



DĀR AL-FONŪN

DĀR AL-FONŪN (lit., “polytechnic college”), a college founded in Tehran in 1268/1851 by [Mīrzā Ṭāqī Khan Amīr-e Kabīr](#), which marked the beginning of modern education in Persia.

Within two years of Amīr Kabīr’s appointment as grand vizier (*ṣadr-e a’zam*) in October 1848 the first steps had been taken to establish the educational institution that subsequently became known as Dār al-fonūn (Ādamīyat, 1354 Š./1975, p. 355). In his initial letter of instruction to Jān Dāwūd, first secretary at the Persian legation in St. Petersburg, in August 1850, Amīr Kabīr stressed the military and technical nature of the subjects to be taught at the new academy, which in subsequent letters and in the official newspaper *Waqāye’-e ettefāqīya* he referred to variously as Ta’līm-kāna, Madrasa-ye jadīd, Madrasa-ye neẓāmīya, and Maktab-kāna-ye pādšāhī (Ādamīyat, 1354 Š./1975, pp. 357-58; Maḥbūbī, *Mo’assasāt* I, p. 255). Foreign observers also considered the school to be part of his far-reaching military reforms (U.K. Foreign Office, Public Record Office, 248/141, 16 September 1850), primarily intended to improve the cadre of officers, who were held generally responsible for the inefficiency of the Persian army. It was believed that only the creation of an academy in Persia itself would permit training of sufficient numbers of men in the latest military techniques.

At about the same time that instructions were first sent to Jān Dāwūd in Europe to employ trained staff to conduct the training at the new academy, Amīr Kabīr set about building the academy, in the northeast corner of the Arg, on land formerly used for military maneuvers. The plan was drawn up by



Mīrzā Reżā Mohandes-bāšī, who as a young man had been sent to London, in 1230/1815, and had studied for some years at the Royal Military Academy, Woolwich (Ādamīyat, 1354 Š./1975, p. 355; Maḥbūbī, *Mo'assasāt* I, p. 258). It followed a traditional pattern, with fifty rooms around a large central courtyard, onto which *ayvāns* opened on each side; subsequently extensive additions were made at various times. Moḥammad-Taqī Me'mār-bāšī was responsible for the actual construction under the supervision of Bahrām Mīrzā, governor of Tehran and a student of military science. In July 1851 the eastern wing was ready to receive the first instructors and students, though the remainder of the initial complex was not completed until December 1852 (*Waqāye'-e ettefāqīya* 98, 5 Rabī' I 1269/17 December 1852).

Despite the evident urgency to complete the building and Amīr Kabīr's insistence, Jān Dāwūd's negotiations in Vienna were prolonged. It took further instructions, specifying wider needs and different terms of service (12 Ramażān 1267/11 July 1851), before contracts were signed, on 12 Šawwāl 1267/10 August 1851. A small party of instructors, Czech, Italian, Swiss, and Austrian, left Vienna with Jān Dāwūd almost immediately. The group comprised Alfred Baron de Gumoëns (infantry); Johann von Nemiro (cavalry); Captain Zatti (engineering); Captain Joseph Czarnotta (mineralogy); Lieutenant August Kržiž (artillery); and Dr. Jacob Eduard Polak (medicine; Polak, pp. 298-99). The number was smaller than Amīr Kabīr had wanted, as neither the two miners nor the pharmacist who had been specified in his final instructions were included; Polak was prepared to teach pharmacy, however. The length of service was stipulated as five years, with an annual salary of 600 tomans and a further 400 tomans for travel to and from Persia (Ādamīyat, 1354 Š./1975, pp. 358-59; Maḥbūbī, *Mo'assasāt* I, pp. 259-63). On 29 Moḥarram 1268/24 November 1851 the group arrived in Tehran, only to learn that Amīr Kabīr had been dismissed two days earlier.

