

# Between Practice and Allegory: Ottoman Perception of Alchemy\*

FEZA GÜNERGUN

When studying the history of science in the Ottoman Empire, the following questions come to the fore. Did the Ottomans engage in experiments to comprehend the workings of Nature? For instance, did they conduct experiments to explore the properties of metals or salts? Alchemy, beyond its occult aspects, was a practical science par excellence. Processes such as distilling, melting, evaporating, dissolving, and sublimating were among the many techniques known to alchemists who acquired this technical knowledge through the ages. It is known that alchemists in the medieval Islamic world conducted experiments: the Jabirian corpus attributed to Jabir b. Hayyan al-Sufi (8th – early 9th c.) attests this fact.<sup>1</sup> In Europe, alchemical/chemical operations were performed either in laboratories that were set up in the late 16th century or in artisans' workshops

---

\* This text is based on research made for the following article: F. Günergun, “Convergences In and Around Bursa: Sufism, Alchemy, Iatrochemistry in Turkey, 1500–1700,” in P.H. Smith (ed.), *Entangled Itineraries — Materials, Practices, and Knowledges across Eurasia* (Pittsburgh 2019), 226–257.

1 E.J. Holmyard, “Jabir ibn Hayyan,” *Proceedings of the Royal Society of Medicine, Section of the History of Medicine* 16 (1923), 46–57 <https://journals.sagepub.com/doi/pdf/10.1177/003591572301601606>

Copyright: © 2024 The Institute for Mediterranean Studies/FORTH and the Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.  
See <http://creativecommons.org/licenses/by/4.0/>.

*Aca'ib: Occasional papers on the Ottoman perceptions of the supernatural* is an open access journal published by the Institute for Mediterranean Studies/FORTH.

Günergun, Feza. 2023-2024. “Between Practice and Allegory: Ottoman Perception of Alchemy”. *Aca'ib: Occasional papers on the Ottoman perceptions of the supernatural* 4.

DOI: <https://doi.org/10.26225/7qsc-ey26>

which predate them.<sup>2</sup> The laboratory of the German physician and alchemist Andreas Libavius (1550–1616) is a well-known example.

The questions I am attempting to answer are: ‘Did Ottoman scholars who wrote about alchemy engage in practical experiments?’ and ‘Can the use of the term *gayet mücerreptir* (thoroughly tested and attested) by the Sufi alchemist Ali Çelebi el-Izniki (16th century) be considered as evidence of his involvement in practical alchemy?’ Answering these questions is challenging, given the limited studies on Ottoman alchemical texts. I am hopeful that the papers presented in the ‘Knowing and Controlling Nature in Ottoman Culture’ will offer new insights into the Ottomans’ exploration of Nature, and help to answer the above questions.

Ottoman alchemical texts differ significantly from other Ottoman scientific texts in two key ways. Firstly, they were produced in relatively small numbers when compared to astronomical and mathematical texts written or copied by madrasa students or scholars. The main reason for this lies in the fact that alchemical knowledge was considered unorthodox despite it was qualified a noble, subtle and prophetic science (*ilm-i şerif ve latif ve nebi*) by Sufi mystics. Unlike the orthodox sciences such as astronomy and mathematics, which were taught in madrasas and were essential for tasks like calculating time, solving inheritance problems, and tax accounting, alchemy was excluded from the madrasa curriculum. While there are alchemical texts written or copied by madrasa members, the overall number of extant alchemical treatises remained limited.

Secondly, alchemical texts have received less attention from present-day Turkish historians, historians of science, or linguists compared to other Ottoman scientific texts. There are, of course, exceptions, including studies conducted by Tuna Artun,<sup>3</sup> Akif Yerlioğlu,<sup>4</sup> and a few other researchers. Has this neglect emerged due to the complexity and ambiguity of alchemical texts? Or

---

2 P.H. Smith, “Laboratories,” in K. Park and L. Daston (eds), *Cambridge History of Science*, vol.3 (Early Modern Science), (Cambridge 2008), 290–304; P.J. T. Morris, “The History of Chemical Laboratories: A Thematic Approach,” *ChemTexts* 7, 21 (2021), <https://doi.org/10.1007/s40828-021-00146-x>

3 T. Artun, “Hearts of Gold and Silver: The Production of Alchemical Knowledge in the Early Modern Ottoman World,” unpublished PhD Dissertation, Princeton University, 2013; T. Artun, “Bâyezid-i Kimyâ’î: Osmanlı Kimya Metinlerinde II. Bayezid,” *JTS*, 39 (2013), 181–186.

