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## Review Article

# Examination of Mehmet Refik Fenmen's Life in that Scientists and Educationist

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### Abstract

From the 19th century, especially while living the positive effects of the European Industrial Revolution, also The Ottoman Empire who is considered by Western in Asiatic mode of production is in the quest. The Ottoman Empire realized that they need well-trained staff who high equipped in respect of technical and knowledge and educational institutions to train them and for this purpose have worked to eliminate the deficit in the field of education by reorganized the existing training institutions by brought the experts from abroad and on the other hand sending out select students. Returned to the country after completing their education and contributing to the state's development by opportunities they had gained, a team was formed which can be called "Last Ottoman-Young Intellectuals Republic of Turkey". The subject of our study, Mehmet Refik FENMEN, perhaps one of the best examples of the students in this group. In this weak period of the Ottoman Empire, he is one of the great actors in turnout which preparation of infrastructure of progress which will arise in the development of science and technology in Republican era. Beside he is a scientist who is very well equipped and trained, Mehmet Refik FENMEN has taken to inform of the developments in Turkish society especially his students as a duty and with his book and articles he was able to catch all layers of community. Today, for the younger generations also for new generation of our scientists' name of Mehmet Refik FENMEN is a model of intellectual that should be known and take as sample.

### Key words

mining engineering, scientist, Mehmet Refik Fenmen, history of science of Republic of Turkey

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## INTRODUCTION

19th century for both Eastern and Western, especially in terms of enlightened or intellectuals, which is emerged a great change and transformation, means a bright period. During this period, rapid and dizzying developments have emerged in science and technology unprecedented degree in any period of history. As a result of this, there has been great and radical changes in social life.

The Ottoman Empire, during this process, felt the need reviewing himself and have seen clearly how stay behind from advances in science and technology course of time. In the field of education, in the Ottoman Empire, reform movements that starting in the 18th century continued with 19th Century Military Medical School (1827), School of Mines (1858), establishment of Darülfünun (University) (1863).

The Ottoman Empire realised that they need well-trained staff who high equipped in respect of technical and knowledge and educational institutions to train them and for this purpose have worked to eliminate the deficit in the field of education by reorganized the existing training institutions by brought the experts from abroad and on the other hand sending out select students.

In this embodiment, the most important challenge is that finding a really talented young people and cannot be supported in a timely manner. To determine and to distinguish talented students in country, it is essential to have an authoritative scientific committee. If no such establishment, the wrong people are selected naturally and a healthy environment in science cannot be established a kind.

Some of the students sent abroad failed, some of them never returned to the country, some of the returning since failed to provide sufficient state aid cannot create environments that will apply the knowledge and a great source was failed by this way also wasted.<sup>1</sup>

All across this negativity, though a small portion returned to the country after completing their education and tried to make a contribution to the state's development with opportunities they receive. There is a group that can be called "Last Ottoman-Republic of Turkey Young Intellectuals". The subject of our study, Mehmet Refik FENMEN, perhaps one of the best examples of the students in this group.

Sending students to Europe and work of waiting great hopes is applied in the Republic of Turkey that established in 1923. Short and meaningful way to express the target is that expression, which is said belong to Mustafa Kemal, "I am sending you a spark, turn the volcano".<sup>2</sup>

The most distinctive feature of 19th century is that getting very closer of scientific knowledge and technology to each other. However, rapid technological developments have changed people's lives and have led to new economic, social, cultural and political formation in the world. Also in this century, in a different way from the Renaissance, science and philosophy are separated with clear boundaries, new sciences are emerged in the beginning of specializations of science and speed and spread of knowledge production reached the size cannot be compared with previous ones.

The first contacts of Ottoman Empire with Europe coincides with the beginning of the 18th century. In the result of gradual increase in military defeat, the first scientific studies and reforms occur with the adoption of new procedures in the military field. III. Selim is the first sultan in Ottoman Empire who the understanding that lagged behind many other matters in Europe not only in the economic field and military and becoming conscious of the need to make innovation in style of Europe at any price as the only way to save the state.<sup>3</sup>

At the end of the 18th century various military schools are opened up. This continues until in the middle of the 19th century. From this period civil schools are opened in areas such as medicine, agriculture, and mining. The opening of a European-style university, only was held in 1900 after several failed attempts and unnecessary waste of time.

The Ottoman Empire who understands the importance of industrialization and that political power of states are connected to the industrialization is entrance to the establishment of some factories. Technical staff who works in this factories were brought from Europe, training the local staff could not be planned initially. High Schools are directly opened but because there is no rich source from below failed to reach the desired result. After the middle of the 19th century, starting with the opening of secondary education institutions just infrastructure of higher education is seated. Still are lacking in infrastructure in the schools. Laboratory facilities are inadequate. In new schools many foreign teacher were employed. Because there is not an original and radical

<sup>1</sup> Prof. Dr. Esin KAHYA – Asst. Prof. Dr. Hüseyin Gazi TOPDEMİR "Science During Republic Period" Turks Encyclopedia, Vol 17, Ankara, p.1543

<sup>2</sup> Melis APAYDIN "They Were Sent as Sparkle, They Came Back as Volcanos" Interview September 11, 2011 Sunday <http://www.aksam.com.tr/pazar/kivircim-olarak-gonderildiler-volkan-geri-donduler--66581h/haber-66581>