The first six years. Responsibility for reception of the instructors and official inauguration of the new college, on 5 Rabī' I 1268/29 December 1851, fell to the minister of foreign affairs, Mīrzā Moḥammad-'Alī Khan Šīrāzī. It was in a letter that he wrote on 24 Moḥarram 1268/19 November 1851 to Maḥmūd Khan, mayor (*kalāntar*) of Tehran, and the military commander 'Azīz Khan Mokrī that the name Dār al-fonūn was first mentioned. The choice of this name and the more general description of the kinds of learning to be pursued suggest an attempt to broaden its purpose, though whether at Mīrzā Moḥammad-'Alī's initiative or that of Amīr Kabīr is unknown (Ādamīyat, 1354



Š./1975, p. 363). Mīrzā Moḥammad-‘Alī Khan died on 18 Rabī‘ II 1268/10 February 1852. Neither of his two immediate successors, ‘Azīz Khan, who remained director for only a few months in 1268/1852, and Moḥammad Khan Amīr Tūmān (1268-73/1852-57), appears to have had much impact on the administration of the college or its welfare; nevertheless, as active military officers, their appointments emphasized the initial purpose of the academy and furthered strict military discipline among the students (Qāzīhā, pp. 124-35). It was the Austrian instructors and particularly the deputy director (*nāzem*) Reżāqolī Khan Hedāyat “Lala-bāšī” who shaped the curriculum and activities, subject always to the approval and encouragement of Nāṣer-al-Dīn Shah (1264-1313/1848-96). From the beginning the shah showed a genuine interest in the college, visiting regularly and attending examinations or prize-giving ceremonies (E‘temād-al-Salṭana, II, p. 104; Qāzīhā, p. 131; Browne, p. 112).

It may have been Amīr Kabīr’s intention in time to broaden the scope of subjects taught (Ādamīyat, 1354 Š./1975, pp. 353-54), but such expansion was also necessitated by the number and educational level of the first students (see below). The Austrians had expected to be able to teach their own specialties from the beginning, but it soon became clear that they would have to start at a more basic level. For this reason, in the first few weeks additional teachers had to be enlisted. From the beginning Italians played a conspicuous role. From 1269/1852 onward the brothers Michele and Francesco Materazzo and Luigi Pesce, three of six Italian officers recruited, at lower salaries than the Austrians and on ten-year contracts, by the Persian legation in Istanbul to help train the Persian army, were brought in occasionally to teach at Dār al-fonūn, not without creating some friction with the Austrians. Others were also associated with the college at an early stage: Enrico Andreini began his long career in Persian service as an infantry instructor in 1274/1857, and already in 1269/1852 Focchetti was responsible for pharmacy, which included physics and chemistry. The latter’s name is frequently cited among the first group from Austria, but there is no evidence concerning when he arrived in Tehran or how he was recruited. He remained at the college until 1279/1862, despite personal criticism from the grand vizier Mīrzā Āqā Khan Nūrī (Amīn-al-Dawla, pp. 334-35). In 1274/1858 he also briefly visited Europe, attached to the mission of [Farroḳ Khan Amīn-al-Dawla](#), to purchase laboratory equipment.

Beside this group of Italians, teachers were enlisted from among residents of Tehran, both Persian and European. Jules Richard, who had lived in Persia



since 1260/1844 and had converted to Islam, assuming the name Mīrzā Reżā Khan, began teaching French at Dār al-fonūn when it opened and continued for nearly forty years, until his death in 1308/1891. Another locally enlisted European was the Austrian tailor Andrae, though he served mainly as a translator for Nemiro (Maḥbūbī, *Mo'assasāt* I, pp. 243-44, 269-70, 282).

Aside from the shortage of teachers, the need for translators presented the Austrians with an acute and immediate problem. Although German was their usual language, it was hardly known in Persia, and French was chosen as the medium of instruction because more translators were available for that language. Some had returned from study in Europe and were attached to particular instructors, whom they accompanied from class to class (for a list of teachers and translators in 1268/1852, see *Waqāye'-e ettefāqīya* 98, 5 Rabī' I 1269/17 December 1852; Nabavi, p. 99). Others were also assimilated to the teaching staff; for example, Mīrzā Malkom Khan translated for Zatti but also taught mathematics and geometry at both general and more advanced levels.

