çalışmalardan farkı, İngiliz arşiv belgelerine dayanarak Doğu Akdeniz havzası ekseninde özellikle denizaltı telgraf hatları konusu üzerine odaklanmasıdır.

Bu bağlamda çalışmamızda, İngiliz arşiv belgelerini kullanmak suretiyle telgrafın teknolojik gelişmesine paralel olarak telgraf hatlarının deniz altına döşenebilmesi için yapılan bilimsel çalışmalar, kurulan denizaltı telgraf şirketleri ve faaliyetleri, özellikle 19. yüzyılın ikinci yarısı boyunca Doğu Akdeniz havzasından Hint Okyanusu ve Avustralya'ya kadar olan alanlarda denizaltı telgraf hatlarının döşenme süreci ve netice itibarıyla bu haberleşme ağı altyapısının günümüz modern dünyasının inşasına nasıl bir katkı sağladığı ortaya konulmaya çalışılmıştır.

**Anahtar Kelimeler:** Denizaltı Telgraf Sistemleri, Denizaltı Telgraf Şirketleri, Uluslararası Telgraf Haberleşmesi, Doğu Akdeniz, Geç Osmanlı Dönemi.

### INTRODUCTION

The invention of the telegraph and its widespread use were technological advances in the 19<sup>th</sup> century of significant socio-cultural developments. The telegraph provided great convenience to the relationship between countries, institutions, and establishments.<sup>1</sup> When the Crimean War began a message could reach London from Crimea in a minimum of five days at the fastest. The message could first be delivered by ferry from Crimea to Varna in two days, and from there on horseback to Bucharest, the nearest center connected to the European telegraph network, in three days. From there, the message was transmitted to London by telegraph. In order to strengthen their control and management, France and England attempted to connect Paris, London and Istanbul with telegraph lines.<sup>2</sup> The need to establish telegraph connections over great distances was a necessity for England's imperialist interests, both politically and commercially. For this reason, it can be stated that England was the most proactive state in building telegraph lines between Europe, India, and the Far East. The year 1857 marked a turning point in establishing telegraph connections between these regions, as developments such as the "Sepoy"<sup>3</sup> uprising endangered English rule in India, and England was informed of this situation with a delay of 40 days.<sup>4</sup> Approximately 800,000 British pounds were spent by the British on submarine telegraph lines after 1857. However, since submarine telegraph lines were a new technology, the efficiency was very low and investment in this work was not very profitable. However, Britain's need for rapid and continuous communication with its colonies was so great that a state-funded scientific commission was even established to redesign submarine telegraph cables.<sup>5</sup> England accelerated the construction of telegraph lines to enable fast communication, connecting London to India and its other colonies. In addition to the terrestrial telegraph lines, attempts to build submarine telegraph lines began in 1858. Consequently, the strategic importance of the Eastern Mediterranean and Ottoman lands increased further, making these regions a crucial part of the international communication network since the second half of the 19<sup>th</sup> century.<sup>6</sup> In 1865, the Ottoman land telegraph lines became connected with the

<sup>1</sup> Zafer Sağdıç, "Osmanlı Politik Sisteminin Osmanlı Saray Mimari Mekan Örgütlenmesi Üzerindeki Etkileri", *Türkler Ansiklopedisi*, c.12, Yeni Türkiye Yayınları, Ankara 2002, p. 216.

<sup>2</sup> Yakup Bektaş, "The Sultan's Messenger: Cultural Constructions of Ottoman Telegraphy, 1847-1880" *Technology and Culture*, v. 41, no. 4, 2000, p. 673.

<sup>3</sup> See for detailed information: Eric Stokes, *The Peasant Armed: The Indian Revolt of 1857*, Clarendon Press, 1986; Christopher Hibbert, *The Great Mutiny: India 1857*, Penguin Books, 1980; Rudrangshu Mukherjee, *Awadh in Revolt 1857-1858: A Study of Popular Resistance*, Permanent Black, 2002.

<sup>4</sup> Diren Çakılcı, "Doğu Akdeniz'de Denizaltı Telgraf Bağlantıları: Yunanistan'ın Uluslararası Şebekeye Dahil Edilmesi", *Tarih İncelemeleri Dergisi*, 2018, c. 33, s.1, p. 24-25.

<sup>5</sup> Mostafa Minawi, "Telegraphs and Territoriality in Ottoman Africa and Arabia during the Age of High Imperialism", *Journal of Balkan and Near Eastern Studies*, 18:6, 2016, p. 578.

<sup>6</sup> Çakılcı, ibid, p. 24-25.

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Indo-European submarine telegraph lines, thus establishing continuous telegraph communication between India and the European.<sup>7</sup>

According to the British archive documents on submarine telegraph lines, which is the focus of this study, submarine telegraph cables running from London to Suez and then down the Red Sea would reach Aden. After the completion of the India line, it could propose to begin the construction of telegraph lines to Singapore and Chinese ports. As the telegraph lines reached these places, no doubt the Britain colonies would rejoice in the advantages of being in close contact with England and Europe.<sup>8</sup> International competition via telegraph lines increased, leading to projects such as the British government's "all red" route around the world. "All red" referred to the red color that marked British territory on maps of the period. By 1902, telegraph lines had been installed in every British colony.<sup>9</sup>

Various proposals had been under consideration for some time by the directors of the Submarine Telegraph Companies, primarily about the development of telegraph cables between England and India and the Trans-Indian colonies in times of political trouble and open warfare and secondly to ensure the speed, accuracy, and regularity of the service. Only by establishing alternative lines could states achieve these goals. These suggested lines were as follows, firstly A cable to Alexandria and Port Said would lay along the Suez Canal to Suez; secondly, along the northern coast of the Red Sea from Suez to Aden and from there to Bombay; thirdly, from Port Said to Zante, from Zante to Malta; lastly a new line would lay from Malta to Tripoli.<sup>10</sup> Major submarine telegraph line companies, "Eastern Telegraph Company," "Eastern Extension Telegraph Company," "East and South Africa Telegraph Company," and "Submarine Telegraph Company," provided communication service for England with India and Trans-India Colonies.<sup>11</sup> During the second half of the 19<sup>th</sup> century, many companies were established to lay submarine telegraph cables, many of which went bankrupt.<sup>12</sup>

In this study, unlike previous studies that extensively used Ottoman archive documents<sup>13</sup>, the construction of submarine telegraph lines in the Eastern Mediterranean basin was approached from a historical perspective, focusing especially on the second half of the 19<sup>th</sup> century, based on British archive documents and employing document analysis methods.