<sup>3</sup> Mehmet Alaaddin YALÇINKAYA "The Role of Chief of Scribes Mehmed Raşid Efendi During The Modernisation of Turkish Diplomacy" Ottoman Studies XXI (The Journal of Ottoman Studies XXI) Istanbul 2001, p.112-113

native ecol, French or German-Austrian ecol and foreign language education have been the dominant. After the proclamation of the Tanzimat (Reform) the issue of foreign language learning has become more important. The definition of a foreign language is almost synonymous with French lessons in curriculum of many modern style opened schools. In 1868, Mekteb-i Sultanî (Galatasaray) were opened which conducts educational activities in French. With the "Regulation of the Ministry of Education of the public" (General Education Code), which accepted and implemented in 1869, Ottoman education system is subjected to a new arrangement. It was decided to teach Arabic, Persian, and French in state schools as a foreign language.<sup>4</sup>

According to political preferences of statesmen and the changing world politics, towards the end of the 19th century German influence has been added to the French influence which is effective on education. Language School which is opened on March 26, 1866, at first only been opened for the teaching of French, however, according to the needs German class is added to the school for the practical needs of the Ottoman bureaucracy.<sup>5</sup> The original works could be very rarely in the field of Science. If we say "Translating Science Period", we would not be wrong to say at all for this period.<sup>6</sup>

For the Ottoman Empire 19th century is lapsed with economic upheavals, military failures, political turmoil, and territorial losses. Beginning of the 20th century is a period that pressure of the European states is reached the extreme level and ultimately the empire began to crumble. It is a very optimistic attitude that wait for the development of science and scientific activities in such a chaos. Despite the all this desperate table, the many disciplines in Turkey again base on that the weak thrown during the Ottoman Empire, confrontation of the Turkish scientific community with the European scientific mentality occurs during this period, therein, it is our duty to specify that republican period is preparing the infrastructure to the development of science and technology.

When we look at the history of education, we saw that in the 17th century the positive science began to lose its effect in madrasas. In the Ottoman Empire, in 1839, with the announcement of the Tanzimat it is began to give importance to opening the Western-style educational institutions. Colleges are began to open up in the early 18th century, in the 19th century their numbers increased. During the Ottoman period, Darülfünun, which is the first university in the modern sense, is established in 1863 in Istanbul by a report which is prepared in 1863; it is closed and reopened several times for various reasons until the end of 1860. In 1900, teaching in European Style University which is reopened with the name of Darülfünun-i Şahane was carried out with superficial program, in features of II. Abdulhamid regime period that excludes the Literature, World History, Philosophy and Policy Issues. In 1908, with the first the proclamation of the Meşrutiyet, the curriculum of the universities is reorganised and enriched.<sup>7</sup> It is so-called as "Longest Century"<sup>8</sup> of Ottoman Empire and lasts in turbulences and as long as the establishment of the Republic of Turkey, It is natural that the media in the war years 1911-1923, great scientific studies could not have occurred in the country. However the university continued until 1933 through several stages in great distress. Due to this establishment fail to satisfy expectations from itself, Mustafa Kemal ATATÜRK act for the preparation of a university reform. For this purpose, Prof. Albert MALCH comes to our country from Switzerland. As a result of the formation of the prepared report, closing the Darülfünun in July 31, 1933, Istanbul University was opened in August 1, 1933. By Istanbul University attempted to establish a modern higher education structure.

As can be seen the situation in the first 10 years of the Republic of Turkey is a continuation of studies and regulations at the end of the Ottoman period. In both periods Darulfunun, the highest scientific institutions in Turkey (University) level, is very low compared to European universities. The majority of faculty members are not conducted original studies and researches. Also research undertaken by foreign guests coming (Austrian, German and French) to Turkey professors, during and after the First World War, are not set up a research tradition in a short time.<sup>9</sup> This situation has changed only the radical reform of the university in 1933.

<sup>4</sup> Mehmet DEMİRYÜREK "A review on the historical development of French language teaching as a foreign language in Turkey" (1891-1928). Hacettepe University Journal of Education, 28(1), p.130-131

<sup>5</sup> Selim Hilmi ÖZKAN "Foreign language teaching in Ottoman Empire" Turkish Studies International Periodical For the Languages, Literature and History of Turkish or Turkic" Volume 5/3 Summer 2010 p.1794-1796

<sup>6</sup> Assoc. Prof. Dr. Fatma ACUN "Development of science and technology during Republic Period" (1923-2003) Atatürk and History of the Republic of Turkey, Ankara Political Bookstore p. 352-370

<sup>7</sup> Yücel NAMAL, Tunay KARAKÖK "Ataturk And University Reform" (1933) Journal of Higher Education and Science Vol 1, No 1, April 2011; p.27

<sup>8</sup> This definition belongs to Prof. Dr. İlber ORTAYLI and it is used as a unit title in history course books of second grades at high schools.

<sup>9</sup> Prof. Dr. Erdal İNÖNÜ "The Importance and Meaning of Science History During Republic Period (Republic and Science)" Vol 5, No 1, İstanbul January 2005 <http://www.universite-toplum.org/text.php3?id=219>

Sciences approach in the last period of the Ottoman Empire, the studies and transmission of cultural background and the heritage to the Republic of Turkey has found life in scientist Mehmet Refik FENMEN who lost nothing from their energy from the Ottoman Empire to the Republic. In a sense, his life story is a lively field of application of the information given so far in background