4 A.E. Yerlioğlu, “Paracelsus Goes East: Ottoman ‘New Medicine’ and its Afterlife,” unpublished PhD dissertation, Harvard University, 2020; idem, “May Those Who Understand

should we consider historians' preference for studying orthodox sciences, potentially driven by a desire to glorify madrasa teaching and highlight the productivity of Ottoman scholars, while alchemical texts may suggest involvement in potentially fraudulent activities?

## The Sufi Mystic's Motivation in Dealing with Alchemy

The Ottoman alchemical literature in Anatolia was predominantly produced by Sufi mystics, locally known as dervishes, who were regarded as heterodox Muslims. These mystics arrived in Asia Minor from Khorasan, Transoxiana, and Iran alongside nomadic Turkoman tribes, establishing their presence on its fertile plains starting from the 11th century (following the Battle of Manzikert of 1071). Consequently, Anatolia became a melting pot for various Sufi doctrines originating from Central Asia, Iran, and the Middle East. The Mongol invasion later compelled them to migrate further westward, reaching up to the Byzantine border.<sup>5</sup>

Did Sufis compile or copy alchemical texts with the intention of producing gold to increase their revenues? The early Sufi mystics of Anatolia sustained their livelihoods through cultivating lands provided by authorities, as well as through their livestock. Additionally, they possessed various practical skills, including constructing lodges, building and operating watermills, digging wells, tanning leather, and engaging in silk farming. As dervish lodges (*tekke*) functioned as pious foundations (*waqf*), the founder would meet their expenses in accordance with the deed (*waqfiyya*). Consequently, the lodge could sustain its activities with the endowed revenues<sup>6</sup> and also received donations.

The late 16th-century monetary crisis does not appear to have directed Sufi mystics toward practicing transmutation. The few alchemical texts studied so far do not suggest that Sufi mystics were involved in the transformation of base metals into silver and gold. Although these operations might have been carried out clandestinely, adulterating silver and gold coins was technically

---

What I Wrote Remember This Humble One': Paratextual Elements in Eighteenth-Century Ottoman Medical Manuscripts," *YILLIK: Annual of Istanbul Studies*, 2 (2020), 35–51.

5 A.C.S. Peacock and S.N. Yıldız (eds.), *Islamic Literature and Intellectual Life in Fourteenth- and Fifteenth-Century Anatolia* (Würzburg 2016).

6 Ö.L. Barkan, "İstila Devirlerinin Kolonizatör Türk Dervişleri ve Zaviyeler / Les Fondations pieuses comme Méthodes de Peuplement et de Colonisation," *Vakıflar Dergisi*, 2 (1942), 279–304.

easier than transforming base metals into gold, an uncertain process difficult to achieve. Therefore, the crisis seems to have encouraged forgery rather than transmutational practices. Forgery was conducted by professional forgers, including blacksmiths, locksmiths, goldsmiths, and primarily by the employees of the State's mint, who possessed the necessary technical expertise.<sup>7</sup>

The motivation of Ottoman Sufis to engage with alchemy appears to be similar to that of other Sufis in medieval Islam. The ultimate goal was to become a perfect man (*insan-ı kamil*) and, in doing so, attain union with God. An aspirant (*talib*) was supposed to pass through a series of stages (*maqams*) of spiritual development, striving to purify their soul and shed worldly concerns. At the culmination of this arduous journey (*tariqa*), they reached the state of spiritual truth (*marifat*) and the divine reality (*haqiqa*). Sufi mystics thus perceived an analogy between the transformation of the aspirant into a perfect man and the alchemical transmutation of base metals into gold. In essence, the alchemical purification of base metals, a crucial operation to realize transmutation, was considered equivalent or similar to spiritual purification.<sup>8</sup>

### Allegorical Poems in Turkish Imbued with Alchemy (14th – 15th c.)

The introduction of alchemical knowledge to Anatolia appears to have occurred through allegorical poems. An early example is the *Risale-i Aşık Paşa*,<sup>9</sup> written by the Sufi poet Sheikh Aşık Ali Pasha (1271–1332), renowned for his masnavi *Garibname*, and a member of the Wafa'iyya community in Amasya. This Turkish poem is directed towards aspirants eager to embark on the spiritual path. The chapters cover oils and waters (*dühn u ab*), spirits/tinctures/essences (*ervah*), the creation of metals (*ecsad*), the science of the elixir (*ilm-i iksir*), the making of whitening and reddening waters (*tedbir-i ebyaz* and *tedbir-i tahmir*).