## 1. First Theoretical and Experimental Applications

Researchers can find the first academic record of the construction of submarine telegraph lines in an article taught at the Academy of Sciences in Barcelona written by a Spaniard named Salva, dating back to 1795. However, although it was rumored that in 1803 there were attempts by a person named Aldini to lay submarine telegraph lines off Calais, a port city in France, and along the Marne River in France, it was thought that there were no accurate scientific records. The earliest examples of two Germans, Sömmering and Shilling, applying a soluble insulating material to a conductive wire in the river Isar near Munich were. But perhaps the earliest example of a submarine telegraph was transmitted over seven miles by insulated wire dipped in a pond by Colonel Pasley, a royal engineer, in Chatam, England, in 1813. In the Journal of the Asiatic Society, Dr. O'Shaughnessy, the Director of the East India Company's Telegraphs.<sup>14</sup> Professor S. F. B. Morse, the well-known inventor of the telegraph apparatus, which bears his name, said that in 1842 he laid down an insulated copper wire in New York Harbor through which he sent electric currents.<sup>15</sup> The first commercially valuable submarine telegraph line was laid in 1849 by Charles Walker of the Southeastern Railroad Company. An isolated submarine telegraph line of about 3.5 km was connected to a ship anchored offshore, the Princess Clementine, and telegraphic communication was

<sup>7</sup> Bektaş, *ibid*, p. 686.

<sup>8</sup> *Public Record Office* (PRO), FO (Foreign Office), 1857: 7/620.

<sup>9</sup> Ariane Knüsel, "British Diplomacy and the Telegraph in Nineteenth-Century China", *Diplomacy and Statecraft*, v.18, 2007, p. 530.

<sup>10</sup> PRO, T (Treasury), 1882: 1/13173, Tr: 14923.

<sup>11</sup> PRO, T, 1882: 1/13173, Tr: 12336.

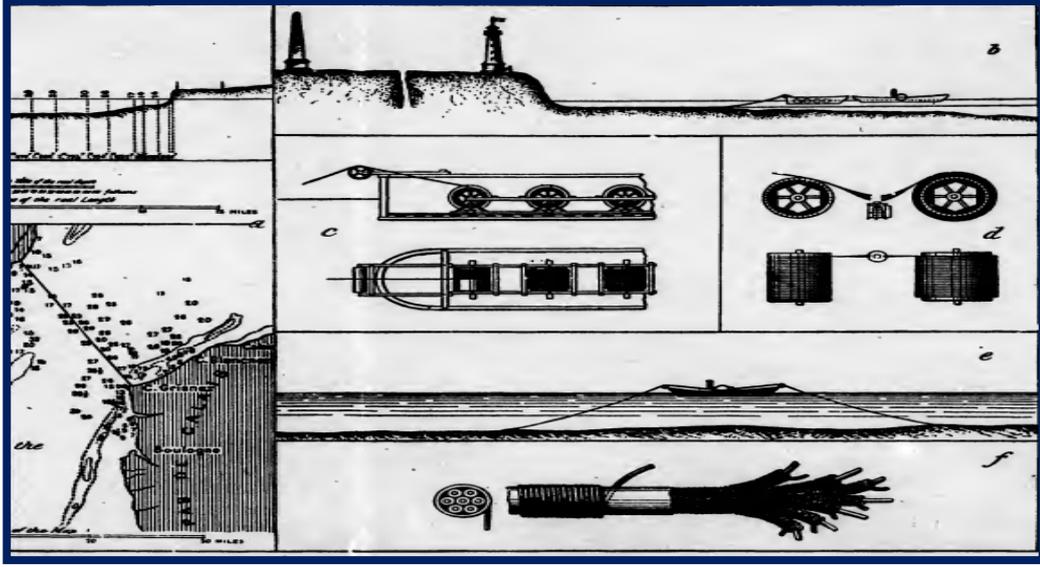
<sup>12</sup> Ken Beauchamp, *History of Telegraphy*, The Institution of Engineering and Technology, London, (2001), p. 134.

<sup>13</sup> See some previous studies: Saltuk Duran, "Transportation, Steamships and the Rise of Postal Protectionism in the Ottoman Empire under the Reign of Abdülaziz (r. 1861–1876)", *DIYÂR*, v.1, 2020, p. 84-107; Yakup Bektaş, "The Sultan's Messenger: Cultural Constructions of Ottoman Telegraphy, 1847-1880" *Technology and Culture*, v. 41, no. 4, 2000, p. 669–696; Diren Çakılçı, "Osmanlı Devleti'nde Denizaltı Telgraf Hatları ve Eastern Telegraph Company", *XVIII. Türk Tarih Kongresi*, Ankara, Türkiye, 1 - 05 Ekim 2018, p. 289-309; Diren Çakılçı, *Rumeli Telgraf Hatları (1854-1876)*. Türk Tarih Kurumu, 2019, Ankara; Diren Çakılçı, "Yemen'i Payitaht'a Bağlamak: Yemen Vilayeti Telgraf Şebekesi ve Bağlantı Hatları" *Türkiyat Mecmuası*, vol. 32, no. 1, 2022, p. 61-92; Diren Çakılçı, "Doğu Akdeniz'de Denizaltı Telgraf Bağlantıları: Yunanistan'ın Uluslararası Şebekeye Dahil Edilmesi", *Tarih İncelemeleri Dergisi*, 2018, c.33, s.1, p. 21-39; Diren Çakılçı, "Kıbrıs'ta Osmanlı Telgraf İşletmesi", *İstanbul Üniversitesi Edebiyat Fakültesi Tarih Dergisi*, s. 62, İstanbul, 2016, p. 65-90.

<sup>14</sup> Sir Charles Bright, *Submarine Telegraphs: Their History, Construction, and Working*, C. Lockwood and Son, 7. Stationers Hall Court, Ludgate Hill, 1898, p. 1-2.

<sup>15</sup> Bright, *ibid*, p. 4.

provided between them.<sup>16</sup> As a result, technically there were differences in the problems and solutions regarding land and submarine cables. However, after various initiatives, partially successful results began to be obtained.<sup>17</sup>



**Figure 1:** An example of a project prepared to lay a submarine telegraph cable between England (Dover) and France (Calais) in 1840<sup>18</sup>

The successful laying of submarine telegraph lines depends on the telegraph cables being well insulated against salt water, solving the problem of decreasing electrical signals due to long distances, using large cargo ships to carry the cables, and properly placing the submarine telegraph lines as there may be strong currents under the sea or ocean.<sup>19</sup> Submarine telegraph lines were made of copper wires insulated with a type of latex called gutta-percha obtained from tropical trees in Malay. Additionally, submarine cables consisted of brass tape, tarred hemp and steel layers. This made the production and laying of submarine cables very costly. England stood out in terms of using this technology with its advantages in accessing these resources.<sup>20</sup>

