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ISFAHAN

xiv. Modern Economy And Industries

(2) Industries of Isfahan City

The stagnation experienced after the fall of the Safavids was even more marked in the 19th century owing to European competition that had rendered many local industries such as textiles and the manufacture of arms and weapons practically extinct, leaving much of the bazaar industries deserted (Philipp). In the early 1900s, the industries of Isfahan were still steeped in tradition. Small establishments, pre-industrial in nature, were the norm in the manufacturing sector, and were mostly organized into guilds that were concentrated in the bazaar. In 1924 there were 9,555 traditional craftsmen in Isfahan engaged in the following trades and industries: metalwork 1,183, woodwork 220, building and ceramics 317, textile and leather 1,354, food and agro-industry 1,412, transport 370, services and trade 4,784 (Matin-Daftari, p. 30; apud Floor, 1984, p. 12).

Beginning with an overview of the main periods of industrial development in

the city of Isfahan, this article will discuss the major modern industries of the city.

AN OVERVIEW OF THE MAIN PERIODS

The Reza Shah period. After the coup of 1921, the government took measures to protect home industries and provide investors with incentives to start new enterprises. The 1923 government decree compelling officials to wear only Persian-made clothes and the 1925 law exempting industrial machinery from import duties for ten years had a positive impact on the local industry: by 1932 a large textile mill, an electric plant for generating electricity, and five cigarette factories had been established by private capital (Floor, 1984, p. 47). The big change, however, came in the mid-1930s, in the form of Reza Shah's protectionist policy, which safeguarded the growth of home industries by setting high tariffs on imports of foreign merchandise and making bank loans and trade credit available to investors (Wilber, p. 134; Sayfpur, pp. 901-4). As a result of these state directed measures, many new factories were built in the country with Isfahan enjoying a substantial share. In the period 1934-38 alone eleven spinning and weaving mills, one hosiery, one boot making, two paper, and one match factory were established with private capital (Floor, 1984, pp. 30, 59). According to a British Foreign Office document "nearly every section of the population of Isfahan and its districts has invested some, if not all of its savings" (FO 371/20050, *Report on Economic Conditions of Esfahan in October 1936*, f. 128, apud Floor, 1984, p. 24). The greater part of the investment in these new ventures was derived from the immense wealth accrued by the affluent merchants through foreign trade, particularly that of opium.

By the end of Reza Shah's reign, Isfahan was an industrial city, highly specialized in textile manufacture and its accessories. The industrial labor encompassed 11,000 textile workers plus those employed in modern factories manufacturing paper, matches, cigarettes, and footwear, the electric plant, and the state-owned grain silo (Floor, 1984, p. 59). Assuming an average of three dependents, as did Arthur Chester Millspaugh in his calculations (see above, 1, under Farming), one finds that a quarter of the city inhabitants (about 210,000) were dependent for their livelihood on the newly established industries. Perhaps most of these wage earners belonged to the same families who were engaged in the opium business just prior to the reign of Reza Shah.

Moḥammad Reza Shah period. From the 1940s through the mid-1960s the consumer good industries grew through private investments, but the textile

industry still retained its unique position and vital importance in the economic life of the city. The politically unsettled 1940s were, however, a period of industrial decline for Isfahan. Many new plants were forced to curtail their operations or to shut down completely, largely due to shortages of raw materials and spare parts caused by the war. On the other hand, this situation created an impetus for the redevelopment of small-scale industries, especially textiles and carpet, which continued to be the biggest source of employment in the urban and rural areas. These circumstances changed in the 1950s, when the textile industry of Isfahan began to flourish again (Floor, 1984, p. 18).

Having made a fortune as textile mill owners, the Hamadāniān brothers (q.v., Supplement online) emerged as the city's major entrepreneurs. They also diversified their interests by establishing a large cement factory in 1959 to meet the growing demand for the ongoing construction projects. This new venture proved highly lucrative, returning a 60 percent yield of the initial capital to the investors within only two and half years of operation (Musawi-Fereydani, ch. 3). The brothers also opened a sugar refinery, which together with the cement and two textile mills that they owned (Ṣanāyeʿ-e pašm and Šahnāz) employed 8,000 workers in the 1960s, i.e. about a tenth of the entire workforce of the city (idem, *passim*).

The Land Reform Law of 1962 encouraged the traditional landowner-merchants of Isfahan to invest in the industrial sector, mostly in agricultural and food-processing industries, but also in assembly and capital-intensive industries such as non-metal mineral products (cf. Ministry of Industry and Mines, 1959, pp. 159-63; Ministry of Economy, 1968, pp. 15-21).