Disparities in preparation among the first students also caused difficulties. In the formal advertisement for applications, sons of *a'yān* and *ašrāf* (see [class system](#)) between fourteen and fifteen years old were specified (*Waqāye'-e ettefāqīya* 43, 3 Šafar 1268/28 November 1851), and, according to his letter (see above), Moḥammad-'Alī Khan envisaged a total of thirty such students. Nevertheless, in the first year about 105 students were accepted (see below) from a broader range of social strata, with diverse educational backgrounds. Those who had been trained to an advanced level in traditional disciplines were able to make remarkable progress. Others required basic instruction in Persian, Arabic, and mathematics. Even among the sons of the *a'yān*, standards varied, as there were at first no established criteria for admission. Some received monthly allowances (*māhāna*), others salaries (*mawājeb*) or pensions (*mostamarrī*), varying between 12 and 100 tomans a year. Daily lunch was provided free, and two sets of clothing, for summer and winter, were given to each student each year (Maḥbūbī, *Mo'assasāt* I, pp. 266, 268, 293).

Despite the difficulties, within a few months a curriculum had been established and a structure of examinations and grades created. The curriculum was based on the respective specialties of the six Austrians and Focchetti, students in each discipline wearing uniforms of a specified color. Preliminary subjects like mathematics, geography, history, and French were taught by Europeans and Persians; Arabic and Persian were taught by Shaikh Moḥammad-Šāleḥ, who also led formal prayers twice daily. By the beginning



of the second year, 1269/1852-53, a system of levels (*martaba*) had been introduced for each major subject, each level theoretically lasting three years before an examination to qualify for a higher level; the full cycle of instruction was designed to last twelve years. At each level copper, silver, silver-gilt, and gold medals were awarded for superior performance, though it was also possible for those with outstanding ability to be accepted into higher levels or to move more rapidly through the system (Piemontese, 1969b, p. 431; E'temād-al-Salṭana, II, p. 90).

The number of students in the first year (E'temād-al-Salṭana, II, pp. 85-90) reflects the immediate popularity of Dār al-fonūn. About 105 students had enrolled in the seven main subjects, though this figure may include some overlap. The breakdown reveals the emphasis placed on the military sciences: infantry 30, cavalry 5, artillery 26, and engineering 12. On the other hand, in medicine there were 20 (cf. Polak, I, p. 303: 14), in pharmacy 7, and in mining 5. In addition, subjects like French and swordsmanship could be studied. Military officers not formally enrolled at Dār al-fonūn could benefit from participation in daily infantry and cavalry maneuvers held by the European instructors outside the city walls. Because of the division into levels, classes were usually small, which placed considerable demand on the foreign instructors' time. The more able and experienced students served as teaching assistants (*kalīfa*) at the lower levels.

The roster of subjects, student names, and examination results from August 1858 reveals how quickly the core curriculum of Dār al-fonūn had become established. Since the first year the number of students had remained relatively constant, and the subjects taught were similar, the military sciences predominating. The main difference was the larger number of those studying languages. In 1275/1858 thirty-five students were learning French and twelve English or Russian (Maḥbūbī, *Mo'assasāt* I, pp. 300-05; Yaḡmā'ī, 1349 Š./1970, pp. 303-06).

In the first years of the Austrians' service, Dār al-fonūn had developed, not only a core curriculum, but also an academic routine and administrative framework strong enough to survive the vicissitudes that affected most new initiatives in Nāṣer-al-Dīn Shah's reign. The daily schedule and the pattern of holidays, punishments, and regular examinations, as well as the administrative posts, were all determined in this first phase. Through continuity of key personnel, particularly Hedāyat, who soon introduced his two sons, 'Alīqolī (later Mokḡber-al-Dawla) and Ja'farqolī (later Nayyer-al-Molk)



into the administration, but also other long-serving officers like Moḥammad-Ḥosayn Eṣfahānī (first *ājūdān* < Fr. *adjutant* “assistant” and later *nāẓem*), a sense of tradition and some guarantee of respectable academic achievement were created. Much of the credit was also due to the dedication and ability of the instructors and translators. Despite the problems of teaching at widely varied levels, they were still able to produce excellent results. For example, within a few years Polak had trained a number of students who were admitted to medical schools in Paris and completed important research (Polak, I, pp. 310-11; cf. Elgood, p. 502). Some returned to teach at Dār al-fonūn, establishing a tradition in which the best students remained attached to the institution.