In the 15th century, Safiyüddin Efendi (d. 1513), the sheikh of the Zayniyye order in Bursa, composed the *Kaside-i Şeyh Safi* (The ode of Sheikh Safi)<sup>10</sup> in which he drew an analogy between alchemical processes and the transfor-

7 O. Kılıç, "XVI. Yüzyılın İkinci Yarısında Osmanlı Devleti'nde Kalpazanlık Faaliyetleri," in C. Güzel, K. Çiçek and G. Eren (eds), *Osmanlı*, vol.3, (Ankara 1999), 180–187.

8 Günergün, "Convergences In and Around Bursa", 241–242.

9 Sheikh Aşık Ali Pasha, *Risale-i Aşık Paşa*, İstanbul, Atatürk Kitaplığı, MS Muallim Cevdet K.180/16.

10 Sheikh Safiyüddin, *Kaside-i Şeyh Safi*, İstanbul, Süleymaniye Library, MS Karaçelebizade 359/10.

mations an aspirant must undergo to become a spiritual guide (*mürşid*) of the order. The text is rich in operative terms such as *hak* (pulverizing), *tahmir* (reddening), *tebyiz* (whitening), *tesvid* (blackening), *tas'îd* (sublimation), *tekliis* (calcination), *taktir* (distillation), *tathir* (purifying), *tedbir* (treating, making), *hall* (dissolving), *akd* (congealing), and mentions chemical substances such as *kibrit* (sulphur), *zibak* (mercury), *'ukab* (sal-ammoniac), *pulad* (steel), *dühn* (oil), *şeb* (alum), and *barud* (saltpeter). Notably, the term 'elixir' is not used, and there are no recipes for making silver and gold. The text employs analogies, such as birds with green wings, to describe the lengthy process of transformation awaiting the aspirant.

### Al-Jildaki's Works Permeate the Ottoman Alchemical Literature (16th c.)

Experimental knowledge, prevalent in the texts of Jabir b. Hayyan al-Sufi (8th–9th c.) and al-Razi (9th c.), began to permeate Anatolia from the 16th century, if not earlier. This infiltration occurred through the works of 'Izz al-Din Aydamir al-Jildaki, who flourished in Mamluk Egypt in the 14th century.<sup>11</sup> In the footsteps of Jabir b. Hayyan, al-Jildaki described numerous experiments in his works without forsaking his allegorical vision. This dualism had a profound impact on Ottoman alchemists. Ottoman Sufis praised al-Jildaki's works due to the extensive quotations he made from previous alchemists such as Zosimos (3rd c.), Jabir b. Hayyan, al-Razi, and al-Tughra'i (11th–12th c.). Consequently, by studying al-Jildaki's works, the reader could gain insights into the views of alchemists prior to the 14th century in one comprehensive study. The theory of the 'Science of the Balance' (*ilm al-mizan*)<sup>12</sup> developed to explain the formation of metals and their transmutation was introduced to Anatolia by Mohammad b. Omar al-Hanefi al-Antaki (d. 1531), also known as Mullah Arab. He epitomized al-Jildaki's encyclopedic work titled *Al-burhan fi asrar ilm al-mizan* (Demonstration of the secrets of the science of the balance) in 1512. This epitome<sup>13</sup> in Arabic delves into chapters portraying the relationships between the

11 E. J. Holmyard, "Al-Jildaki," *Iraq*, 4 (1937), 47–53; G. C. Anawati, "Jaldaki," in R. Rashed (ed.), *Encyclopaedia of the History of Arabic Science*, vol.3 (London 1996), 874.

12 For the theory of the "Science of the Balance" see S. O. Moulaye Ahmed, *L'apport scientifique arabe à travers les grandes figures de l'époque classique* (Paris 2004), 162–166.

