

## First Mining School in the Ottoman Empire and Mining Engineer Training

*Osmanlı Devleti'nde İlk Maden Mektebi ve Maden Mühendisi Eğitimi*

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**Abstract:** *The mines in the Ottoman Empire had met both the needs of public and military institutions of the empire. Because of insufficient management by the nineteenth century the Ottoman mines had substandard productivity. Due to the absence of mining schools in the Ottoman Empire and lack of a skilled labor force to rehabilitate the mines, the Ottoman Empire made various attempts to sustain mining efficiency. In order to answer the increasing need, the Ottoman Empire first put mining regulations into force in 1861 then assigned Prussian Mining Engineer Ernst Weiss to establish the first Ottoman mining school, which was opened in Istanbul in 1874. Relying on Ottoman documents, this paper examines the establishment of first Ottoman mining school and its curriculum and presents that despite its short period of activity school was able to supply the engineers the Ottoman mines needed.*

**Keywords:** *Ottoman Empire, Mining School, Engineer, Mining, Training*

**Öz:** *Osmanlı Devleti'nde madenler hem halkın hem de askeri kurumların ihtiyaçlarını karşılamıştır. XIX. yüzyıla gelindiğinde Osmanlı madenleri çağın gereklerine göre işletilemediklerinden verimliliklerini kaybetmişlerdir. Osmanlı Devleti'nde bir maden mektebinin olmayışı ve bununla birlikte madenleri ıslah edebilme kabiliyetine sahip kalifiye elemanların bulunmayışı, devleti farklı arayışlara yöneltmiştir. Madenleri verimli hale getirmek için Osmanlı Devleti ilk önce 1861 yılında yürürlüğe giren maden nizamnamesini çıkardı ardından da Prusyalı Maden Mühendisi Ernst Weiss'i ilk Osmanlı maden mektebini kurmakla görevlendirdi. Osmanlı arşivi belgelerinden yararlanarak hazırlanan bu makale 1874 yılında İstanbul'da açılan maden mektebinin kuruluşunu ve verilen dersleri inceleyerek, bu okulun hizmette kaldığı kısa dönem içinde Osmanlı Devleti'nin ihtiyacı olan mühendisleri yetiştirdiğini tespit etmektedir.*

**Anahtar Kelimeler:** *Osmanlı Devleti, Maden Mektebi, Mühendis, Maden, Eğitim*

### Introduction

Since ancient times, human beings have explored mines and utilized them in maintaining their lives. During early periods, casual ornaments and hunting instruments were produced using soft and easily moldable minerals which did not need extreme effort and energy to process. As time passed, the relationships between human being and existing metals on the ground increased. Both increase in the number of the metals and in the number of processes for utilizing them reflected positively on the process of cultural development.

In the mediaeval age, when science and technology showed progress, the necessity for mines increased due to the diversity in the area of utilization. During this age, important steps were taken to extract the metals from underground when the mineral stocks on the surface were used up. New techniques were used to extract mineral ores. Muscle force was utilized in extracting ores in adits which opened in vertical and horizontal forms. With the increasing depth of the opened mine pits, different techniques and mechanical equipment were used in the



extraction of ores as well as the use of water power. This technological development was effective not only in the extraction of ores but also in dissociating and processing them.<sup>1</sup>

Thanks to technological developments in Europe, attention to the mining of such metals as iron, copper, and silver significantly increased. With the increase in the area of utilization, transfers of technology also increased. As seen in European states, mining was an important field of occupation. Turks, who had spread over a large territory formed a portable society due to their general nomadic characteristics, were experienced in extracting, processing, and trading various surface occurring metals, especially, iron.<sup>2</sup> The establishment of Turkish control of Anatolia led to increased relationships with European states. Because the lands of the Ottoman Empire held rich mineral deposits that could provide raw-materials for various industries, trade relations with Europe improved. In response, the empire began incorporating regulations towards mining, the re-organization and development of mining specifications, and legal codes which included socio-economic status definitions for miners.

Since the 18<sup>th</sup> century, however, a great extent of disintegration and decline was seen in Ottoman mining enterprises. This disintegration and decline resulted from the problems encountered in supplying fuels, the increase in salaries, and insufficiency of legislations related to mining as well as economic reasons.<sup>3</sup> One of the factors which accelerate the collapse of mining was the mining regulations, which were unable to keep up with the conditions of the age.<sup>4</sup> Thus, the Ottoman Empire made serious movements in mining policy after the second half of 19<sup>th</sup> century.

