1. THE NATURAL SCIENCES UNDER THE OTTOMAN DYNASTY UNTIL THE 19TH CENTURY

The available evidence indicates that from the founding of the Ottoman state in the later part of the 13th century to the middle of the 15th century, the Ottoman scholars who were trained in such medieval subjects as shariah (Islamic law), rhetoric and logic were not very interested in the study of the natural sciences. With the accession of Mehmet II in 1451, however, a new era of learning began in which philosophical and scientific thought played a predominant role. Particularly at the new higher educational medreses (colleges) at Ayasofya and at those the Conqueror established as part of his Kulliye (the Fatih Complex) constructed on the fourth hill of the city, eminent philosophers and scientists of his day were ardently supported by the young Sultan. A scholar in his own right and fluent in several western and eastern languages, Mehmet II was especially interested in both Aristotelian and Stoic philosophy according to his biographer Kritovoulos. The royal library at Topkapi Palace contained nearly 600 manuscripts in non-Islamic languages, 75 of which dealing with mathematics and sciences are believed to have been compiled by the Conqueror himself. Among the most important of these treatises are Euclid’s Geometry, Ptolemy’s Geography and Almagest, Apolonyos’s Konika and Serenos’s two treatises on mathematics, as well as a number of treatises on astronomy. In addition to the treatises mentioned above, Hesiod’s Theogony, Homer’s Iliad, Diogenes’s work on the Lives of Philosophers, as well as a 13th century copy of Plutarch’s Biography of Renowned Men translated from Greek to Turkish on the Sultan’s command and a copy of Francesco Berlinghieri’s Italian translation of Ptolemy’s Geography published in 1480 and dedicated to Mehmet II are part of the palace library collection.1

During this golden age of Ottoman science in the second half of the 15th century, Mehmet II was able to attract to his court and then enthusiastically patronize the eminent mathematicians and astronomers of his day. Among them the astronomer Ali Kuşçu, who was born in Samarkand during the first quarter of the 15th century as Aladdin Ali bin Mohamed Kushdji, and studied mathematics and science under the famous astronomer Uluß Bey and Kadi-zâde at the Samarkand observatory.

established by Ulugh Bey (1393-1449), was appointed by the Conqueror as the müderris (professor) of the Ayasofya (Hagia Sofia) medrese, which position he retained until his death in 1474. Important treatises on mathematics and geometry were written by Molla Lütfi from Tokat and his teacher Sinan Paşa (1440-86), and a number of treatises on mathematics and the astrolabe were written by Mahmud bin Mehmed, also known as Mirim Çelebi, who was also a student of Sinan Paşa. In addition to mathematics and astronomy, two important books on medicine date from this era, the first one of these called Kitab-ı Tib (Book of Medicine) by Mohamed Ibn Hamza Akşemseddin, and the other one written in 1465 and called Cerrahname-i İhâni (Book of Ilkhanid Surgery) by Şerefeddin Ali bin el Hajj Ilyas, the chief surgeon of the Amasya Darüşşifa (the Amasya Hospital).

Although Süleyman the Magnificent assigned one of the four medreses he built at his külîye (the Süleymaniye complex) to the study of mathematics and another to medicine, Ottoman science seems to have stagnated and declined during the 16th century. On the other hand, Ottoman fleets were able to go beyond the Mediterranean to sail in the Indian and Atlantic oceans during the 16th century, and as a result of these new excursions, two Ottoman captains, Seyit Ali Reis and Piri Reis, produced important works on naval geography. One of these works was a copy of the Christopher Columbus map of 1489 presented to Sultan Selim I in Egypt by Piri Reis (1470-1554), and another was a book by him called Kitab-ı Bahriye (Book of the Navy), written in 1521 and presented to Süleyman the Magnificent four years later. In the introduction of this book, the author has written that the earth is like a globe and that he has seen a model of such a globe made by a Portuguese priest, and that America was discovered by Christopher Columbus.

During the last quarter of the 16th century, an astronomer named Taki a-Din bin Mehmed bin Ahmed (1520-1585) presented a report to his teacher Sadeddin Efendi observing that it had become necessary to modify Ulugh Bey’s system of astronomy, which did not always produce accurate readings. Sadeddin Efendi, who was well respected by Sultan Murat III, took this matter to the court and obtained the permission of the Sultan to build an observatory with all the appropriate instruments, on the hills above the Tophane area of the Galata region in Istanbul.

Takiyüddin’s contact with European science was probably his Jewish assistant from Salonica. Unfortunately, this venture had a very short life, because the ulema (the orthodox Islamic teachers) reacted strongly to the establishment of such an observatory on the grounds that the privacy of the angels in the sky was being violated, and the place was demolished upon the insistence of the Sheikh ul-Islam.

The recession that plagued Ottoman science in the 16th century continued in the following century as well. The medreses of this era produced only a handful of encyclopedic scholars, while courses relating to scientific topics were replaced by non-scientific subjects. It is true that mathematics, astronomy and philosophy remained in the curriculum, but they were no longer considered to have much weight. During this era, publication of medical books compiled from European sources indicates that the Ottoman men of medicine were aware of advances in this field in the West.