In other ways the collaboration between European instructors and Persian translators had a deeper impact on the general scientific and cultural life of Persia. The first group of instructors had to write their own textbooks, as nothing suitable was available in Persian. Within a few years most of them had produced works that were published at the government printing house, which was attached to Dār al-fonūn. Kržiž wrote four studies on mathematics and fortifications, Polak eleven on different aspects of medicine, surgery, anatomy, pathology, and ophthalmology, most of which were published during the nine years he worked in Persia; the first was *Tašrīḥ-e badan-e ensān*, published on 25 Rajab 1270/22 April 1854 (Maḥbūbī, *Mo’assasāt* I, p. 299; Najmābādī, 1354 Š./1975, pp. 206-07; for a list of these textbooks and their authors and translators, see Nabavi, pp. 100-01).

Most instructors were also involved in practical initiatives outside their teaching duties but associated with Dār al-fonūn and involving its resources and students. Polak took two or three pupils on his medical visits and to the operations he conducted. In 1272/1856 he succeeded [Dr Louis-André-Ernest Cloquet](#) as Nāṣer-al-Dīn Shah’s personal physician, initiating a link between this position and teaching or examining at Dār al-fonūn that continued into the next century. Kržiž produced the first detailed map of Tehran and also of its surrounding area, with the assistance of students at Dār al-fonūn; with another group he measured the height of [Mount Damāvand](#). In 1274/1857 he laid the first telegraph line from the Arg to the Bāḡ-e Lālazār, linking the shah’s palace and Dār al-fonūn (Polak, I, p. 315). At the government press, beside textbooks and translations by the staff, official newspapers were published. At least four teachers, Richard, Focchetti, Pesce, and Kržiž, were also associated with the rapid progress of photography in Persia (E’temād-al-Salṭana, III, p. 21; see [daguerreotype](#)).



By 1275/1858, half the original European instructors had died or left, and the contracts of the remainder had expired. Gumoëns had left in February 1853 and had been replaced by Francesco Materazzo, then in turn by Pesce and Andreini. Zatti had died suddenly in 1268/1852, allegedly suffocated by charcoal fumes, and had been succeeded by Fedor Karaczay and subsequently by the outstanding French military officer Alexandre Buhler, who had arrived in Persia in 1270/1854. Czarnotta died of malaria in 1269/1853 but was replaced only many years later by an Englishman named Hawkin, followed by Félix Vauvillier. Nemiro and the two most successful Austrians, Polak and Kržiž, stayed beyond the terms of their contracts. Kržiž was succeeded by the Frenchman Rousse in 1276/1859; Nemiro left in 1277/1860, and in the same year Polak was succeeded by the Dutch physician, Johann Louis Schlimmer, who had been in Rašt and northern Persia since 1267/1851. Schlimmer taught at Dār al-fonūn for six years, until he was replaced by Mīrzā Rezā Doktor. Focchetti, the last of the original group, stayed until June 1862; his replacement was Mīrzā Bāqer Khan, followed by Mīrzā Kāẓem Maḥallātī (Šīmī).