### **Ottoman Mining Policy in the 19<sup>th</sup> Century**

The innovation movements the Ottoman Empire began in the second half of the 18<sup>th</sup> century intensified in the 19<sup>th</sup> century. In the Tanzimat or Reform Era, innovations and developments were visible in every field of state. The education reform carried out by Sultan Mahmud II (r.1808-1839), was also the policy of his successors. During that age, vocational schools were opened in numerous cities of the state, especially in İstanbul. As noted in the title, this study focuses on the first Mining School of Ottoman Empire which was one of those vocational schools. This study examines the reasons for establishing the school, the establishment process, educational activities, and its closure under the light of archive documents.

During the 19<sup>th</sup> century, the Ottoman Empire was an important mine owner as a result of the lands it possessed. The mines were run directly by the state or by private entrepreneurs depending on the articles of agreement between the state and the private entrepreneurs. Since mining contributed less than one percent to the Ottoman Gross National Product, the scarcity of income obtained from them was obvious.<sup>5</sup> However, the contribution of the mines to the central treasury was rather more significant, although the technological developments seen in this field were insufficient between the 15<sup>th</sup> and 18<sup>th</sup> centuries.<sup>6</sup> The Ottoman Empire failed to apply innovations presented in extracting and processing mines parallel to the scientific and

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<sup>1</sup> Jean Gimpel, *Ortaçağ'da Endüstri Devrimi*. (Ankara: Tübitak Publications, 1996), 64.

<sup>2</sup> Bahaeddin Ögel, *Türk Kültürünün Gelişme Çağları I*. (İstanbul: MEB Publications, 1992), 91.

<sup>3</sup> T.C Genelkurmay Başkanlığı, *Türk Silahlı Kuvvetleri Tarihi Osmanlı Devri*. (Ankara: Genelkurmay Publishing, 1995), 179.

<sup>4</sup> Genelkurmay, *Osmanlı Devri*, 180.

<sup>5</sup> Donald Quataert, "19. yy'da Osmanlı Devleti'nde Madencilik", *Tanzimattan Cumhuriyet'e Türkiye Ansiklopedisi*, 4 (1985): 914.

<sup>6</sup> Neşet Çağatay, "Osmanlı İmparatorluğu'nda Maden İşletme Hukuku", *Ankara Üniversitesi Dil Tarih Coğrafya Fakültesi Dergisi* 2:1 (1943): 118-119.



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technological developments coming out of Europe, thus failing in obtaining the required productivity in the mines. As well as the extraction and processing techniques, it slipped back in preparing the necessary legal infrastructure at the point of awarding contracts.

As a result of commercial treaties with foreign states, metals being processed by foreign states entered into Ottoman markets. In the international exhibitions, moreover, the objects and equipment made of the metals processed by foreign countries also increased. The Ottoman Empire participated in the Paris exhibitions hosted by France in 1851 and 1855 and closely witnessed the innovations and developments at this stage. This exposure to Western processes and products forced the realization of the real value of mining, thus, a new mining regulation was prepared by Ottoman bureaucrats on July 17, 1861.<sup>7</sup> This first wave of innovation proved insufficient and so new and more comprehensive regulations were put into effect in 1869.

These reforms, designed in order to make the mines it possessed more efficient, demonstrated that there was a serious shortage of qualified personnel; it was obvious that the state needed mining engineers who could be utilized in many fields within mining industry. In the first stage, the state chose to employ experts from Europe in order to meet the deficit of mining engineers.<sup>8</sup> Although a considerable deficit seemed to be filled in the short term, this solution caused more harm than good to the state due to high salaries and expenses of employing foreign engineers. This presented economic, political and diplomatic problems for the state. The complete dependency on Europe led to a severe drainage of capital out of the domestic economy and, through the influence of foreign experts, a process of rapid colonization of the state. For that reason, Ottoman statesmen began making medium and long-term plans in order to resolve it. In the second stage Turkish personnel were sent to Europe in order to be educated in advanced engineering knowledge instead of hiring foreign experts from Europe. For that purpose, six students from the fourth grade at the Military School were sent to England and France (three students per country) on February 15, 1851 for training on mining to then be assigned in Toplane when they returned.<sup>9</sup>