### Senior Electrical Engineer Mehmet Refik Fenmen

Today, the name of Mehmet Refik FENMEN, except of people who closely interested in Turkish science education and engineering history, is not a familiar name. In studies to introduce Turkish celebrities and in many printed encyclopaedias his name is uncommon. However, Senior Electrical Engineer Mehmet Refik FENMEN is well known and appreciated by people who makes research in important subjects such as History of Engineer School, History of Darülfünun, and History of Zonguldak Senior Mine Engineer School. Likewise, his name is encountered frequently in history of Ottoman Engineers and Architects Association which is the first organization of engineer in our country. When looking at popular science works that published in the early years of the Republic name of Mehmet Refik FENMEN is still always in sight.<sup>10</sup>



**Figure 1.** Mr. Mehmet Refik 1910 Manager of Mühendis Mekteb-i Âlisi

Mehmet Refik FENMEN who is the one of the first electrical engineer of Turkey, devoted himself to engineering be recognized as the profession and be loved in our country. He is an example reformist intellectuals who having application stability for planned system.<sup>11</sup>

### His Education

Mehmet Refik FENMEN's mother Mistress Memduha (Hanım) who is daughter of Mithat Pasha who is the chair of committee which prepared Kanun-i Esasi that is first constitution of Ottoman, his father Mister Vefik who is governor of Halep, son of Mayor of İstanbul Rasim Pasha, he come into the world in 1882 in Preveze today the Adriatic sea coast in Greece. The structure of this powerful family has provided the opportunity to get him a good education.

He studied Primary School in the Numune-i Terakki Mektebi in İstanbul and secondary and high school in Saint Benoit High School. The effect of French ecol which he takes educational infrastructure, then in the management of educational institutions has been effective in this school live in and practice.

Mehmet Refik FENMEN graduated from the University of Lausanne, Department of Mathematics and Physics. Later, he went to the Belgium, Liege and continued Montefiore Electro Technical Institute (L'Institut Montefiore Electrotechnique) which providing a one-year specialist training in the electric field for university graduates. He graduated in 1906 as senior electrical engineer title with outstanding success.<sup>12</sup> The role of the

<sup>10</sup> Dr. Meltem AKBAŞ , “Electrical engineer Mehmet Refik Fenmen: An innovative and tireless enlightened person rrom Ottoman to Republic” , Studies in Ottoman Science IX/1-2 , 2007-2008, p.101.

<sup>11</sup> Füsün ORALALP “Refik Fenmen, The genius of education who transformed engineering into an occupation in Turkey”, Journal of Science and Technology No:338 January 1996, p.68.

<sup>12</sup>Dr. Meltem AKBAŞ, Ibid, p.102-103. (in the same article)

deep-rooted culture received from the family is great in the studying best schools of his period and continuation of a successful educational life of Mehmet Refik FENMEN.

### His Business Life

Mehmet Refik FENMEN returns home in 1908. Meanwhile, the Ottoman Empire is living a painful break point inside and outside. Yet II. Constitutional was declared and the parliamentary system has been implemented in the country again. Mehmet Refik FENMEN, after his graduation, was an electrical engineer in Thessaloniki Electric Company for eight months without salary. On November 14, 1908, he was appointed as teacher for electric course in Civil Engineering School that can be defined as School of Military Engineering. On November 25, 1908, he was appointed as the math teacher in Mekteb-i Sultani (Galatasaray High School), by the way his mission in Civil Engineering School was continuing. On January 11, 1909, in addition to teaching duties, he was appointed to order of the Science Advisory of Ministry of Trade and Public Works. On January 31, 1909, he resigned his duty in Mekteb-i Sultani.

Mehmet Refik FENMEN who is chosen up as electric teacher on March 14, 1910, is promoted to management of the school on April 2, 1910.<sup>13</sup>

Thus, he becomes manager of Mühendis Mekteb-i Âlisi which is the first civil engineering school of the Ottoman Empire. Now the opportunity is born to practice the target.<sup>14</sup>

Mehmet Refik FENMEN's selection of school manager, in a sense, has come across a period of reform in the education system. In the Ottoman Empire Civil Engineering School (School of Engineering) was administered in a military structure. When decided to make it civil, Colonel Mister Bahattin who is the military director retrieved from duty. It came out with discussion that who will be appointed as civil manager. When the manager appointment does not decree, Hallaçyan Effendi who is the Minister of Public Works and his assistant Mister Hulusi decided to take view of "Ottoman Engineers and Architects Association" which is newly established. Mister Hulusi thinks that there have to be an engineer who is a good administrator at the same time at head of School of Engineering which has civil administration. With this thought, he wanted to be decided two name from "Ottoman Society of Engineers and Architects" by determining secret voting and be reported to himself. Between the reported candidates, Engineer Mister Mehmet Refik was selected at the meeting in the presidential Mister Hulusi by a majority vote. Thus, Mister Mehmet Refik was appointed to the management on March 20, 1910 (As in Gregorian April 2, 1910).<sup>15</sup>

The most important objective of Mehmet Refik FENMEN was that engineering as a profession has been provide to love on the years when performing duty as first civilian director of School of Engineering. Also he took important steps especially on students participate in management with his intellectual personality. He takes students' views in the design of courses, in cleanliness and order of the school, problems in the cafeteria and forces them to find solutions. Even he took students' idea about exploration of the building to be settled and he gave tasks to them in the transportation of school.<sup>16</sup> At that time, students went to the organization among them in various fields and the organizations were established such as Young Engineers Society of Economics, School of Engineering Students' Society. With the effect is provided by democratic environment the students was interesting in the problems of the country, attending the march, and publishing newspapers and leaflets. During the period of Civil Engineering School while students contented their self with notes that were kept in the course, with Manager Mister Mehmet Refik's attempts, instructors prepared lecture notes and they distributed by duplicating.