In April 1857 efforts had been made to persuade the French government to send as many as fourteen instructors for Dār al-fonūn, mostly officers for the infantry, artillery, and arsenal but also two for engineering and one each for physics, mining, and sugar refining. The party that was sent in November 1858 was far smaller; a few did some teaching at Dār al-fonūn until 1278/1861, but they by no means achieved success comparable to that of the Austrians. After this experience foreign military missions were no longer regarded as the most effective means of recruiting capable and dedicated instructors. Replacements were found among European residents in Tehran, independent travelers prepared to stay, and increasingly Persians who had studied in Europe. The success of Polak's first students in Paris encouraged the idea of sending a much larger group abroad, and, when Ḥasan-'Alī Khan Amīr(-e) Neẓām Garrūsī was appointed minister to Paris, a number of students were dispatched with his retinue, which left in April 1859. Forty-two students, at least half of them from Dār al-fonūn were chosen, along with a few skilled craftsmen. They were to study medicine, metallurgy, and the three main branches of military science, as well as more practical skills like carpentry and the manufacture of porcelain and paper. Most stayed several years, until Nāṣer-al-Dīn Shah, who had become suspicious of the loyalty of the students abroad, abruptly ordered them to be recalled in 1284/1867. Back in Persia several taught at Dār al-fonūn and introduced, through their publications and



teaching, the latest ideas and techniques current in Europe (for the careers of these students, see Maḥbūbī, *Mo'assasāt* I, pp. 321-28).

The reforms of E'tezād-al-Salṭana. The negotiations for the French mission and the decision to send students to France occurred shortly before the appointment of 'Alīqolī Mīrzā E'tezād-al-Salṭana as director of Dār al-fonūn in December 1857. Three years earlier he had served as an examiner at the college; in 1272/1855 he was given the title *wazīr-e 'olūm* (minister of sciences), although a separate ministry had not yet been organized. A cultivated man and author of several works, he was the obvious choice to head the new Ministry of sciences established in the reorganization of 1277/1860. Uniting the two offices of minister of sciences and director of Dār al-fonūn, E'tezād-al-Salṭana was in a unique position to direct development of the college after the unsatisfactory tenure of his three predecessors (see above). His personal stature as a son of Faṭḥ-'Alī Shah, his close relationship with the influential Maḥd-e 'Olyā (queen mother), and Nāṣer-al-Dīn Shah's support enabled him to defend and promote the interests of the college (Ādamīyat, 1351 Š./1972, pp. 17-18, 22-24), which he did vigorously throughout his long tenure, until his death in December 1880.

One of his first measures after the dispatch of the students to France and the arrival of the French military mission was to reemphasize the purpose of Dār al-fonūn and to reorganize the curriculum. According to a long statement in *Waqāye'-e ettefāqīya* (458, 19 Jomādā II 1276/13 January 1860), after the departure of so many good students for France he sought to encourage enrollment from a broad spectrum of society, rather than only from the privileged classes. For that reason, the practical value of the subjects taught and guaranteed future employment in government service were stressed. Salaries were to be paid to students at Dār al-fonūn, and free lunches and clothing were to be provided as before. The length of the overall course, originally conceived as twelve years, was reduced to less than five in some instances. The preliminary courses were also restructured, in order to confront the problem of different levels of preparation among the new students. Two or three years were to be devoted to a thorough grounding in essential subjects, followed by five or six years of specialized study (for details of the preliminary curriculum and the syllabus in military engineering at the advanced level in 1288/1871, see Mīrzā 'Abd-al-Ġaffār Najm-al-Molk, apud Pākdāman, p. 331).

These initiatives had barely been launched before Dār al-fonūn became



involved to a degree in the crisis over the *farāmūš-kāna* (for discussion of the *farāmūš-kāna*, see [freemasonry](#)). Mīrzā Malkom Khan, a translator and teacher on the staff until he was sent with Amīr-al-Dawla's mission to Europe in 1272/1856, was alleged to have encouraged students to attend secret meetings held in the house of Jalāl-al-Dīn Mīrzā (Hedāyat, p. 53). The *nāẓem*, Hedāyat, was himself supposedly among the initiates (Algar, 1973, p. 49). Once Nāṣer-al-Dīn Shah's suspicions had been aroused, the *farāmūš-kāna* was banned and Malkom Khan, who had returned to Persia, sent into exile in October 1861. The effect on Dār al-fonūn might have been severe, but, probably due to E'tezād-al-Salṭana's position, no permanent damage was inflicted on the college.