Sending students to Europe to be educated was one of the basic policies of Sultan Mahmud II upon which his successors built by continuing to send students to Europe. However, fulfillment of this plan required a long process. Training qualified mining engineers was the most significant problem for the Ottoman Empire because the number of qualified mining engineers was insufficient to apply the provisions of Mining Regulation that were put into practice in 1861.<sup>10</sup> To fulfill those requirements, a radical decision had to be made related to the training of mining engineers. In the meantime, as noted above, the regulations relating to the mines which had been accepted in 1861 were modified and broadened and put into practice in 1869.<sup>11</sup> Since the 1869 Mining Regulation especially allowed foreign enterprises to enter into mining operations in the Ottoman Empire, duties and authorities of mining engineers increased more.

<sup>7</sup> Genelkurmay, *Osmanlı Devri*, 181.

<sup>8</sup> The first foreign mining engineer to be hired from Europe was Gustave de Pauliny from Austria. See, Özkan Keskin, "Osmanlı Devleti'nde Yabancı Maden Mühendislerinin İstihdamı ve Osmanlı Madencilğine Hizmetleri", *İstanbul Üniversitesi Atatürk İlkeleri ve İnkılap Tarihi Enstitüsü Yakın Dönem Türkiye Araştırmaları Dergisi* 11 (2007): 81-82.

<sup>9</sup> Özkan Keskin, *Orman ve Ma'adin Nezareti'nin Kuruluşu ve Faaliyetleri*, (Unpublished PHD Thesis, İstanbul University, 2005), 34.

<sup>10</sup> Özkan Keskin, "Osmanlı Devleti'nde Maden Hukukunun Tekâmülü", *OTAM* 29 (2011): 129.

<sup>11</sup> The mining regulation of Ottoman Empire dated 1869 was prepared based on the French mining law of 1810. See, Vedat Eldem, *Osmanlı İmparatorluğu'nun İktisadi Şartları Hakkında Bir Tetkik*. (Ankara: TTK, 1970): 91-92.



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## **B-The Mining Regulation dated 1869 and Duties and Responsibilities of Mining Engineers**

The new form of Mining Regulation dated 1861 was revised and enlarged by the Ottoman Empire and put into practice on November 18, 1868. The 1869 Mining Regulation consisted of 6 chapters and 98 articles.<sup>12</sup> In this regulation, there were articles such as initiating the tender for the privilege of mining within the Ottoman lands for 99 years (article 7)<sup>13</sup>, participation of both Ottoman citizens and foreigners in those tenders (article 20), the opportunity for cooperative participation in such enterprises as well as individual participation (article 21), and conditions required for getting work permits for the tendered mines (article 22).<sup>14</sup> The fourteen articles relating to the regulations concerning mining engineers are scattered within the various sections of larger document.<sup>15</sup>

Before the Mining School was opened, the tasks and responsibilities of mining engineers were given in detail in 1869 Mining Regulation. Primarily, the engineers were assigned authority for control and inspection of all types of documents related to the mines.<sup>16</sup> The engineers also had the authority to inspect all the details of books, pictures, maps, and manufacturing related to the mines. The account books kept by the grant holders of the related mines were examined by the engineers who were appointed by the state and were under the management of mining administration.<sup>17</sup> Those inspections were under the security of the state from the point of reliability.<sup>18</sup>

The mining engineers were also responsible for the protection of the fields where the mines were located and for assuring the rights of people working in the mines as labourers.<sup>19</sup> The engineers were also responsible for telling the tax men about the defects in the mines which needed resolution and the necessary reforms required and also to inform the administration of the mines relating to any such situations.<sup>20</sup> In case of abandoning and suspending the mines or when there was a violation related to the production of metal wares, the engineers would prepare a report after site inspections related to the topic and submit them to the administration of the mines.<sup>21</sup>

Relating to accidents that might occur in the mines, the mining engineers were obliged to make first responses and recommend necessary precautions. They had all the responsibilities related to the processes they executed and were given clear power by the Ottoman Empire

<sup>12</sup> “Maadin Nizamnamesi”, *Düstûr*, 2 (1289): 318-337. In this study, only related sections of the mining regulation dated 1869 were given as references. The related sections in the mining regulation are the articles concerning mining engineers and the remaining articles were ignored. Moreover, in the footnotes which this regulation was shown reference; only the related regulation and article number will be given.