Mister Mehmet Refik persuaded officials about imported instructors who can transfer new technology to students in order to upbringing proper engineers in European conditions from abroad. In 1910 he has visited the engineering school in Germany, Belgium, France and Switzerland for 40 days. He inspected the Turkish students who is studying in this schools. He made researches relating to the new engineering approaches. Another object of him was determine the foreign teachers who will be introduced to School of Engineering. As a result of that two Belgian professor in irrigation and railways from Belgium was found and they were brought to our country to give lectures. The students who previously follows the French lessons through a translator, joined the French course by Mister Mehmet Refik's attempts and after a while they came to a position to follow the course without a translator.<sup>17</sup> For the Ottoman Empire French was the language of science, out window in a sense, in

<sup>13</sup> Dr. Meltem AKBAŞ, Ibid, p.103. (in the same article)

<sup>14</sup> Nermin FENMEN "Refik Fenmen: A Model Science Man for Engineering and Teaching" Engineering and Architecture Stories -2 Ankara May- 2006, p.51.

<sup>15</sup> Füsün ORALALP, Ibid, p.69. (in the same article)

<sup>16</sup> Füsün ORALALP, Ibid, p.70. (in the same article)

<sup>17</sup> Nermin FENMEN, Ibid, p.52. (in the same article)

that period.<sup>18</sup> Today many terms related to coal mining especially used in Zonguldak Basin Coal Mines are French origin. Example: firedamp, Reserve, jigsaws, Lavvar, Slate, royalty etc.<sup>19 20</sup>

Mehmet Refik FENMEN he published his studies which he had done in countries such as Germany, Belgium, France, Switzerland in Journal of Ottoman Society of Engineers and Architects which is one of the broadcast organ of Ottoman Society of Engineers and Officers.<sup>21</sup>

Mehmet Refik FENMEN has played a very important mission in publishing in the direction in recognition of science in country.

He has spent much effort for developing School of Engineering that he is one of the founders and to make it conform to the requirements of the era. In subsequent years, there are many common aspects between his successful applications which are carried out in School of Zonguldak Senior Mining Engineering and Engineering School.

His activities in Engineering School are in directory of rearrangement and forming the education and training. He has changed the teaching time of school and the course, has enriched the content of engineering courses. He also studied to support direction of the practical training feet. Improving existing laboratories and workshops, he has opened new ones. While the internship work for senior student by seeing and by learning methods have been applied, irrigation in Konya and port in İzmir and to examine the bridge construction elsewhere, regularly during the holiday season students were sent to training. For subclass students in the class internship programs are set in Samsun, Sivas, in Banda railway lines and the locomotive repair shop in summers.

In 1910, final year students were sent abroad The Schneider factory and to examine the nearby important railway bridges in Marseille and Lyon and were asked their observations inform in a report. Mehmet Refik FENMEN also aimed to establish an engineering museum for school. Writing letters to important technical institutions of Europe, some of the devices milling machines, batteries and electrical appliances models took place in the museum. Mehmet Refik FENMEN who is collaborating with teachers in the preparation of course book, enable the publication and distribution of ready lecture notes to the students. Thus, between the years 1910-1913 course books has been prepared for many lesson and could have been given to the students.

Mehmet Refik FENMEN has prepared books by himself for his lesson electricity and physics courses. He has developed the school library and increased the number of French courses. With the aim of meet the needs of teachers of Engineering School and to train Turkish teachers instead of the foreign teachers, he has been involved with successful students to be sent to Europe, despite the difficulties that the produced by Ministry of Public Works, he has managed to implement.

Mehmet Refik FENMEN has always been in good relationships with the students. The association which is founded by students of Engineering School has very cocky and consistently supported. However, the Ministry of Trade and Public Works (Commerce and Ministry of Public Works) has not adopted this organisation somehow.

It has been criticized that He wants to train his student confident and as individuals who can express their ideas, the routing to release engineering, as individual entrepreneurs rather than civil service, applications such as 1 hour out grant for boarding students in evenings, by a group of conservatives in the administration.

Also a student at school events also added to this criticism, Ministry of Public Works gave a suspension to student and Mehmet Refik FENMEN has been received the task even before the investigation in September 28, 1913. Thus, many innovation attempt that launched by him unfinished, then anyone was interested in issues such as Museum project, Pressing the course book, the construction of new buildings in Gedikpaşa. Followed appointed directors have not continued this tradition. Mehmet Refik FENMEN who dismissed from management, shortly after by resigning from his teaching position, has left Engineering School.

### **His Family Life**

There is not much information about Mehmet Refik FENMEN what about he did or where he worked for 6 years between 1913 and 1919. In the process, the biggest improvement in his life is his marriage with Mistress Lamia (Hanım) in 1913.

<sup>18</sup> Selim Hilmi ÖZKAN Ibid. p.1794-1796 (in the same article)

<sup>19</sup> <http://www.genelmadenis.org.tr/Sayfalar.asp?ID=15> last access on 04.04.2015

<sup>20</sup> <http://www.nisanyansozluk.com> last access on 04.04.2015

<sup>21</sup> Dr. Meltem AKBAŞ, Ibid, p.104. (in the same article)



**Figure 2.** Mister Mehmet Refik and his wife mistress Lamia (Hanım), honeymoon days in Switzerland in 1913

Mistress Lamia (Hanım) who is daughter of a family from Yanya where Remaining within the boundaries of present day Greece had received a good education. She speaks English and French, she plays the piano. After the establishment of the Republic, she has taken place in the women's organization, has served as the second President of the large organizations which named World Women's Union Congress collected in 1935 in Istanbul.