13 Mohammad b. Omar al-Antaki, *Talbis al-Burhan*, 1512, Zeytinoglu Library (Tavşanlı, Kütahya) MS 631/2.

planets, the zodiacal signs, and the metals, conceived as the causes determining the 'balance' of natures. It attributes each metal its characteristics in its formation from sulfur and mercury.

Al-Jildaki's most enthusiastic Anatolian follower was the Sufi mystic Ali Çelebi el-Izniki (d. 1607), a descendant of Eşrefzâde / Eşrefoğlu Abdullah Rumi (d.1469), the founder of the Ashrafiyya order, a branch of the Qadiriyya, established in Iznik (Western Anatolia).<sup>14</sup> Claiming to have traveled for many years across Maghreb, Arabia, Persia, India, and China, Ali Çelebi reported to have served scholars and sheikhs as a "slave" in his quest to learn the secrets of alchemy. As similar statements appear in al-Jildaki's works, one wonders if Ali Çelebi identified himself with al-Jildaki. He claimed to have learned the science of the philosopher's stone (*ilm el-hacer el-mükerrem*) from an Anatolian master who was a disciple of Sheikh Ali al-Marjushi al-âmâ (the blind). Al-Marjushi is believed to have flourished in Cairo and visited Anatolia during the reign of Bayezid II.<sup>15</sup>

Ali Çelebi informs that he collected various Islamic alchemical treatises over the years. These texts probably allowed him to compose the twenty-eight alchemical works that are listed in the epilogue of his *Durar al-anwar fi asrar al-ahjar* (Gleamy pearls of the secrets of the stones). Additionally, more than fifty alchemical texts in Arabic and Turkish are attributed to him.<sup>16</sup> Most of his texts are based on al-Jildaki's works. In the preface of *Sirr al-rabbani fi ilm al-mizan* (Divine secrets of the science of the balance), he explicitly mentioned al-Jildaki's *Kitab al-burhan fi asrar ilm al-mizan* (Book demonstrating the secrets of the science of the balance) and *al-Taghrib fi asrar al-tarkib* (The elimination of the secrets of compounding).

## Mecmuatü'l-mücerrebat: Ali Çelebi el-Izniki's "Laboratory Manual"

Ali Çelebi's most intriguing work is *Mecmuatü'l-mücerrebat* (A collection of tested and attested recipes), resembling a laboratory manual in Turkish.<sup>17</sup> This

14 Artun, "Hearts of Gold", 102–185.

15 Ibid, 33–62.

16 For works attributed to Ali Çelebi see C. Brockelmann, *Geschichte der arabischen Literatur*, Zweiter Supplementband (Leiden 1938), 667–68; E. İhsanoğlu, R. Şeşen, M. S. Bulut et al. (eds), *Osmanlı tabii ve tatbiki bilimler literatürü tarihi*, vol.1 (İstanbul 2006), 53–81.

17 For a 17th century copy see *Mecmuatü'l-Mücerrebat*, Millet Kütüphanesi (İstanbul), MS Hekimoğlu Ali Paşa 541/1.

practical guidebook on alchemy is devoid of mysticism and rich in recipes and technical information, such as the intensity of fire required for the operations. The preface notes that the work is based on symbols and signs (*rumuz u işarat*) that Ali Çelebi recorded on sheets of paper while working with his master. It also draws upon the knowledge (*kemalat*) he acquired through trial and labor over the years. He aimed to explicitly name all substances and describe operations as clearly as possible, eliminating the need for consulting a master to practice alchemy. This book raises the following questions: Did Ali Çelebi practice alchemy? Did he have a laboratory in which he realized the recipes he described in *Mecmuatü'l-mücerrebat*?

Ali Çelebi occasionally used the term *gayet mücerrebdir* (thoroughly tested and attested). While he primarily employed the optative or imperative mood (*döşeye, saklıya, edesin, soğudasın, kızdurasın*) in most descriptions, he also utilized the first person singular, stating “I put a piece of iron in this water, I took it off, one-half was melted”.<sup>18</sup> Although Ali Çelebi does not mention where he conducted these operations, these features suggest that he personally conducted at least some operations. However, the absence of graphic proof, artifacts, and apparatus for chemical experiments from the period under study prevents us from making reliable assessments. However, a copy made in the 17th century is accompanied by a Turkish translation of a text that appears to be al-Razi’s *Kitab al-asrar*, a work on practical alchemy.<sup>19</sup> It suggests that someone with an interest in alchemical experiments might have brought these two manuals together. *Mecmuatü'l-mücerrebat* was not widely copied, especially when compared to Ali Çelebi’s some other alchemical works. The lack of mystical overtones in this work might be a reason for its relative unpopularity. Therefore, it is challenging to assert that practical alchemy was highly esteemed in Anatolia during the 16th century. Nonetheless, further studies are necessary to substantiate the practice of alchemy in Ottoman Turkey during the 16th century and thereafter.