<sup>13</sup> Ahmet Kartalkanat, “Osmanlılarda Madencilikle İlgili Yasal Düzenlemeler ve Madencilik Politikası”, *Jeoloji Mühendisliği Dergisi* 36 (1990): 67.

<sup>14</sup> The four provisions mentioned in the 22nd article of the related regulation were as follows:

- 1- The production of the invented material should be useful,
- 2- The invented material should prevent other factories or mines in the neighbourhood from functioning,
- 3- An attempt should be made to produce and export the mines,
- 4- The people who apply for the mines should be competent and capable. See, The Mining Regulation dated 1869, article 22.

<sup>15</sup> The articles of Mining Regulation dated 1869 related to the mining engineers: 29, 55, 56, 61, 62, 63, 64, 65, 68, 81, 90, 91, 94 and 95.

<sup>16</sup> The Mining Regulation dated 1869, article 29 and 95.

<sup>17</sup> The Mining Regulation dated 1869, article 55.

<sup>18</sup> The Mining Regulation dated 1869, article 56.

<sup>19</sup> The Mining Regulation dated 1869, article 61.

<sup>20</sup> The Mining Regulation dated 1869, article 62.

<sup>21</sup> The Mining Regulation dated 1869, article 63 and 68.



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from the point of taking necessary help from local administrations.<sup>22</sup> In case of mine accidents, the miners were obliged to immediately inform the engineers, and the engineers had to inform the administration of the mine. If the engineers failed to report the accidents, they were required to pay a fine of 500-1.000 Ottoman kuruş.<sup>23</sup> Similarly, the mining engineers were in charge of reviewing any liabilities recorded in the applications for mining licenses.<sup>24</sup> However, the grant holder had to inform the local administration if any modifications in a license were desired. The local administration had to transmit the related requests to the mining engineer in charge. Necessary modifications would be put into practice after the administration of the mine had accepted the report written by the mining engineer after the inspections.<sup>25</sup>

In case of the construction of a refinery or a factory, the provincial administration had to give the documents of those enterprises to be established to the mining engineers. The engineer completed his investigation and prepared a report after examining the current documents. In this report, numerous factors such as the ground of the related enterprise for construction, its risks and benefits, and the accuracy of the documents as written had to be reported. The mining engineer then sent the reports and documents to the Council of Imperial Mines. The final decision about whether to build such enterprises were then finalized according to the result coming from this council.<sup>26</sup>

### C- The Establishment Process of Ottoman Mining School

As noted, the services which were provided by the mining engineers had been given by foreign experts employed in the Ottoman Empire before the Mining School was established. Those engineers were insufficient for applying the 1869 Mining Regulation. For that reason, the Ottoman Empire embarked on a different quest on the employment of mining engineers. Rather than employing foreign engineers, who were considered in the first stage as problematic from the points of permanence and in terms of economy, a more reasonable solution was needed. Within this context, it was thought to open a school and train the mining engineers whom the Ottoman Empire needed. Ottoman bureaucrats agreed on the establishment of a school to sort out the problem of engineers and dedicating more time and money as needed for the education process. It was decided to establish a school related to the second-class mining engineers who were needed in the provinces and could be employed for simpler tasks. For that purpose, the Prussian mining engineer Ernst Weiss<sup>27</sup>, who worked for the Directorate of Mining, was consulted. Weiss submitted a report consisting of seven articles relating to a Mining School on September 27, 1873.<sup>28</sup> The first article of this report specified the qualifications and tasks of the students to be accepted to the school. Accordingly, it was stated that the students who graduated from Rüştiye (Ottoman Junior High Schools) and the students not from those schools be accepted so long as they had studied a little Arabic and Persian, accounting and geography courses, could express themselves in written forms, and were between the ages of 18 and 25.<sup>29</sup> In the section of the related article mentioning the tasks of the students to be appointed as second-class engineers it was stated that they were obliged to

<sup>22</sup> The Mining Regulation dated 1869, article 64.