Couple of Mehmet Refik-Lamia FENMEN has five children. These are Rasim, Mithat, Sabahattin, Seniye and Şefik FENMEN. Lamia FENMEN who is the leading name in women struggle, has grown five children; but she never remains in the shadows of neither of her husband nor five children of all leave a trail individual life.

It is known that Mehmet Refik FENMEN has encouraged his students' self-employment by making individual attempts rather than the life of the civil service during his duty in Engineering School.

Dr. Meltem Akbas's research have proved that Mehmet Refik FENMEN had made electrical installation engineering and trade of telephone and electricity supplies between 1916 and 1917.

Mehmet Refik FENMEN was assigned as a teacher of General Physics (electrical part) in Darülfünun Science Madrasa. Thus a new era of life has begun. We see that after a while Mehmet Refik FENMEN who has been promoted to professor, in addition to the course assignment he had been assigned General Director of Maarif Nezareti Tedrisat-ı Âliye in 1920, In addition to these duties in 1921 member of Meclis-i Kebir-i Maarif.

He was a teacher of physics, electrical course in Darülfünun until he had been appointed to Director of Zonguldak Mining Engineering School.

### **His Life of Publishing**

In Darülfünun period Mehmet Refik FENMEN had published a magazine which is named "Science World" and it was the first scientific journal in popular sense. In various volumes of magazine original and translation articles took place about electrical installations, power generation and distribution, wireless operation, craft, urban planning and public works. His purpose is here following the latest developments in physics, being in an effort to explain that both Darülfünun students and public. In the 1920s, he has adopted Albert Einstein's theory of relativity and arguing the theory vehemently has written the first book on the subject in Turkey. "Theory of Einstein: Change of Concepts of Space, Time and Mass" titled this book was penned in the period of his physics teacher in Darülfünun.

Although there are shortcomings in term of understanding correctly the theory of relativity and explain, books published as early as 1922 and has been trying to write in a language that can be understood by ordinary readers. Not given in the book to heavy mathematical inferences, avoiding a language based on formulas and equations completely preferred verbal expression. The book has seen great interested, the second edition was published in 1924. Mehmet Refik FENMEN with his book "Theory of Einstein" not only helped set up the theory of relativity

in Turkey also in Darulfunun where he had given general physics course, ensuring placed the course of the theory of relativity in quite early time as 1922 he had performed the subject to be taught at the university level.

Considering the trend in other countries of the world the theory of relativity, we better understand the importance of this step. In the early 1920s, in France where relativity theory was widely criticized and adopted too late, except of Paul Langevin who was Einstein's very close friend and colleague there has been only one or two people who has given a place in their courses. The special theory of relativity began to be taught in the first year of the general physical education in France has been realized in 1960s.

Started in Turkey, in the academic year of 1922-1923, in Darülfünun, in the subject field power section of General Physics course (General Physics and Electrical section, second semester). Explaining the theory of relativity continued in the 1924-25 academic year. While Mehmet Refik FENMEN has not mentioned about tensor calculus, subjects were told in the course. It is known that Mehmet Refik FENMEN support the use of textbooks by students in educational institutions which he has worked and for that he had penned textbooks. This also suggests that "Theory of Einstein" was used as a textbook. Works of Mehmet Refik FENMEN are listed at the end of the book "Theory of Einstein". Among them a work entitled "Electricity and Magnetism - Science School Courses" is remarkable. This work which indicates that completion of the construction consists of three volumes: In the first volume (Electricity and Magnetism); in the second volume electrical discharges in gases and radiation events (Gazât Derûnunda İfraqât-ı Elektrikiyye ve Faaliyet-i İnşaiyye); in the third volume Maxwell, the electron and relativity theory (Maxwell, Electron and Relativity Theory) subjects were examined. The theory of relativity entering physics courses in Darülfünun, has continued to be educated after he went to Zonguldak.<sup>22</sup>

In 1927 he published the books "Practical Wireless Operation and "Practical Motoring" and translation of "The Nature of Light" by Max Planck. In 1930-31 years he completed the book "Electro Technics" 3 volumes with "Technique of Temperature" 2 volume on the thermodynamics and combustion. He has adopted this books in the textbook for students in Zonguldak School of Mining Engineers.<sup>23</sup>

He has given memorable services in lecturer in general physics and electrical fame of Science Madrasa of Darülfünun which as defined in 1919 and during the directorate of Zonguldak Senior Mining Engineer School which as defined in 1925. An important reason take part in a rare early educators Turkey has raised is that he value his students very much. The period of his leadership, perhaps the students who realized for the first time, the first time such a value, is not the "object" of education, "Factor" they are, connected to courses and school, adopted engineering as a profession.<sup>24</sup>

### Period of Management in Zonguldak Senior Engineering School

Mehmet Refik FENMEN is appointed as manager of Zonguldak Senior School of Mining Engineering in 1925. Mehmet Refik FENMEN is the person who makes this the first higher education institution in the Republican era an engineering school will serve as an example for Turkey. His promotion of Fahmiye (coal basin) General Directorate has contributed greatly intertwined with the application of the school to raise mining engineer. The school closed in 1931, due to reasons in determining exactly and Mister Mehmet Refik has promoted to Management of İstanbul Territory Industry. It is said that he used his administration and teaching experience which he gained in director of İstanbul School of Engineering and Darülfünun in Zonguldak Mine School in the best way. This will be understood better when compared his application in İstanbul in School of Engineering with applications in Zonguldak.