Under his patronage and protection there was remarkable continuity in the administrative hierarchy over several decades. Hedāyat remained as *nāẓem* until his appointment as steward (*pīškār*) to the crown prince, Moẓaffar-al-Dīn Mīrzā, at Tabrīz in 1278/1861 (Bāmdād, *Rejāl* II, pp. 40-41, 120). Hedāyat's two sons had been closely associated with the college almost from its foundation. 'Alīqolī Khan Moḵber-al-Dawla had briefly been a student, then librarian (1269-76/1853-59) and *ājūdān* (1276-78/1859-61). He was appointed director of the telegraph service in 1291/1874 (Bāmdād, *Rejāl* II, pp. 456-59) and after E'tezād-al-Salṭana's death minister of science, ultimately responsible for Dār al-fonūn. The real control, however, rested with his younger brother, Ja'farqolī Khan Nayyer-al-Molk. He, too, had studied engineering in the early years and had succeeded his brother as librarian; in 1278/1861 he had taken over many of the duties of *nāẓem* from his father. Indeed he was often referred to as *ra'īs* (director), a position he retained until two years after his own appointment as minister of sciences in 1313/1895-96. He was then succeeded by his own son Reẓāqolī Hedāyat, who kept the position until the [Constitutional Revolution](#) of 1324/1906.

In the early years, Nāṣer-al-Dīn Shah's interest had guaranteed that initial expenses and the salaries of the European instructors were met. According to Lady Sheil's information (p. 389), the annual operating cost was 7,750 tomans, about half of which was paid to the European instructors. Shortly after E'tezād-al-Salṭana's appointment as minister of science the revenues of Malāyer and Tūyserkān were made over to support Dār al-fonūn, thus ensuring its financial stability for the next two decades (E'temād-al-Salṭana, III, p. 12). There is evidence that in the 1880s its expenses were met from more than one source. In 1307/1889, for example, 5,000 tomans came in the form of



a draft on the revenues of Fārs and 8,000 tomans from the rent of a turquoise mine in Khorasan (Nabavi, pp. 135-36). In the same year [George Curzon](#) was told that annual costs of running the school were in the region of 30,000 tomans, though E'temād-al-Salṭana had estimated them at twice as much (Curzon, *Persian Question* I, p. 495; E'temād-al-Salṭana, *Rūz-nāma-ye kāṭerāt*, p. 525). A few years later, however, in 1315/1897-98, Afzal-al-Molk (p. 180) gave the figure of 25,000 tomans, closer to the lower estimate.

With continuity of support from the court and ministers, Dār al-fonūn was able to maintain a relatively high educational standard. Even in the last two decades of the century it still employed a number of qualified and competent European teachers. Most were recruited locally and were often prepared to stay longer than the members of the original Austrian mission, many having other employment as well. From the 1860s, however, it was the Persian teachers and their assistants who taught the core subjects; the Europeans mostly taught languages and strictly military subjects. Medicine was entrusted to generations of Paris-trained doctors on their return to Persia: Mīrzā Reżā Doktor, Dr. Moḥammad Khan Kermānšāhī, and Mīrzā 'Alī Doktor Hamadānī were the forerunners of a large number of Persian doctors, trained either at Dār al-fonūn or abroad, who taught regularly at the college after 1298/1880-81 (*Rāhnemā*, p. 50).

Like their predecessors these teachers produced a range of textbooks that had a wide impact on the cultural, scientific, and in time even political life of Persia. The publications of Mīrzā Reżā Doktor, Mīrzā 'Alī Doktor, and Abu'l-Qāsem Ḥakīm-bāšī helped to popularize Western medicine and to allay prejudice against it. The leading European doctors of the period, like Isidor Albu and Schlimmer, author of the useful *Terminologie medico-pharmaceutique et anthropologique* (Tehran, 1874), also made valuable contributions to the study of anatomy and therapeutics. Other teachers wrote studies on their own specialties. Najm-al-Molk, who spent his entire working life at the college and taught mathematics and astronomy for some forty years, wrote more than sixteen textbooks, many of them published at the Dār al-fonūn printing house (Pākdāman, p. 332). In military science the studies of Buhler and 'Alī Khan Nāẓem-al-'Olūm were notable. The translation of European travelogues, histories, and geographies, begun by Polak in the 1850s, proved popular; several teachers at Dār al-fonūn, notably Jules Richard and Mīrzā Kāẓem Maḥallātī, played a prominent part in spreading the information and ideas in these accounts beyond the confines of the classroom (for a list of



these translations and textbooks, see Nabavi, pp. 100-03).