<sup>23</sup> When it is considered that the monthly income of a civil servant was about 500 kuruş during the second half of the nineteenth century the fine equals to two month's salary shows the deterrence of the fine. The Mining Regulation dated 1869, article 65. It should also be noted that salaries were not regularly paid in Ottoman Empire.

<sup>24</sup> The Mining Regulation dated 1869, article 81.

<sup>25</sup> The Mining Regulation dated 1869, article 94.

<sup>26</sup> The Mining Regulation dated 1869, article 90 and 91.

<sup>27</sup> The task of Ernst Weiss in Ottoman began with the exploration and rehabilitation of the mines and ended with his death in the line of duty in İstanbul after 33 years in July 1866.

<sup>28</sup> Keskin, "Osmanlı Madenciligi", 85.

<sup>29</sup> Osman Ergin, *Türkiye Maarif Tarihi 2*. (İstanbul: Osmanbey Publication, 1940): 492.



inspect the activities of the tax men who had to act in accordance with the mining regulations and their applications written in the specifications and write reports related to it.<sup>30</sup> Indeed, the main point emphasized in the written report was to train engineers to a level appropriate for the application of the provisions of the 1869 Mining Regulations.

The period of training for mining engineers had been planned as two years. During that period, the following courses would be taught two hours per course per week: Geometry, the Numbers, the Roots and Powers of the Numbers, Algebra, Logarithms, the Science of Physical Laws, Measuring the Ground, the Rigid Bodies, Trigonometry, Topography, and the Science of Mines were taught during the first year; Topography, the Brief Science of the Layers of the Earth, the Brief Science of Chemistry, and Brief Science of Mines were taught during the second year.<sup>31</sup> The lecturers for those courses and their salaries were also determined. There were also courses, Geometry, Topography and Chemistry, for which the salary had been determined but the teachers were not definite. The lecturers would be separately hired for those courses and a monthly salary of 400 kuruş would be paid.<sup>32</sup> In addition to this, algebra, logarithms, and the numbers from the first year and the Brief Layers of the Earth in the second year would be taught by Captain Yusuf Bey free of charge.<sup>33</sup> The course of the Brief Science of Mines, which was designated to be taught in both first and second year, would be taught by the Prussian mining engineer Ernst Weiss. However, Weiss asked for a reasonable delay in taking up that duty because he did not know Turkish well enough to give lessons.<sup>34</sup>

Courses in the Regulations of Mining and Literary Composition, which were not in Weiss's report but were included in the curriculum afterwards, would be taught by the officials of the Mining Office. Having these courses taught by the Ottoman officials who were on duty was completely the result of economic conditions. Besides, the whole annual budget of 15.000 kuruş<sup>35</sup> which was allocated for the Mining School, had been separated for the salary of new lecturers to be employed.<sup>36</sup> Moreover, this subsidy allocated for the Mining School would be obtained from the income which the Ottoman Empire received from mines.<sup>37</sup>

Preliminary research had been done related to the materials to be used at school as well as the curriculum and the lecturers to teach them. In order to teach the courses of the first and second year effectively, models of mines and machines, samples of mines, the equipment to measure land, and chemical items were needed. In order to supply them, 20.000 kuruş in hundred pieces were also needed.<sup>38</sup>

<sup>30</sup> BOA (Prime Ministry Ottoman Archives) *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 2.

<sup>31</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 2; Ergin, *Maarif Tarihi*, 492.

<sup>32</sup> The lecturers to teach those courses would come the Mining School twice a week. See, BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, January 26, 1874 (1290.Z.7.), lef 1.

<sup>33</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, January 26, 1874 (1290.Z.7.), lef 1; BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 2. As a result of the executed research, no information was found on Yusuf Bey the captain in the Prime Ministry, Ottoman archive documents and second hand sources

<sup>34</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 3.

<sup>35</sup> The Kuruş is an Ottoman currency. It is a payment instrument which is valuable according to the amount of silver in it. The kuruş which was in circulation from the first quarter of the 19<sup>th</sup> century until the collapse of the state was regarded as a small unit of currency used in daily shopping.

<sup>36</sup> The total salary to be paid to the teachers to be newly employed in the Mining School would be 1.250 kuruş. The annual value of the salaries in total would be 15.000 kuruş. See, BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, January 26, 1874 (1290.Z.7.), lef 1.