### Sufi-Physicians Blending Alchemy with Iatrochemistry (17th c.)

In the 17th century, the alchemical knowledge embedded in Ali Çelebi’s texts was enriched with drawings of alchemical utensils and apparatus,<sup>20</sup> as well as

18 Günergun, “Convergences In and Around Bursa”, 237–238.

19 *Mecmuatü'l-Mücerrebat*, Millet Kütüphanesi (İstanbul), MS Hekimoğlu Ali Paşa 541.

20 The absence of drawings of chemical instruments in pre-17th century Ottoman alchemical



Fig. 1 Two different distillation processes are depicted in Salih b. Nasrullah's *Ghayat al-itqan fi tadbir badan al-insan* (The highest perfection in the treatment of the human body) written in Arabic. The copying date is 1722.

The figure above illustrates a process in a sand bath, while the one below shows a process using a briquette oven. Süleymaniye Library (Istanbul) MS Ayasofya 3682, 26a.

recipes borrowed from European iatrochemical texts<sup>21</sup>. Notably, these included the formularies of Daniel Sennert (1572–1637), Oswald Crollius (1563–1609), and other established European iatrochemists. These European medical formularies were initially translated into Arabic under the initiatives and supervision of Salih b. Nasrullah ibn Sallum al-Halebi (d. 1669), a physician at the court of Mehmed IV (r. 1648–1687).<sup>22</sup>

The Sufi physicians, heirs of the alchemical literature accumulated by their Sufi forebears, were drawn to these new therapies and recipes, and sought to disseminate them by compiling formularies in Turkish. One such figure was Ömer b. Sinan el-Izniki, a Mawlawi physician who flourished at the end of the 17th and early 18th century. In his work *Künuz el-Hayat* (Treasures of Hu-

texts may have originated from the fact that the medieval Islamic manuscripts from which the Ottoman Sufis drew were devoid of illustrations.

21 The Ottoman Turkish equivalent of the term iatrochemistry was *tıbb-i kimyâî* (chemical medicine) or *tıbb-ı cedîd* (novel medicine). These terms were used because the new recipes included inorganic compounds, such as minerals, not widely used in traditional Islamo-Galenic medicine.

22 N. Bachour, *Oswaldus Crollius and Daniel Sennert in frühneuzeitlichen Istanbul – Studien zur Rezeption des Paracelsismus im Werk des Osmanischen Arztes Salih b. Nasrullah ibn Sallum al-Halabi* (Freiburg 2012).





Fig. 2 Alchemical utensils and apparatus depicted in Ömer b. Sinan el-Izniki's *Künuz-i hayat el-insan* (Treasures of human life), written in Turkish in 1695. Istanbul University Library (Istanbul) MS T7083, 345b.

The *imbik el-hayye* (serpentine alembic) on the upper right was used for fractional distillation to separate components with different boiling points and for purifying spirits, like aqua vitae, requiring repeated distillations.

man Life),<sup>23</sup> Ömer bin Sinan states that Paracelsus transformed alchemy, which aimed to transmute common metals into gold, into the spagyric art that seeks to cure diseases. This statement clearly indicates his effort to establish a connection between alchemical practices and medical therapies.

### Ongoing Interest in Alchemy in the 18th Century: The Sufi Physician Ömer Şifai Dede

One of the most popular Sufi alchemist-physicians of the 18th century was Ömer Şifai (d. 1742). After receiving training as a physician in Bursa, he traveled to Egypt to learn *ulum-i garibe* from the Khalvati sheikh Hasan Efendi. Serving as the chief-physician at the *dariüşşifa* of Bursa, he is reputed to have mastered French and Italian medical literature. Ömer Şifai compiled more than 15 treatises in Turkish, playing a crucial role in popularizing iatrochemical recipes in Anatolia.<sup>24</sup> The dedication of *Mürşid el-muhtar fi ilm el-esrar* (An excellent guide for occult sciences) to Sheikh Hasan Efendi, along with the ti-

23 Ömer b. Sinan el-Izniki, *Künuz-i hayat el-insan*, 1695, Istanbul University Library (Istanbul), MS T7083.