The first scientific application of the electric telegraph in the Ottoman Empire was tried in Beylerbeyi Palace in 1847. It was in 1854 that the French allies of the Ottoman Empire built a telegraph line between Bucharest and Varna. Later, the British extended this line to Istanbul with a submarine cable. The Ottoman Telegraph Administration took over the Bucharest-Istanbul line in 1857 and started a new era in the history of Ottoman communication by ensuring that these commercial lines were transferred to the public. The British efforts to reach its colony in India via telegraph lines allowed the Ottoman telegraph networks to expand.<sup>21</sup> By the way the first submarine telegraph station in the Bosphorus was located inside the British embassy in 1855.<sup>22</sup>

## 2. Mediterranean, Red Sea, and Indian Ocean Submarine Telegraph Lines

One of the most important developments of the Victorian period was establishing and developing the world's electrical telegraph system. In this period, companies laid the first practical submarine cable in 1851.<sup>23</sup> The Submarine Telegraph Company was working at least half a dozen excellent lines ranging from 2 to 117 miles in length, connecting England with the Continent. In 1853 the International Telegraph Company determined to lay cables to Holland and elsewhere. Afterward, when amalgamated with the Electric Telegraph Company, they fitted out a ship for the first time in a permanent fashion for cable operations. During the subsequent few years, they

<sup>16</sup> Beauchamp, *ibid*, p. 138.

<sup>17</sup> Beauchamp, *ibid*, p. 134.

<sup>18</sup> Bright, *ibid*, p. 4.

<sup>19</sup> Lynne Hamill, "The Social Shaping of British Communications Networks prior to the First World War", *Historical Social Research / Historische Sozialforschung*, 2010, v. 35, No. 1 (131), p. 270.

<sup>20</sup> Knüsel, *ibid*, p. 519; see also, Bill Glover, "British Submarine Cable Manufacturing Companies", *History of the Atlantic Cable and Undersea Communications*, <https://atlantic-cable.com/CableCos/BritishMfrs/index.htm>, 2.12.2023, 11:51 AM.

<sup>21</sup> Sırrı Emrah Üçer, "Telegraphic Protectionism: Growth of Ottoman Telegraph Business as A Public Enterprise, 1854-1914", *Muhasebe ve Finans Tarihi Dergisi*, s.21, Temmuz 2021, p. 26.

<sup>22</sup> Bektaş, *ibid*, p. 676.

<sup>23</sup> Bright, *ibid*, p. XV.

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established submarine communication between Denmark and Sweden; Italy, Corsica, and Sardinia; Sardinia and Africa; and, finally, between Ireland and North America.<sup>24</sup>

Thanks to the communication with and support from the British Government, and especially British Foreign Minister Lord Clarendon, with the Ottoman State administrators, Mr. F. Gisborne had the opportunity to explain the submarine telegraph projects to the Ottoman Government. Although Mr. F. Gisborne's project to lay a submarine telegraph line from Istanbul to Alexandria could not be realized, it was an important initiative in terms of revealing the strategic position of the Ottoman Empire in the field of international telegraph communication. This initiative also had positive effects in terms of drawing the attention of the Ottoman State administrators to this issue.<sup>25</sup> Engineers drew up the project for the European telegraph design with India and Alexandria in May 1855. Thereupon, Mr. F. Gisborne was sent to Istanbul to develop preparations for the concession with the Ottoman Government on the line from Alexandria to India. Mr. F. Gisborne, in addition to laying the telegraph line from Alexandria to Suez, was also able to obtain the concession to read a submarine telegraph line facility down the Red Sea from the Porte. A submarine telegraph<sup>26</sup>cable going down the Red Sea would reach. The completion of the India line and the start of the telegraph drawings for the Chinese constructions. They were transmitted via telegraph lines.<sup>27</sup> It would also be drawn from Çanakkale (Dardanelles) to Alexandria. The Çanakkale line was already a connection with the European telegraph system at this time. "You can exchange views from Istanbul, the Indo-European telegraph line of the Ottoman Empire. Before the telegraph was invented, these lines could be delivered between Europe and India in less than a month. But in April 1856" a new telegraph project was submitted to get used to Gisborne's receiving from Egypt.<sup>28</sup> Meanwhile, some members of the Ottoman Translation Chamber were assigned to learn about the telegraph from experts from France in 1855, and the telegraph translated the language of correspondence into Turkish.<sup>29</sup>

Due to the rebellions in the Hedjaz and Yemen Provinces along the Red Sea coast, as well as the expansionist policies of states such as England and France, the Ottoman Empire recognized the need to establish rapid communication with these geographical regions. In this context, the Ottoman Empire extended some of its submarine telegraph lines to El-Arish. Additionally, the laying of the Jeddah-Seakin lines facilitated communication with other important strategic centers. These efforts were part of a broader strategy to regain effective control in regions where the authority of the Ottoman State was weakening. The last submarine telegraph line of the Ottoman Empire in the Red Sea was drawn from Salafi in 1894 in order to reach the quarantine center on Kamran Island.<sup>30</sup>

Thanks to British engineering, telegraph lines that reached Baghdad from Istanbul in 1861 reached Basra in 1865. These telegraph lines within the borders of the Ottoman Empire enabled the establishment of continuous communication between England and India. In addition, these lines formed the basic skeleton of the Ottoman State telegraph network.<sup>31</sup> In 1862, Britain approved the project of a submarine telegraph cable, approximately 1,250 nautical miles long, planned to be laid from Karachi to Al-Faw and from the northwesternmost port of India to the head of the Persian Gulf at the mouth of the Shatt Al-Arab. In this way, India was connected to the three major telegraph lines of Europe, passing through Istanbul, the capital of the Ottoman Empire, and reaching London.<sup>32</sup> Simultaneously, with the initiative of the British, the Istanbul-Alexandria submarine line was extended to reach to Bombay. The Ottoman State began to benefit financially from the use of these lines within its borders.<sup>33</sup> It was also felt that there was a need to build alternative lines in order to meet the increasing demand for messaging on the telegraph line between England and India and to ensure the security of communication in case of damage in one of the lines.<sup>34</sup>

<sup>24</sup> Bright, *ibid.*, p. 15-16.

<sup>25</sup> Çakılcı, *ibid.*, p. 24.

<sup>26</sup> A new organization was required to live for a meeting, like the postal organization in the Ottoman Empire. It was closed as the Telegraph Administration until it merged with the Post Office on September 21, 1871. After this equipment, the Ministry of Post and Telegraph attached to the Ministry of Internal Affairs in its name. And then, Fünûn-Telegraphy School was opened. See Nesimi Yazıcı, "Tanzimat Döneminde Osmanlı Posta Örgütü", *Tanzimat'tan Cumhuriyete Türkiye Ansiklopedisi*, c. 6, İletişim Yayınları, İstanbul 1985, p. 1649.