The last decades of the Qajar dynasty. The growth in the number of teachers reflected the steady expansion of the number of students. By November 1871, a little more than ten years after the departure of the students to France in 1275/1859, enrollment had increased to about 200 (for names of ninety-eight students and the subjects studied, see Yağmā'ī, 1349 Š./1970, pp. 303-06). Some years later, E'temād-al-Salṭana (IV, p. 45) gave the figure 245, and, in 1889, Curzon (*Persian Question* I, p. 494) mentioned 255. During the same period the percentage of students in military sciences had fallen, from over 70 percent in 1268/1851 to under 30 percent in the late 1880s. Medicine, physics, chemistry, and engineering had gained preference in the core curriculum, and such subsidiary subjects as painting, drawing, music, and a wider selection of languages had been added. French was still compulsory, but English, Russian, and German (beginning in 1303/1885-86) were also taught (for the schedule of two typical days at Dār al-fonūn, 16-17 Moḥarram 1301/17-18 November 1883, compiled from the *Ketābča-ye madrasa-ye mobāraka*, see Nabavi, pp. 110-13; for another example of the daily schedule, recalled by Mīrzā Maḥmūd Khan Mohtašem-al-Salṭana, see *Rāhnemā*, p. 33).

As the numbers of students and fields of specialization increased, so did constraints on space around the original courtyard complex. As many as 250 students and at least 15 teachers and assistants, most of whom had their own rooms, plus several members of the administrative staff and servants had to be housed there, along with the offices of the Ministry of science, the printing house, a chemical laboratory, a *tūp-kāna* (arsenal), a photographic atelier, an art studio, a music room, and the library. Extensive additions, including an upper story (*bālā-kāna*) and a large hall, sometimes used as a theater, were made in 1304-05/1886-87 (*Qāżihā*, pp. 129-30).

By the 1890s Dār al-fonūn had lost its preeminence as the only Persian institution of modern learning. The Military college (*Madrasa-ye nezāmī*), established in 1302/1885 with 150 pupils and a budget of 10,000-12,000 tomans, was its first rival; in 1317/1899 the College of political sciences (*Madrasa-ye 'olūm-e siāsī*) was organized within the Foreign ministry (Pahlavan, p. 330). Enrollment in the medical department at Dār al-fonūn had already suffered from the availability of alternative tuition from several eminent physicians who had all at one time been associated with it (*Rāhnemā*, p. 61). Despite these challenges and financial constraints during the disturbances of the Constitutional period, the college continued to attract large numbers of students and



retained its staff. In 1323/1905-06 there were 316 students, 40 of whom were studying medicine; in 1329/1911-12 there were 177 students, but only 24 of them were studying medicine and engineering at the higher level. Although the annual budget of approximately 40,000 tomans accounted for a third of the total budget of the Ministry of science, at the higher and even intermediate levels, Dār al-fonūn was gradually being surpassed in numbers of students by the Military college and the College of political sciences. When plans for a separate medical college, first prepared in 1324/1906, were implemented in October 1918, thirteen Persian doctors and thirty-four medical students formed the nucleus of an independent medical faculty, financially separate from though still situated in the *ḥayāt-e nezām*, or main complex, of Dār al-fonūn (*Rāhnemā*). Establishment of separate colleges for dentistry, music, and the fine arts in the following year helped to hasten the inevitable downgrading of Dār al-fonūn to a secondary school (*dabīrestān*) in the educational reforms of the 1920s.

For a music sample, see [Dastgāh-e Māhur](#).

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