<sup>37</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 2.

<sup>38</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 3.



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As well as the educational activities of the school, there were regulations in the prepared report relating to the employment of the graduates. The aforesaid school would be under the management of a director and regulations regarding educational-administration would be prepared before long and would be put into practice. Moreover, the second class mining engineers who graduated after succeeding in the exams after two years would be appointed where they were needed.<sup>39</sup> In those assignments, salary based central and rural distribution was obvious. Accordingly, a mining engineer would get monthly 750 kuruş if he started work in İstanbul while this salary was 1.500 kuruş in the rural areas.<sup>40</sup> Thus, the Ottoman Empire had planned to encourage working in mining pits in rural areas and turn it into a more attractive option through promising higher salaries. Hereby, the Mining Administration completed the bureaucratic process through finishing the activities related to the establishment of the school.

The documents relating to the report written by Weiss on the establishment of the Mining School were sent to the Sublime Porte with the writ of the Directory of Forests and Mines in the Ministry of Finance.<sup>41</sup> In order to enter into negotiations on the documents coming from the Ministry, they were sent to Şurâ-yı Devlet (the Ottoman Advisory Council) on December 19, 1873.<sup>42</sup> The Şurâ-yı Devlet sent them to the Directory of Prosperity on December 27, 1873 and they were thoroughly examined.<sup>43</sup> During the interviews carried out there, it was concluded that the basic education levels of the students to be accepted to the school were not sufficient with reference to the first article of the report of Mining School because it was known that the graduates of Mekteb-i Rüştîye (Ottoman Junior High Schools) lacked the equipment to enable them adequately to learn the mining lessons. The question related to this was directed to the Administration of Mining by the Directory of Prosperity in order to solicit advice from the mining engineers.<sup>44</sup> In the given answer, it was stated that it was unnecessary to know the science of mining for the courses of the first year and there was no objection to every student who knew accounting and geometry to attend the school.<sup>45</sup> If deemed necessary, it was also explained that consolidation could be provided related to the course of Geometry. As written in the second article of the report, the annual budget of the mining school was discussed at the meeting. The cost journal which included expense items in the budget was requested from the Administration of Mines. The Şurâ-yı Devlet Nafia Dairesi (the Council of State, the Directory of Prosperity) executed its final discussion on the third article of the report. In the related report, it was written that the mining courses would be taught by Ernst Weiss. During the meetings, it was stated that instruction would encounter problems in case the engineer teaching the courses went to the countryside as a part of his duty and there would be deficiencies for the students in gaining experience through performing applications in the field. The Administration of Mines was asked for its opinion. The administration made an explanation after receiving the opinion of the mining engineers. Accordingly, it was clearly stated that the two engineers who were appointed to the school by the Administration of Mines would not be obliged to go for field work after the establishment of the School of Mining. It was guaranteed that one of the engineers would stay and provide the maintenance of the

<sup>39</sup> The places where the mining engineers would be employed were the provinces of Hüdavendigâr, Aydın, Trabzon, Yanya Selanik and Cezâir-i Bahr-i Sefid where the mines increased. See, BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 3.

<sup>40</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 2.

<sup>41</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 11, 1873 (1290.L.20.), lef 5.

<sup>42</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 26, 1873 (1290.ZA.6.), lef 7.

<sup>43</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, December 27, 1873 (1290.ZA.7.), lef 4.

<sup>44</sup> The Directory of Forests and Mines made an effort to open the school stating that the status of the applicants of the Mining School could be determined during the exams. See, Nadir Avşaroğlu, *Türkiye'de Maden Mühendisliği Eğitimi Tarihçesi*, (Unpublished Report, TMMOB the Library of Mining Engineers Chamber, 2000), 21.

<sup>45</sup> Ergin, *Maarif Tarihi*, 493.



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lessons in case the other had to go for field work. Among the engineers who would be graduated after taking their diplomas, moreover, those who were regarded necessary would gain experience through performing field applications in company with the mining engineer in the countryside due to his duties.