<sup>27</sup> PRO, FO, 1857: 7/620.

<sup>28</sup> Soli Shahvar, "Concession Hunting in the Age of Reform: British Companies and the Search for Government Guarantees; Telegraph Concessions through Ottoman Territories, 1855-58", *Middle Eastern Studies*, Vol. 38, No. 4 (Oct, 2002), p. 172-173.

<sup>29</sup> Ali Akyıldız, "Tercüme Odası", *Türkiye Diyanet Vakfı İslâm Ansiklopedisi*, c. 40, Ankara 2011, p. 506.

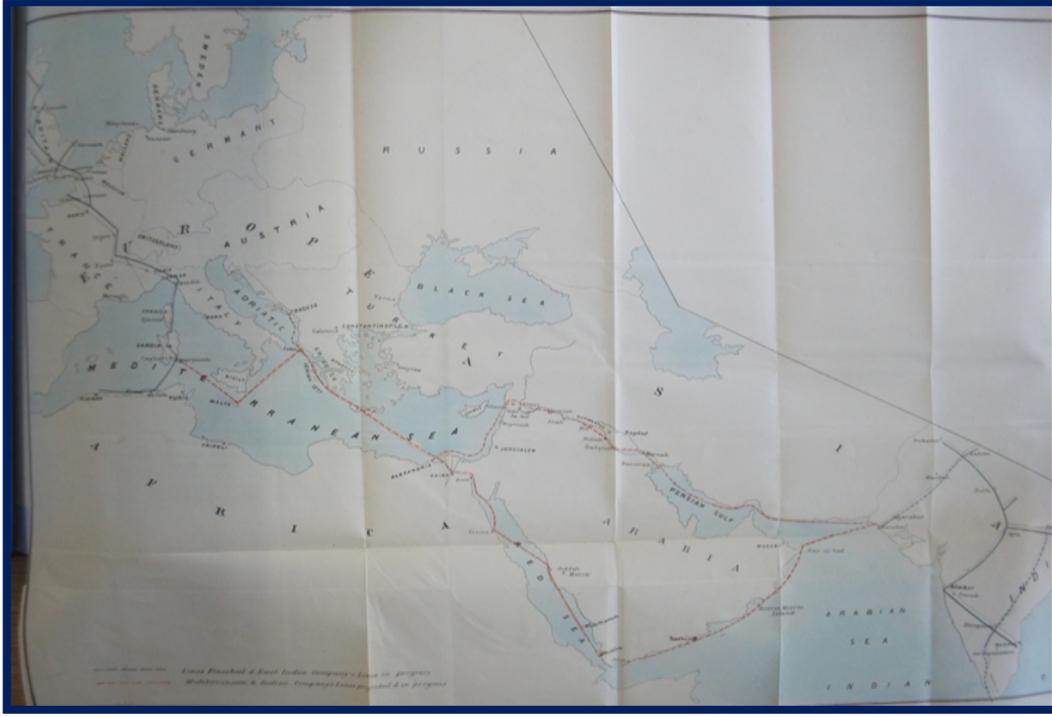
<sup>30</sup> Diren Çakılcı, "Osmanlı Devleti'nde Denizaltı Telgraf Hatları ve Eastern Telegraph Company", *XVIII. Türk Tarih Kongresi*, Ankara, Türkiye, 1-05 Ekim 2018, p. 292-293.

<sup>31</sup> Üçer, *ibid.*, p. 27.

<sup>32</sup> Christina Phelps Harris, "The Persian Gulf Submarine Telegraph of 1864", *The Geographical Journal*, Jun., 1969, v. 135, No. 2 (Jun., 1969), p. 170.

<sup>33</sup> Saltuk Duran, "Transportation, Steamships and the Rise of Postal Protectionism in the Ottoman Empire under the Reign of Abdülaziz (r. 1861-1876)", *DIYÂR*, v.1, 2020, p. 96.

<sup>34</sup> Harris, *ibid.*, p. 180.



**Map 1:** Telegraph Line from England to India<sup>35</sup>

Along with these lines, an agreement was made between the British and the Austrian Government to lay a submarine telegraph line between “Ragusa” (Dubrovnik) and Alexandria. This telegraphic communication would reach Alexandria from Ragusa via Corfu, Zante, and Heraklion and also from Trieste to Alexandria. The Austrian Government had the right to grant a concession to a company establishing this telegraph line. This concession would be valid for 50 years and the Austrian Government guaranteed to give shareholders a minimum of 5% per annum on the capital spent during the first 25 years. Furthermore, after the expiration of these 25 years, the Austrian Government would have the right to purchase at any time all the movable assets of the company.<sup>36</sup>

The purpose of the establishment of "the Malta and Alexandria Telegraph Company, Limited", founded in England in 1858, was to provide telegraphic communication between Malta and Alexandria and other places and places decided later. Shareholders' liability was limited, and the company's nominal capital was £250,000, divided into £50,000 shares of £5 each. This company continued to exist until 1882, and the dissolution of the company was announced in the "London Gazette" on March 4, 1882.<sup>37</sup> For the Ragusa-Alexandria telegraph line, the Ottoman State took the necessary measures to facilitate the construction of the Malta telegraph line by England following the contract between the Ottoman Empire, the British, and the Austrian states.<sup>38</sup> Since the submarine line to be laid will pass through the coasts of Tripoli and Benghazi, convenience was requested for the engineers and employees involved in laying these lines.<sup>39</sup>

Another agreement was made between England and the Ottoman Empire for constructing an submarine telegraph line from the Bahr-ı Sefid Strait to Alexandria. Accordingly, various tools and machinery used for the line construction would be exempted from customs duty.<sup>40</sup> Since the telegraph line extending to Tripoli, Benghazi, and Malta, which was completed, was broken from time to time, there were interruptions in communications. The Ottoman State ordered the Khedive of Egypt to extend the line to Alexandria and to cover the expenses of the line to be built from the Egyptian treasury, which the Egyptian Government had to do.<sup>41</sup> Tests were carried out to check whether the conductivity was continuous in telegraph cables, and it was found that this continuity was broken from

<sup>35</sup> PRO, FO, 1857: 7/620.

<sup>36</sup> PRO, FO, 1857: 7/620, nr.992.

<sup>37</sup> PRO, BT (Board of Trade), 1882: 31/341/1230.

<sup>38</sup> *Cumhurbaşkanlığı Devlet Arşivleri Başkanlığı Osmanlı Arşivi* (BOA), Hariciye Nezareti Mektubi Kalemi (HR.MKT.), 366/46, H. 27/B/1277, (8 Şubat 1861).

<sup>39</sup> BOA, HR.MKT, 372/70, H. 24/N/1277, (5 Nisan 1861).