Really Mehmet Refik FENMEN previously gained experience in the School of Engineering has implemented in Zonguldak Senior Mining Engineering School which he was manager for 6 years as one to one. According to our determinations Similar applications come to mind first are:

- 1-To gain the school expert as a faculty member European scientists.
- 2-With providing students French courses, convey them listening lesson without translator level.
- 3-Building excellent laboratories and workshops.
- 4-Preparing internship programs for students also sending them abroad.
- 5-Personally write or do the translation required textbooks

6-Sending successful students to Europe with the aim of meet the needs of teachers and train Turkish teachers. For example school's best student Bahattin BİRSAN who graduated in 1928 served in school as School

<sup>22</sup> Dr. Meltem AKBAŞ, Ibid, p.104-112. (in the same article)

<sup>23</sup> Nermin FENMEN, Ibid, p.55. (in the same article)

<sup>24</sup> Füsün ORALALP, Ibid, p.68. (in the same article)

of Mines Geology Assistant Teacher, Tevfik Ayyıldız who graduated in 1928 and Sadettin Pekmezciler who graduated in 1930 served in school as Teacher of the School of Mines.



**Figure 3.** Opening Ceremony of Geology and Metallurgy Institute Mehmet Refik FENMEN (Front row from right initial) and teaching staff

Mehmet Refik FENMEN as in Darülfünun, in Zonguldak has provided being taught Einstein's theory of relativity in the courses. According to 1931 dated "Mining And Industrial Engineering School Student Guide" the course within "Motion and Dynamism" which is taught in the 2.classroom give place to "Theory of Special and General Relativity" so special and the general theory of relativity. Additionally, Mehmet Refik FENMEN's book named "Electrical Science and Implementation in Industry" which is published in the Ottoman Arabic letters before, has been published again by improving. 3rd edition of book which is published in Latin letters in 1929 bears name of "Courses of Zonguldak Senior Mining Engineering School Application of Electricity in Industry".<sup>25</sup>

Mehmet Refik FENMEN expresses his goal to arrival of Zonguldak Senior Mining and Industry School year after as following;

*"In this charming industrial area, a school to be established, eighter in my student life in Istanbul Engineering School or later, I have done the orders of our government, having found a good application field for my observation and examination was a great pleasure for me. Other than I have accepted as a happily attempt our knowledge institutions, the spread on each side of Anatolia, country's development, not only from the two centres, but by hands of all citizens, according to their specialization, to help the work in other regions."*<sup>26</sup>

Mehmet Refik FENMEN has left too big traces in Zonguldak coal basin. In a sense, he maintains third important training and management time in his life in Zonguldak Mining Senior Engineering School. He brings Zonguldak Coal Operator which he was appointed in 1925 into a modern enterprise.<sup>27</sup>

Mining school was a moderate boarding school which settled in a modest two-story building, three classrooms, accepts secondary school graduates when first established. There was only a simple chemical laboratory in these schools. Those schools that accept free and boarding students, the majority came from Anatolia, poor but was filled students who longed for the determination with read request. Among them there were orphaned student's father who died in the war.

Mehmet Refik SCIENCE man while telling the school says that, "Inextinguishable love of mining students, sacrifice of the teachers gives a lively spirit, promises a sure future to this modest establishment. Proximity of

<sup>25</sup> Dr. Meltem AKBAŞ, Ibid, p.112. (in the same article)

<sup>26</sup> Prof. Dr. Bektaş AÇIKGÖZ and Assoc. Prof. Dr. Ertuğrul ÜNLÜ, Bulletin of Mining, July December 2007 No: 82-83, p. 102-103.

<sup>27</sup> Füsün ORALALP, Ibid, p.76. (in the same article)

Black Sea Region to mines, richness of the lands, were the main factors that will ensure the enterprise's development ". This school which has been developing rapidly in a very short time developed a university identity that training in foreign languages, sending students to internships abroad, even in the small but present conditions of social and sporting activities can be considered contemporary. Graduates have contributed to the development of domestic mining in very different parts of our country. Some of them will continue the work of mining in Zonguldak where the most important coal basins of the young Republic of Turkey.<sup>28</sup> (Naim Hikmet KROMER, Mustafa Hulusi ORPEN, Ahmet Ihsan SOYAK, Cemal KIPÇAK, Ismail Hakkı EVINSEL, Halil Bahri SAVASKAN etc.)

Mister Mehmet Refik also gave great importance to the development of social care of his students. Giving importance football, volleyball and tennis as a sport introduced teachers in these area. Riding is already a compulsory subject.<sup>29</sup> Especially football team has founded which named Karaelmas lived for many years with this name in subsequent periods.

Mister Mehmet Refik has been in a huge effort for students learning French and has succeeded. Foreign professors teach in French. While initially lessons were translating later students came to understand the level of direct instruction. Students also forced to speak French outside the classroom to provide learning French. Also French course is given to student 10 hours per week from the entrance to the school. Thus the most modern techniques of French books were provided as free as textbook annually to French learned students. French Technical Library was established as a complementary. In this way, opportunity is provided to enter directly into the technical literature of the Western world, not through translation.



**Figure 4.** Mister Mehmet Refik and Karaelmas football team consisting of students

Graduates of this rapidly growing school with laboratories, collections with any device has been employed in existing domestic and foreign mining companies, in very good condition of material and spiritual because they passed through a serious training following graduation, 3 months in the mines in Europe during their holiday. At the end of each academic year as they do in a month internship working as quarry workers after finishing the school was also sent to the mines internship in Europe. Also people who did not complete this internship successfully, did not receive diplomas.<sup>30</sup>

<sup>28</sup> Prof. Dr. Bektaş AÇIKGÖZ and Assoc. Prof. Dr. Ertuğrul ÜNLÜ, Ibid, p.103. (in the same article)

<sup>29</sup> Prof. Dr. Emre DÖLEN , "Zonguldak School of Higher Education for Mining Engineering (1924-1931)" Proceedings Book of the Zonguldak City History '05 Biennial, p. 26-27.