The answers of the Administration of Mines to the questions which were directed to it and the resolutions suggested by them were approved by the Şurâ-yı Devlet Nafia Dairesi. As a result of the discussions carried out for approximately one month, the Administration submitted its positive opinion to the Şurâ-yı Devlet Nafia Dairesi related to the establishment of the Mining School.<sup>46</sup> Şurâ-yı Devlet (the State Council) accepted the decision of the Directory of Prosperity as was and the related documents were sent to the Sublime Porte on January 26, 1874. The application form related to the establishment of the Mining School was submitted to the Sultan by the grand viziership. Thus, the first Mining School of the Ottoman Empire was established with the decree dated February 3, 1874.<sup>47</sup>

When the Mining School was opened by the Administration of Mines, the education activities also started. First of all, the supplementary resources and materials were supplied for the courses at the school. Especially, the models of mines and the documents related to mining were brought from Germany by Ernst Weiss. The chemicals and tools related to them to be used in the courses of chemistry were ordered by the lecturer of the course, Kolağası Said Efendi.<sup>48</sup>

While the Administration of Mines was in the process of acquiring equipment and teachers, the advertisements were given to admit students. Advertisements were given through national media in order to train second-class mining engineers and to send enough students to Europe for higher education if needed. As stated in the report written by Weiss, the specifications expected from the students to be admitted were given in the advertisements. Accordingly; it was stated that the graduates of Rüştiye or applicants from outside should have Arabic, Persian, mathematics, geography at basic levels and literary composition sufficient to express themselves and who were between the ages of 18 and 25 could apply for the entrance examination. The applications would be made to the Directory of Forests and Mines within the Ministry of Finance by April 13, 1874 beginning with the publication of the advertisement. The advertisement was repeated for the admission of students since there were not enough student applications between the determined dates. Upon the scarcity of applicants for starting the education in the school, the final application date was extended initially to May 7 and then to the beginning of June.<sup>49</sup>

The students who finally attained a quorum and succeed in the entrance exam officially started their education in the Mining School which was opened in the building of the Ministry of Finance. The courses of science were taught by the Ernst Weiss. For that reason, Weiss received 500 kuruş monthly in addition to his salary.<sup>50</sup> Since the Prussian engineer had too

<sup>46</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, January 19, 1874 (1290.ZA.30.), leaf 6.

<sup>47</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 678/47276, February 3, 1874 (1290.Z.15.), leaf 8; BOA, *Bab-ı Asafî Mektubi Kalemi Mühimme Evrakı*, (BOA.A.MKT.MHM.), 473/78, February 8, 1874 (1290.Z.20.); Ergin, *Maarif Tarihi*, 493; Keskin, "Osmanlı Madenciliği", 85-87.

<sup>48</sup> Keskin, *Orman ve Ma'âdin Nezareti*, 37.

<sup>49</sup> Mehmet Ali Yıldırım, *Tanzimat Döneminde Meslek Okulları*, (Unpublished PHD Thesis, Ankara University, 2010), 287.

<sup>50</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 684/47775, May 13, 1874 (1291.RA.26.).



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many administrative tasks, an assistant was assigned for him.<sup>51</sup> Again, it had been determined in the report of school that some courses could be taught by military personnel. For that reason, Tevfik Bey, Hüsni Bey, and Ahmet Şükrü Efendi, who had qualifications to be teachers, were experts in their fields and were officers in the Ottoman army, taught the courses in physics, geometry, and mathematics at the Mining School until the beginning of the Ottoman-Russian war in 1877-1878.<sup>52</sup>

The educational activities in the first Mining School of the Ottoman Empire were going on at the desired levels. Furthermore, the enormous success which the students achieved in the examinations held at the beginning of the semester in 1876 pleased the administrators very much. Weiss, who had a huge share in this success, was honoured by the state with a fourth grade Ottoman Medal.<sup>53</sup> Moreover, a French mining engineer, Deroz<sup>54</sup>, who was the minister of the Mining School, was honoured with a third grade Ottoman Medal.<sup>55</sup>

Those who successfully graduated from the Mining School were employed as second-class mining engineers in the capital and the provinces. Among those graduates, Raşid Efendi, who started work in the mines of Gümüşhacıköy which had been administrated on consignment, was one of them. In addition to Raşid Efendi; Mehmed, Ohannes, Avnik, and Mihran Efendis also started to work in the provinces of Kastamonu, Sivas, Konya, and Mamûretülaziz.<sup>56</sup> Those people were obliged to perform the tasks and responsibilities of mining engineers determined in the Mining Regulation of 1869.<sup>57</sup>