<sup>40</sup> BOA, Cevdet Hariciye (C.HR), 12/579, H. 21/Ca/1281, (22 Ekim 1864).

<sup>41</sup> BOA, Sadaret Mektubi Mühimme Kalemi (A.MKT.MHM), 428/62, H. 17/Ş/1285, (3 Aralık 1868).

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time to time.<sup>42</sup> Since the second half of the century, modern technologies have increased the need for engineers in the empires.<sup>43</sup>



**Map 2:** Telegraphic Map of Asian Turkey<sup>44</sup>

On August 2, 1867, it was stated that an office for the "British Transport Service" had to be established in Alexandria.<sup>45</sup> As a result, 9,298 miles of telegraph line reaching Sudan by the end of 1873 in Egypt cost 844,258 pounds. In addition, between 1874 and 1875, 145 miles of telegraph line cost £8,700. Overall, £852,958 for 9,943 miles of telegraph lines by 1876 was spent.<sup>46</sup>

From the "Central Post Offices" of Great Britain, Ireland, and Egypt signed in London on November 14, 1877, the Egyptian Government from Alexandria to Suez and from Suez to Alexandria; The British Government would trade from other East India, from Australia, and British colonies and possessions, and from China, from Japan and other people, to and from here. The Egyptian Government also transported sealed shipments between Cairo and Alexandria and British and Egyptian consular correspondence. The Egyptian Government consisted of the rescue of the British mail in Egypt by force majeure. The "Oriental Steam Navigation Company"s time to deliver an Egyptian delivery in Alexandria would not exceed 16 hours. Shipments were to be checked by a British Post Office representative or officers. The British Post Office would continue to maintain its representations in Alexandria and Suez and would be able to send its mail carriers with shipments. The powers of the British Post Office representations would be limited regarding the transit control of British mail related to their relations with the Egyptian Administrative units. The UK Post Office would be abolished from the effective date of this agreement. By the time the British mail arrived at Suez, the Egyptian Government would provide a suitable and separate place at the harbor for the mail to be unloaded and loaded. As the British mail passed through Egypt, independent and secure locked wagons would be allocated, with no other passengers or goods in these wagons. In addition to the agreement signed in Alexandria on May 18, 1873, it was also signed in Alexandria on August 11, 1874, the last agreement would have been abolished after the current deal entered into force. The present treaty was signed in London on November 14, 1877.<sup>47</sup>

<sup>42</sup> Bright, *ibid*, p. 22.

<sup>43</sup> Ekmeleddin İhsanoğlu; Salim Aydın, "Yenileşme Döneminde Osmanlı Bilim ve Eğitimi", *Türkler Ansiklopedisi*, c.14, Yeni Türkiye Yayınları, Ankara 2011, p. 888.

<sup>44</sup> BOA, HRT.h. 364, H.10/02/1299, (1 Ocak 1882).

<sup>45</sup> PRO, Ministries of Transport (MT), 1867:23/4, Nr: 2101.

<sup>46</sup> PRO, FO, 1876: 881/2994.

<sup>47</sup> PRO FO, 1877: 141/109.

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Routes	Approximate Arrival Time
Between London-Malta Via Gibraltar	45 minutes
Between London and Egypt via Marseille	25 minutes
Between London and Bombay via Marseille	1 hour
Between London and Darwin Port (Australia) via Marseille	5 hour
Between London and Durban (South Africa)	2 hour

**Table 1:** Arrival Times of Telegrams under Normal Conditions in 1882<sup>48</sup>

The approximate arrival time of telegraph messages from London to distant places such as Malta, Egypt, Bombay, Australia, and South Africa was an indicator of the extraordinary increase in the speed of communication, with the times expressed in minutes and hours expressed above. While it could take weeks or even months to transmit these messages in the early 19th century, the time required for transmission has decreased dramatically thanks to the telegraph. Especially for the British Empire, rapid communication between colonies and the motherland allowed colonial rule to be carried out more effectively. This played a critical role in the implementation of colonial policies and rapid response to local events.

John Pender, who was an important actor in the construction of submarine telegraph lines in many parts of the world, including the Ottoman State, and was known as the cable king, founded the Eastern Telegraph Company in 1872 by combining four companies operating communication lines to India.<sup>49</sup> Military and Navy stations used these companies Gibraltar, Malta, Cyprus, Aden, and Bombay lines. In maintaining these lines, these companies were responsible for establishing additional lines when telegraph traffic increased when needed. "John Pender," chairman of the "Eastern Telegraph Company, Limited," had stated that he would act in line with the views of the British Government, treasury, and colonial office and had already laid a new cable between Alexandria and Port-Said. However, he stated that the necessary agreements were made to establish a line that would provide communication between Port Said and Suez and that the board of directors ordered the third line to be laid from Suez to Aden. Finally, these new lines were important for India and the Colonial Telegraph Service. "John Pender" also noted at the bottom of his letter that if the British Government wanted, they could prepare a cable to be laid across the Suez Canal to meet the current need.<sup>50</sup> Telegraph lines cut by the rebels after the bombing of Alexandria in 1882 disabled the Red Sea cables that provided communication between Britain and India.<sup>51</sup>

No.	Starting Point	Intermediate Stops	Ending Point
1	London	Penzance, Lisbon, Vigo	Lisbon (via another landline)
2	Lisbon	-	Gibraltar (Two lines)
3	Gibraltar	-	Malta (Direct)
4	Malta	-	Alexandria (Two direct lines)
5	Alexandria	Cyprus, Suez (Two landlines), Cairo	-
6	Suez	Aden	Bombay (Two direct lines)
7	Bombay	Madras, Penang	Singapore
8	Singapore	Batavia, Saigon	Hong Kong
9	Rangoon	Penang, Malacca	Singapore
10	Singapore	Banjoewangie, Port Darwin (Australia), Melbourne	Sydney
11	Australia	Tasmania	New Zealand
12	London	-	Marseille (via France)
13	Marseille	Bona (Algeria)	Malta (Two lines)
14	Italy	Zante, Crete	Alexandria
15	Zante	Athens, Syra	Crete (joining with the Crete-Alexandria line)

<sup>48</sup> PRO, T, 1882: 1/13173, Tr: 12336.

<sup>49</sup> Diren Çakılcı, "Osmanlı Devleti'nde Denizaltı Telgraf Hatları ve Eastern Telegraph Company", *XVIII. Türk Tarih Kongresi*, Ankara, Türkiye, 1 - 05 Ekim 2018, p. 297.

<sup>50</sup> PRO, T, 1882: 1/13173, Tr: 14923.