<sup>30</sup> Mining Engineer Nadir AVŞAROĞLU, "The History of the Education of Mining Engineering in Turkey" p. 25-26.



**Figure 5.** Mehmet Refik Fenmen and first graduates of mining engineering school

Enver Necdet EGERAN who is one of the graduates of the school year 1930-1931 gives the following information about Refik Fenmen and education in school: "I knew Mister Refik when I entered the Zonguldak Mining Engineering School in 1927. Both was director of the school, and provide electrical courses. From 1925 to 1927, math professor Mister Kerim, physics Professor Mister Hayri, and chemistry professor Mister Arif all who have made a name in their field, had promised lessons until the order vocational courses.

*"Mister Refik was brought foreign experts for professional courses. He was so meticulous that makes itself an interview with foreign teacher, then the contract was signed. He forced the students to participate French courses to follow lessons exactly by personal. Many years after graduation, when working in the MTA, we disagree with a colleague graduated from the İstanbul Engineering School. In order to prove their claim that the right, brought keep the notes in school. I showed him books we read in school, my friend had the error arising from the translation of notes. That was the difference between us."*

When Zonguldak Mining Engineering School graduates increased some concerns had appeared in the ministry who evaluating the same pace development jobs, in 1929 the selection of students to be admitted to school was left to a few people. In 1930 by introducing a part of the school transformed into "Higher Engineering School of Mines and Industry", in 1931 on the grounds of economic crisis school was closed. For the revival of education of Senior Mining Engineering had to wait for twenty-two years. Until the establishment of Istanbul Technical University, Faculty of Mines in 1953, our country has experienced a significant gap in this area. Zonguldak Senior Engineering School of Mining is a very important experiment which provide to start from zero of our mining by the state.

### **His Studies and Works after Zonguldak Mining Senior Engineering School**

Mehmet Refik FENMEN, has appointed in 1932 Istanbul Directorate of Industrial zone, in 1934 membership of Electrification Bureau of Depending on the Economics Ministry, between the years 1935-1943 was found in Ankara Municipality Bus Affairs . Mehmet Refik FENMEN who continuing his tasks pioneering approach, was thought that the best way of public transport was the trolley. He has been implemented this idea in a short time and become the person who brought trolleybus to Ankara.

When surname exist in 1934 Mister Mehmet Refik add the name FENMEN that means scientist, which best expresses himself and very worthy him.

In 1935 he published his book "Electrification of Turkey". The proposal was put forward as a thermal power plant will be assessed the worthless coal dust that emerging from coal washing unit in Zonguldak first in this book. The views expressed in this book, Zonguldak-Çatalağzı laid the foundation of the power plant which 60 000 kWh of power and was brought to life by Etibank in 1941. In the same book the basic economic principles and electrification is given with hydroelectric power plants, thermal power plants, discussions, where the plant will be installed, high voltage and low voltage distribution networks for discussions on, together with the likelihood account. It is noteworthy that determination in the book:

*"When Electrification of the country occurred we breed our readers more times a conviction the benefit to be obtained by the industry by showing in numbers. Because, as the greatest scholar of nineteenth century Lord Kelvin said, to know well an event should figure it by numbers. Events cannot be shown in figures our ideas about what would be discussed and so weak."*

In the book by using traction engine with steam using an electric motor wiring harness, in a factory, in addition to the cost of electrification account, recommendations regarding the establishment of the central region of Turkey, and with these stations, with thanks to the railways to feed, in suburban electric train lines, with mass transportation systems in urban trolley, cheap electric drive for ways for farmers are analysed.

In 1937, in "Article and Lighting Science Information, Philosophical Thought" titled book FENMEN, with a discussion of quantum physics in western countries, allowed moving the discussion also Turkey. Mehmet Refik FENMEN has been initiated communicated Turkey to the world of science, following the publication abroad on the subject, these developments that shook the world of science.

With the publication of "Book of the Driver" in 1942, practical information for the maintenance and repair of motorcycles and cars were started to spread in cities, in the same year with the phrase "Suitable for Vocational Schools and End Certificate Programs for Driving License" he published "New Style Electrician" 4 volume, "New Style Mechanical Engineering" 2 volume.<sup>31</sup>

Between the years 1943-1946 he served in the National Assembly as Kocaeli deputy. After 1946 again been busy with teaching at various schools, he was found in the Membership of ETIBANK Board of Directors. Mehmet Refik FENMEN who never move away his profession after retiring, made projects of electricity of provinces and districts personally.

As well as the original book has been published translation book. During the deputy his broadcasts have continued. In addition to the book 2 volume "New Style Electro Technical", he published physics problems books for high school students. Mehmet Refik FENMEN who was an idealistic scientist of the young Republic of Turkey, has initiated to translate and dissemination west development immediately into Turkish, he encouraged common public pars to take the world of science. on the cover of his work "Practical Modern Radio And Television" which he translated in 1946 phrase of "Anyone can learn to self-organize, packed full radio broadcast and principles", a cover of the book "Nuclear Energy" which published in 1949 "was written as everyone can understand" phrase is exist.