The Mining School which was established to train second-class mining engineers had been formed at low cost and without great expectations and upon the requirements considering the economic status of the country. Necessary teachers and equipment were supplied in a short time and the education activities started. However, the political chaos which the country experienced deeply affected the state and society. The educational institutions were also affected by the situation which the country encountered. Since the soldiers, who were originally employed as teachers, had to join the Ottoman-Russian War in 1877-1878, their courses in the Mining School were interrupted. Although new teachers were appointed to their positions, continuity and quality were impaired. Under these circumstances, the Ottoman Empire decided to combine the forestry and mining education together. Thus, the Mining



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<sup>51</sup> Olimpiyos Efendi who graduated from the Military School and studied mining in Paris was assigned as the assistant teacher for the course of the Science of Mines which was taught by Ernst Weiss. See, Yıldırım, *Meslek Okulları*, 288; BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 699/48892, March 25, 1875 (1292.S.17.).

<sup>52</sup> Keskin, *Orman ve Ma'âdin Nezaretı*, 37.

<sup>53</sup> BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 716/50036, January 6, 1876 (1292.ZA.9.). In return for his services, the fourth level Mecidiye Medal which Ernst Weiss possessed was promoted to the thierd level. See, BOA, *İrade Dahiliye Evrakı*, (BOA. İ.DH.), 922/73144, June 29, 1884 (1301.N.5.).

<sup>54</sup> Deroz who was hired from France in 1869 as a result of correspondences between the Bağdat Governor Mithat Pasha and Paris Embassy took Office in the determination and improvement of the mines especially in Bağdat. The mining engineer, Deroz would deal with the related business in İstanbul as well as his tasks there. His original contract would be signed when he returned to İstanbul and the contract could be revalidated although the initial contract was valid for two years in case the parties are satisfied with each other. Hence the contract of Deroz who served Ottoman Empire for long years wasn't renewed in 1881 and he was unseated. Keskin, "Osmanlı Madenciligi", 88.

<sup>55</sup> BOA, *İrade Hariciye Evrakı*, (BOA.İ.HR.), 273/16515, March 15, 1877 (1294.S.29.).

<sup>56</sup> Keskin, *Orman ve Ma'âdin Nezaretı*, 38.

<sup>57</sup> Among the tasks and responsibilities of the mining engineers; control of production and exportations in the mines runned through tenders, preparing the maps of the mines and inspection of specifications of tenders may be listed.

School gave its place to the School of Forests and Mines in 1880 after only six years of independent operation.<sup>58</sup>

### **Conclusion**

The Ottoman Empire which owned various mines in a wide area under its rule started a series of activities in order to obtain maximum yield from those mines and increase the contribution of those mines to the general treasury during the second half of the 19<sup>th</sup> century. One of those activities was the establishment of a school to sort out the deficiency of qualified staff. Through the qualified mining engineers graduated from the Mining School, the highest productivity would be obtained from the current mine resources in the country. Because, the project to increase the productivity of Ottoman mines was among the objectives of establishing the school, the state had to give up employing foreign mining engineers since it was costly and strained internal resources. As a result of training the available potential in the country, both the need for qualified personnel would be answered and current incomes would be increased with contracting more mines out through those personnel. Hence, the first Mining School of the Ottoman Empire was established in order to overcome the economic bottleneck the country encountered, benefit the current natural resources more effectively, and obtain the highest income from them.

The Mining School was an educational institution which was established as a result of long-term experiences and background information. Since the school had been established with plans of education for many years, its regulations were prepared within a short period and were put into effect. Contrary to the conceptions or plans, the Mining School was able to carry on operations for only six years. The political and economic crisis which the state had to encounter also affected the educational institutes of the state. Although the Mining School continued educational activities through contemporary provisions, it had to associate with the School of Forests in the end. The Mining School which was established to meet the needs and expectations of the state failed in executing enough performance from the point of training second-class mining engineers. However, the statement that the Mining School which the state established without preparing necessary infrastructure was successful since it graduated a considerable amount of students within its short educational life and it was the first school to be established on mining.

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<sup>58</sup> Ergin, *Maarif Tarihi*, 493.



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