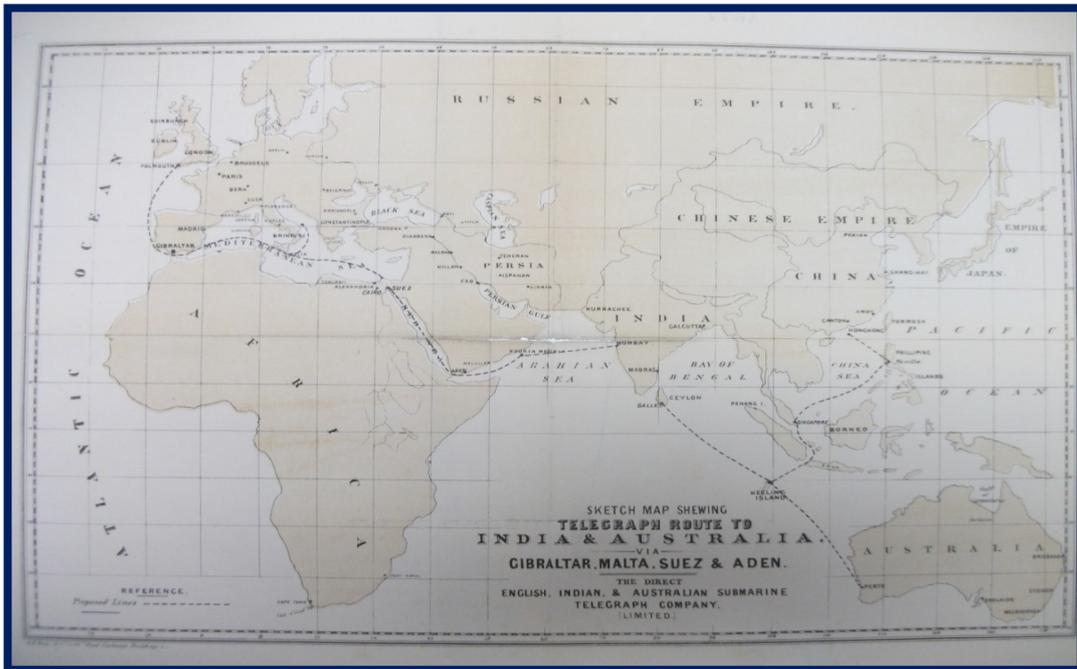
<sup>51</sup> Sneh Mahajan, *British Foreign Policy 1874-1914*, Taylor&Francis e-Library 2003, p. 66.

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16	Syra	İzmir, Chios Island (Chios), Bozcaada (Tenedos), Besika Gulf	Thessaloniki
17	Bozcaada	Çanakkale	Istanbul
18	Istanbul	-	Odessa
19	Trieste	Corfu, Zante	Joining with the Crete-Alexandria line
20	Aden	Zanzibar, Mozambique, Delagoa Bay, Durban	Cape of Good Hope (via Government's landline)

**Table 2:** A Comprehensive Network of Submarine Telegraph Lines in 1882.<sup>52</sup>

This submarine telegraph network represents a significant technological and logistical achievement of the era, marking a revolutionary development in the second half of the 19<sup>th</sup> century. European connections of these networks begin in London, extending through various European cities like Lisbon, Marseille, and Trieste. These connections highlight the importance of European cities as central hubs in the global telegraph network. There was a crucial role for these submarine telegraph lines in the Mediterranean region, with multiple lines connecting significant ports like Gibraltar, Malta, and Alexandria. This situation reflects the Mediterranean's strategic importance as a crossroads between Europe, Africa, and Asia. The submarine telegraph network reaches Asia, with lines extending as far as Bombay, Singapore, and Hong Kong. It also included connections to Australia, indicating the global communication power of the British Empire and its interests in Asia and the Pacific. The addition of port cities such as Suez and Aden to this network highlights the strategic importance of the Middle East in global communications, particularly considering the Suez Canal's role in maritime trade. The network reached the African continent, connecting to places like Zanzibar and Cape of Good Hope, demonstrating the expansion of telecommunication infrastructure into Africa. This communication network played a crucial role in the colonial and commercial expansion of European powers, particularly the British Empire. It facilitated faster decision-making and information exchange, vital for trade, military operations, and governance. Establishing such an extensive telegraph network laid the groundwork for modern global communications.



**Map 3:** Telegraph Line to Reach India and Australia via Gibraltar, Malta, Suez, and Aden Prepared by "England, Indian & Australian Submarine Telegraph Company (Limited)"<sup>53</sup>

<sup>52</sup> PRO, T, 1882: 1/13173, Tr: 12336.

<sup>53</sup> PRO, Maps and Plans (MPD), 1/208, Nr: T1/7150B-1.

### 3. Financial Analysis of Submarine Telegraph Lines

The total length of the submarine cables mentioned above was 30,000 miles. In addition to these lines, there were also landlines from England to Germany, Russia, and Iran, which converged with the Indian state lines in the Persian Gulf. Furthermore, the "Indo-European Telegraph" system extended from the Gulf to "Kurrachee". Also, "the Great Northern Telegraph Company" had a telegraph system from London to Denmark, Russia, and Siberia and via "Amoor" to China and Japan. The companies had a total of 69 stations and 651 employees. In addition, six cable repair ships were operating in this context. The annual maintenance cost of these lines reaches £100,000, and the money spent for the existing lines was about £9,500,000.<sup>54</sup>

Approximately 50% discount was made from domestic telegram tariffs, which resulted in a remarkable increase in telegram traffic. He showed his income and expenses with the telegrams sent between 1890-1892.<sup>55</sup>

	Quantity	Income	Expenses
1890	311,362	35,000	35,000
1891	544,075	34,500	38,500
1892	622,690	40,250	45,400
1893 <sup>56</sup>	687,225		

**Table 3:** Income and Expenses with Telegrams Drawn Between 1890-1893<sup>57</sup>

The Telegraph Administration was under the administration of the Railways Administration. Until the 1890s, the Egyptian telegraph system was working at a loss. In 1890, telegraph revenues and expenses were calculated for the first time at £35,000.E each.<sup>58</sup> This table shows that the number of telegrams has doubled in the last two years due to the reductions in rates. In the same period, there was a 15% increase in revenues. It was true that expenses increased more than revenues; but this was because of the personnel, cables, and equipment needed to cope with the increased telegraph traffic. These expenditures were necessary capital expenditures for infrastructure and it was thought that they would not be realized at the same rate again.<sup>59</sup>