24 For a list of Ömer Şifai's works see E. İhsanoğlu, R. Şeşen, M. S. Bulut et al. (eds), *Osmanlı tıbbi ilimler literatürü tarihi*, vol.1 (Istanbul 2008), 365–374.

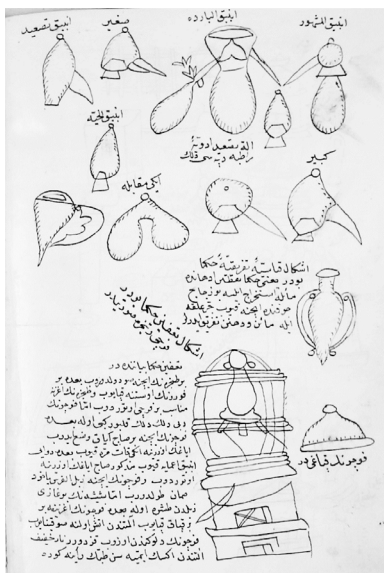


Fig. 3 Ömer Şifai's work, *Cevher el-ferid fi tıbb el-cedid* (The unique gem of the new medicine), written in Turkish in 1698. Süleymaniye Library (Istanbul), MS Hamidiye 1020, 98b.

The treatise comprises 70 figures of chemical utensils and apparatus, primarily alembics used for the production of oils, spirits, and herbal decoctions. The simplicity of the figures suggests that the author himself drew them.

tle of his book, reflects an enduring correlation between occult sciences and iatrochemistry

## Concluding Remarks

Alchemical texts compiled in the 15th and 16th centuries demonstrate Sufis' efforts to introduce medieval Islamic alchemy to Anatolia. They achieved this by drawing primarily from the works of al-Jildaki, Jabir b. Hayyan, and al-Razi. The primary channels for transmitting alchemical knowledge ran between Anatolia and Egypt, as well as Transoxania and the Iberian Peninsula until the mid-17th century. From that point onward, Sufi physicians became acquainted with European iatrochemical formularies.

The alchemical activities of Ottoman Sufi mystics appear to have been limited to spiritual practices. They studied alchemical texts to gain insights into the transformative process of aspirants, aspiring to become perfect individuals. This process was perceived as analogous to the alchemical transmutation of common metals into gold and silver.

Reliable evidence is lacking concerning Ottoman patronage of alchemy. Accounts of regular alchemical experimentation within the palace have not been found yet. Ottoman rulers or wealthy Ottomans did not financially support al-

chemical activities as Caliphs and wealthy families did in the medieval Muslim World, or the rulers did in Europe in the 16th and 17th centuries to increase their revenues. In periods of monetary crisis, the Ottoman rulers simply debased the coinage and did not resort to alchemy. Consequently, there is no evidence of the existence of “laboratories” similar to those established in Europe in the early 17th century, complete with distillation apparatus, assay furnaces, and chemical utensils.

Copying and studying alchemical texts enabled Sufi mystics to amass valuable information about metals, minerals, and chemical substances, as well as on chemical processes. In the second half of the 17th century, when iatrochemical recipes were introduced, Sufi physicians, as heirs of this literary alchemical tradition, made these recipes accessible by compiling formularies in Turkish. In doing so, they introduced a practical dimension to what had initially been a seemingly purely textual tradition.

Despite the negative attitude of madrasa scholars who viewed alchemy as a harmful practice, the *ulema*'s dedication to theology, and the absence of noble patronage, the esoteric tradition of alchemy thrived among 15th- and 16th-century Ottoman Sufis of Anatolia, giving rise to a textual tradition. Given the discouraging atmosphere surrounding the practice of alchemy and the lack of both material and literary evidence, proving that Ottoman dervishes conducted experiments in search of God's reflection in Nature is challenging.

Copyright: © 2024 The Institute for Mediterranean Studies/FORTH and the Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/4.0/>.

*Aca'ib: Occasional papers on the Ottoman perceptions of the supernatural* is an open access journal published by the Institute for Mediterranean Studies/FORTH.