Mehmet Refik FENMEN after a short time of his illness, he died at March 5, 1951. He left behind copyright and translated 33 books and articles, hundreds of engineers trained in courses developed for modern science, hundreds of projects carried out pioneered by personally and his children who referred as "apartment".<sup>32</sup>

He has used every task undertaken leads the country as a step that modernity. During the administration of Engineer School he was trying to get a modern state of this school and has been successful. Materials, Physics and Electrical laboratories still carries his tracks. Both in theory and practice in his field he left works which illuminates the future with its light. His modest, progressivist and intellectual personality; with specific objectives and programmatic work, as well as his contributions to the technical progress of our country starting from the constitutional example is the name of a person worth revered as an administrator.<sup>33</sup>

## CONCLUSION

In this study, Electrical Engineer Mehmet Refik FENMEN's life and scientific studies have been analysed. Mehmet Refik FENMEN is a good role model and a good example within a group can be called "Last Ottoman Republic of Turkey Young Intellectuals".

In this weak period of the Ottoman Empire, he is one of the great actors in turnout which preparation of infrastructure of progress which will arise in the development of science and technology in Republican era. Beside he is a scientist who is very well equipped and trained, Mehmet Refik FENMEN has taken to inform of the developments in Turkish society especially his students as a duty and with his book and articles he was able to catch all layers of community. While doing this he created an example of instead type of arrogant intellectuals in ivory towers, a modest example of enlightened who embracing the community. His tenure as educational institutions the most important objective of him was to be loved engineering as a profession, to create a democrats, entrepreneurs and self-reliant students type. He adopted his method in all institutions of his stewardship that he used in institutions which he worked, by developing systematic methods from the preparation of student textbooks to foreign language training, from laboratory and museum of the application to the sport and most importantly recognition site for the compulsory internship. As a result, Zonguldak Mining Senior School of Engineering occurred without difference of the engineering schools in Germany, Belgium, France and Switzerland. But the unfortunate way, reason still is not presently understood, this school closed in

<sup>31</sup> Nermin FENMEN, Ibid, p.56-57. (in the same article)

<sup>32</sup> Nermin FENMEN, Ibid, p.58-59. (in the same article)

<sup>33</sup> Füsün ORALALP, Ibid, p.77. (in the same article)

1931 and this work is fully exposed to damage. Today, for the younger generations also for new generation of our scientists' name of Mehmet Refik FENMEN is a model of intellectual that should be known and take as sample.

### REFERENCES

- [1] Kahya, E., & Topdemir, H. G. (2002). *Science During Republic Period*. Turks Encyclopedia, Vol 17, Ankara, p.1543
- [2] Apaydın, M. (2011). "They Were Sent as Sparkle, They Came Back as Volcanos" Interview September 11, 2011 Sunday. Retrieved from: <http://www.aksam.com.tr/pazar/kivilcim-olarak-gonderildiler-volkan-geri-donduler--66581h/haber-66581>
- [3] Yalçınkaya, M. A. (2001). The Role of Chief of Scribes Mehmed Raşid Efendi During The Modernisation of Turkish Diplomacy. *Ottoman Studies XXI (The Journal Of Ottoman Studies XXI)* p. 112-113.
- [4] Demiryürek, M. (2013). A Review on the Historical Development of French Language Teaching as a Foreign Language in Turkey (1891-1928). *Hacettepe University Journal of Education*, 28(1), pp.130-131.
- [5] Ozkan, S. H. (2010). Foreign Language Teaching In Ottoman Empire. *Turkish Studies International Periodical For the Languages, Literature and History of Turkish or Turkic*. 5(3) pp.1794-1796.
- [6] Acun, F. (2005). Development of Science And Technology During Republic Period (1923-2003). *Atatürk and History of the Republic of Turkey*, Ankara Political Bookstore, p.352-370
- [7] Namal, Y., & Karakok, T. (2011). Atatürk and University Reform (1933). *Journal of Higher Education and Science*. 1(1), p.27
- [8] This definition belongs to Prof. Dr. İlber ORTAYLI and it is used as a unit title in History course books of second grades at high schools.
- [9] Inonu, E. (2005) "The Importance and Meaning of Science History During Republic Period (Republic and Science)" Vol 5, No 1, İstanbul January 2005 <http://www.universite-toplum.org/text.php?id=219>
- [10] Akbas, M. (2008). Electrical Engineer Mehmet Refik Fenmen: An Innovative and Tireless Enlightened Person From Ottoman To Republic. *Studies in Ottoman Science IX/1-2*, p p.101-112
- [11] Oralalp, F. (1996). Refik Fenmen, The Genius of Education Who Transformed Engineering Into An Occupation in Turkey. *Journal of Science and Technology*, No:338, pp.68-77
- [12] Fenmen, N. (2006). Refik Fenmen: A Model Science Man for Engineering and Teaching" *Engineering and Architecture Stories-2*, pp.51-59
- [13] General Mine Workers' Union official website. Retrieved from: <http://www.genelmadenis.org.tr/Sayfalar.asp?ID=15>
- [14] Nisanyan dictionary website. Retrieved from: <http://www.nisanyansozluk.com>
- [15] Acikgoz, B., and UNLU, E. (2007). *Bulletin of Mining*, 82-83, pp.102-103.
- [16] Dolen, E. (2005). Zonguldak School of Higher Education for Mining Engineering (1924-1931). *Proceedings Book of the Zonguldak City History '05 Biennial*, pp.26-27.
- [17] Avsaroglu, N. (2001). The History of the Education of Mining Engineering in Turkey. pp. 25-26.