In 1881, telegraph tariffs were set based on the regional tariff. A telegram was charged according to the number of regions it passed through. Therefore, a telegram not exceeding ten words going from Alexandria to Halfa Valley passed through four regions and was charged as 20 piastres. In 1887, the first reform was carried out in the tariffs with the pressure of the regions, and a ten-word telegram for all Egypt was charged at one price of 5 piastres. This change was successfully combined with a reduction in postage, and an eight-word telegram was currently charged as low as in Europe at 2 piastres. This discount also brought about a huge increase in the number of telegrams. A loss of income was never expected, including the year 1891.<sup>60</sup> In 1891, tariffs were reduced by more than 50%. Technical training on the telegraph system had reached a level where support was no longer needed.<sup>61</sup>

A series of useful measures taken at the "Vienna Postal Congress of 189" became operational. Among these major innovations was a mechanism to ensure sent mail against all risks. Egypt benefited from this service without any increase in postal costs as a result of an agreement with insurance companies. This insurance fee also covered force majeure, which was previously exempted as "force majeure". This congress also regulated some of the special services related to the transportation of jewelry and what customs fees could be paid on the parcels on delivery.<sup>62</sup>

In 1894, approximately 770,000 domestic and foreign telegrams were sent over the Egyptian telegraph lines, this figure was 82,000 more than in 1893. Despite this increase, revenues remained stable at around E.£ 39,000. Since telegraph expenses were E.£39,000, the Telegraph Service could barely cover its costs and no income could be generated. From 1876 to 1895 the revenues of the Railways, Telegraphs, and the port of Alexandria were pledged to the concessionary debt service. Interest on concessionary loans was calculated as £1,000,000. Net

<sup>54</sup> PRO, T, 1882: 1/13173, Tr: 12336.

<sup>55</sup> PRO, FO, 1893: 407/119.

<sup>56</sup> PRO, FO, 881/6570, No: 92.

<sup>57</sup> PRO, FO, 1893: 407/119.

<sup>58</sup> PRO, FO, 1891:407/106.

<sup>59</sup> PRO, FO, 1893: 407/119.

<sup>60</sup> PRO, FO, 1891:407/106.

<sup>61</sup> PRO, FO, 1894: 881/6570.

<sup>62</sup> PRO, FO, 1893: 407/119.

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revenue from Railways, Telegraphs, and the Port of Alexandria in 1894 was calculated at £1,024,000. Thus, for the first time, these revenues were able to cover the total interest burden.<sup>63</sup> The telegram sent in 1897 was approximately 965,000 copies. This was 941,000 units in 1896, with a margin of 24,000. On the other hand, the department's gross revenues fell from £53,000 to £46,000, resulting in a £7,000 reduction in revenues. This was because quite long telegrams were sent by newspaper reporters during the "Dongola Campaign" in 1896.<sup>64</sup> Between 1881 and 1897, 220 miles of new railways were opened for use. During this period, there were great developments in the railways and telegraph traffic. The number of second-class passengers increased from 415,000 to 1,153,000, and the number of third-class passengers increased from 3,100,000 to 9,412,000. Commercial goods, on the other hand, increased from 1,275,000 tons to 2,796,000 tons. The number of telegrams increased from 688,000 to 2,498,000. A similar development took place in the postal system.<sup>65</sup>

The main telegraphic communication of Alexandria has been revealed in this table. In addition to these lines belonging to the state, the collection and concession of the "Oriental Telegraph Company" between the Alexandria and Suez lines was also a bargain. The Suez Canal Company was also running a line formerly 96 miles through the canal for its administration. With violent violence, this telegram could be severely interrupted.<sup>66</sup>

The Alexandria telegraph line stopped by Crete and provided mutual communication with foreign states via Zante. To get Crete right from this transition, the issue of agreeing with the "The Eastern Company" and the Telegraph and Post Ministry was on the agenda regarding the share of the Ottoman Telegraph Administration. As a result, the agreement offered by the company was accepted for Crete to get the rightful share.<sup>67</sup> Due to the profit ambition of the Eastern Telegraph Company, coupled with the lack of technical knowledge among the personnel of the Ottoman Telegraph Administration, the Eastern Telegraph Company had established a significant monopoly. This monopoly exerted considerable control over the telegraph lines of other companies, in violation of existing contracts. During the reign of Abdulhamid II, the Ottoman government aimed to conduct inspections on these telegraph lines to break the British monopoly and diminish the state's financial losses. Consequently, relations with German telegraph companies were strengthened to counterbalance the dominance of the Eastern Telegraph Company. However, these efforts were not entirely successful in competing with or breaking the monopoly of the Eastern Telegraph Company.<sup>68</sup>

No.	Starting Point	Intermediate Stops	Ending Point
1	Alexandria	Heraklion, Rhodes <sup>69</sup> , Izmir	Istanbul
2	Alexandria	Heraklion, Zante	Otranto
3	Alexandria	Malta, Sicily	Italy
4	Alexandria	Malta, Gibraltar, Lisbon, Porthcurno	England
5	Alexandria	Malta, "Bona" (Annaba), Marseille	France
6	Red Sea	Eastern Routes	India, China, the Straits, Australia, New Zealand

**Table 4:** Submarine Telegraph Lines Laid by the Eastern Company<sup>70</sup>

This table outlines a crucial part of the submarine telegraph network originating from Alexandria, a key communication center in the late 19<sup>th</sup> centuries. The routes demonstrate the strategic importance of Alexandria in connecting various regions. The routes from Alexandria to Istanbul, Otranto, and Italy, passing through islands like Heraklion, Rhodes, Zante, and major ports like Malta and Sicily, emphasize the Mediterranean's role as a connection point for European, Asian, and African. The route to England via Malta, Gibraltar, Lisbon, and

<sup>63</sup> PRO, FO, 1895: 407/131.

<sup>64</sup> PRO, FO, 1898: 881/7158, Nr: 116.

<sup>65</sup> PRO, FO, 1898: 881/7158, Nr: 128.

<sup>66</sup> PRO, FO, 1893: 407/119.

<sup>67</sup> BOA, Dahiliye Mektubi Kalemi (DH.MKT), 1617/23, H. 16/Ş/1306, (17 Nisan 1889).

<sup>68</sup> Diren Çakılçı, "Osmanlı Devleti'nde Denizaltı Telgraf Hatları ve Eastern Telegraph Company", *XVIII. Türk Tarih Kongresi*, Ankara, Türkiye, 1 - 05 Ekim 2018, p. 304.

<sup>69</sup> It was requested that the British engineer and his team, who wanted to explore the telegraph line to be passed from Chios, Rhodes, Cyprus, and Egypt coasts, which were built by the British between Alexandria and the Mediterranean Strait in 1859, to facilitate the exploration work they would start from Alexandria. See. BOA, HR.MKT, 302/94, H. 01/S/1276, (30 August 1859).

<sup>70</sup> J.C. McCoan, *Egypt*, Peter Fenelon Collier, New York, MDCCCXCVIII (1898), p. 252-253.

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Porthcurno is particularly notable. It underscores the importance of maintaining a communication link between the British Empire and its colonies in the Mediterranean and beyond. The route to France via Malta, Bona, and Marseille reflects the interconnectedness of European powers and their colonies, facilitating diplomatic and commercial communications. The Red Sea submarine telegraph lines extending to India, China, the Straits, Australia, and New Zealand indicate the global reach of the network. It also specifies the role and importance of submarine telegraphy in supporting colonial administration, trade, and military operations across the British Empire and other European colonies.

The Telegraph Department's gross revenue for 1900 amounted to E.£65,000, up from E.£59,000 in 1899. The expenditure in 1899 was E.£44,000. E.£4,000 of this figure was spent on rail telegraph transmission.<sup>71</sup>

Languages	1899	1900
Arabic	601,980	678,496
European Languages	520,274	611,784
Total	1,122,254	1,290,280

**Table 5:** Number of Telegrams Sent with Payment in 1899-1900<sup>72</sup>

About 168,000 telegrams were sent in 1900 than in 1899. Work in the planting areas for telegraph poles was also going well.<sup>73</sup> Tree planting for telegraph poles had greatly increased, and in 1905 they began to be cut down into small trees for single lines.<sup>74</sup> The Telegraph Department's income in 1901 was E.£ 64,000, while in 1902 it was E.£ 66,000. The cost was E.£ 52,000 in 1901 and 1902. Between 1900 and 1902, there was a steady increase in the number of telegrams sent in Arabic.<sup>75</sup>

Daily weather reports were published in Cairo, as in 1900, and telegraphic communication was exchanged daily with different stations in Egypt and on the Mediterranean coast. These bulletins were sent to Port Said and Alexandria and this information was forwarded to the shipping companies.<sup>76</sup> A first-class observatory was built in the Abbasid district of Cairo, and this observatory operated regularly. Regular meteorological observations were made from 8 stations located between Alexandria and "Omdurman" and these observations were sent to the observatory in Cairo by telegraph at 8:00 am every day. In addition, these reports were printed and published monthly. Likewise, reports of this kind between Alexandria, Malta, "Brindisi", "Trieste" and Athens began to be transmitted to each other by telegraph at 8:00 in the morning. These telegrams were sent to give general information about Alexandria and the port of Port Said.<sup>77</sup> Observations of all meteorological stations were printed and published monthly. The 1899 observations and the values of the previous 30 years were printed and available for publication.<sup>78</sup> It was expected that meteorological observatories would be established at different points of the White and Blue Nile before long. However, instead of the various local times previously used, the time of the 30° meridian east of "Greenwich" was accepted as the country time.<sup>79</sup>

## CONCLUSION

The developments in the world during the 19<sup>th</sup> century brought about important changes and movements in terms of administrative and socio-economic. Especially with the effect of the Industrial Revolution, the increase in the raw material needs of the industrialized western states and the search for new markets for the products they produced had dramatically increased the competition between them. With the opening of the Suez Canal in 1869, the eastern Mediterranean, which lost relative importance due to geographical discoveries, gained importance again. The use of steam, which was the symbol of the industrial revolution, on ships increased the speed and

<sup>71</sup> PRO, FO, 1901: 633/70.

<sup>72</sup> PRO, FO, 1901: 633/70.

<sup>73</sup> PRO, FO, 1901: 633/70.

<sup>74</sup> PRO, FO, 1902: 407/159.

<sup>75</sup> PRO, FO, 1903: 881/8234.

<sup>76</sup> PRO, FO, 1902: 407/159.

<sup>77</sup> PRO, FO, 1902: 407/157.

<sup>78</sup> PRO, FO, 1900: 881/7737.

<sup>79</sup> PRO, FO, 1901: 633/70.

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carrying capacity of the ships led to the need for the development of communication networks between ports and inland areas, with the widespread use of railway transportation.

The 19<sup>th</sup> century emerged as a period in which the foundations of the modern world were laid with the influence of the industrial revolution and remarkable developments were experienced in positive sciences. With the invention and widespread use of the telegraph, there had been a tremendous change in the quality and quantity of communication in the world. In previous periods, it could take days, months, or even years to exchange from anywhere in the world. As a result of experimental studies in the field of telegraphy, submarine telegraph lines began to be laid in parallel with the previously established land-based lines near the shore. Thus, it became possible to communicate over the other line in case of any disruption in communication. Companies such as the state-sponsored "Eastern Telegraph Company", the "Eastern Extension Telegraph Company", the "East and South Africa Telegraph Company" and the "Submarine Telegraph Company" made enormous efforts to support Britain imperial aims and naturally increase their profit margins.

The invention and spread of the telegraph had significant socio-cultural, economic, military, and technological implications, in addition to transforming the field of communication. Events like the Crimean War and the Sepoy Rebellion in India compelled England to prioritize communication. In the second half of the 19<sup>th</sup> century, the British Empire greatly valued this new technology, investing heavily to establish a fast and continuous communication infrastructure with its colonies and to manage military operations effectively during wartime. In this context, England established a comprehensive telegraph network between India and the Far East, driven by both political and commercial interests, laying the foundation for modern international communication. As a result, important European cities such as London, Paris, Istanbul, Marseille, and Vienna were connected. The network extended from Gibraltar to key Mediterranean port cities and islands, including Malta, Cyprus, Alexandria, and Beirut, and from the Suez through the Red Sea basin to Aden and Yemen. This extensive submarine telegraph network ensured continuous communication between Europe and the Far East, reaching as far as India, China, Australia, and New Zealand.

Submarine telegraph lines were quite disadvantageous in terms of both production cost and construction compared to land lines. In the early days of use of these submarine telegraph lines, the information transmission efficiency was also low. Despite this, the efficiency of submarine telegraph lines increased with the British Parliament's support of investors and scientists. The Ottoman Empire, located between England and its Indian colony, quickly adopted this new technology and contributed to the development of the global telegraph network with its investments in this field. The development of these telegraph networks was also a result of the European states' need to make rapid decisions politically, economically and militarily. As a result of technological advances and competition in countries such as America, England, and France, communication time could be realized within 30 minutes, for example between England and Egypt, within 2 hours with India, and within 5 hours with Australia. Thus, a continuous communication network could be established between England and the Americas, Europe, and the Eastern Mediterranean, and the Far East and Australia. With the completed lines, Britain's colonial connection with its important colony called the "British Raj" in the Far East was strengthened.

Consequently, it can be said that the developments in positive sciences and communication technology after the Industrial Revolution significantly contributed to the military, economic, political, and logistical objectives of states. Countries that developed these new technologies, such as England, played a crucial role in accelerating globalization and international competition. They achieved this by enabling connections to even the most remote corners of the world, as well as to its most strategic points.

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