In the following decades, Isfahan flourished as a major industrial hub of the nation with a marked growth of heavy industries. In the late 1960s and the 1970s, the government invested heavily in steel, cement, defense, and oil-refining and petrochemical industries. These were supplemented by the expansion of transportation, oil and gas pipelines, energy, and irrigation infrastructure of the city and province. The private sector continued to invest in consumer goods and plastic and chemical industries (USDP, pp. 46-47).

The Post-Revolution period. Industrial production in Isfahan, as elsewhere in Iran, went through a period of stagnation in the post-revolutionary years, but the growth resumed after the end of the war with Iraq, with the introduction in 1988 of successive five-year economic plans. Ever since, Isfahan has seen a substantial growth in the steel industry; the hightech industries such as

aircraft assembly and nuclear facilities have been expanded; textile manufacturing has been revitalized and synthetic fabrics have achieved a high production; the making of cement and other construction materials as well as processed food and other consumer goods have remained significant; the chemical and pharmaceutical, leather, and machine production are all expanding, while certain older industries such as the garment industry, wood and paper, and glass have experienced a marked decline (cf. Baḵtiāri, p. 197). To increase industrial efficiency, more than ten industrial townships (*šahrak-e ṣanʿati*) have been established outside major towns near Isfahan.

Overall, in the course of the 20th century the center of gravity of the nation shifted from the northwest, where Tabriz had gained importance as the entrepot for European trade and industries, to other parts of Persia, so much so that, by the turn of the century, the cities of Tabriz, Mashad, Isfahan, and, to a lesser degree, Shiraz were in equal footing after the invincible standing of Tehran.

TEXTILES

A dozen or so large textile factories that were financed by private investment in the reign of Reza Shah were the economic mainstay of Isfahan for most of the remaining years of the 20th century. Textile manufacturing was a natural and obvious choice for modern industrial development in Isfahan; it had been the basis of the town's industry for many centuries, though it had sharply declined since the mid-19th century, when Persian textiles suffered under the devastating onslaught of European imports (Philipp; Floor, 1999, pp. 98-127). The "satisfactory fact that Manchester . . . [was] the universal clothier of Isfahan" (Curzon, p. 41) would obviously be perceived as a disgraceful setback by the reform-minded merchants and clerics of Isfahan who were striving to reinstate the indigenous textile industry by founding societies such as Anjoman-e šarqi and Anjoman-e eslāmi. Led by the pioneering entrepreneur Ḥājji Moḥammad-Ḥosayn Kāzeruni, the leading merchants of Isfahan launched the companies Eslāmiya and Masʿudiya in the last years of the 19th century; Eslāmiya manufactured and sold cloth but eventually the enterprise failed (Jamālzāda, p. 98; Najafi, pp. 31-33; Floor, 1984, p. 31; Ašraf, pp. 100-101). Notwithstanding these failures, the endeavor began to be rewarded when the state economy under Reza Shah began to provide extensive support for domestic industries. By the end of his reign, the aspiration of the previous generation of industrialists to bestow Isfahan with the epithet *dār al-ṣanāyeʿ* had been largely realized, as Isfahan became known as the Manchester of

Persia. In economic terms, however, these factories were really profitable only for a short while; in the long period of decline after the early boom the survival of the industry was guaranteed only by state intervention. More recently, spinning and weaving of wool and cotton have partly yielded to syntactic fiber, a petrochemical product. Taken as a whole, however, Isfahan's textile industry not only offered employment to many residents but also acted as a catalyst for transforming the socioeconomic fabric of the city from a pre-industrial town to a modern metropolis and set the city on the road towards modernization.

A pioneer attempt in the modern textile industry of Isfahan was Waṭan, the third modern textile factory established in Persia, founded in 1921 by the notable industrialist ʿAṭāʾ-al-Molk Deheš. The setting up of the factory itself proved a challenging task as its machinery had to be transported from Germany by road through a mountainous track via Hamadān, and this took several years. But the ideological drive for domestic manufacture was so high that even with its incomplete modern equipments the factory could boast that it was the first in the country to supply woolen cloth and blankets to the home market. Even when all the necessary machinery had been acquired, the factory was unable to compete commercially with foreign goods, and this in spite of the fact that it was taken over by such a shrewd entrepreneur as Moḥammad-Ḥosayn Kāzeruni. Its survival was critically dependent on government support by both direct financial assistance and governmental directives compelling officials to wear clothes made of domestic cloth (Millspaugh, p. 264). On the anniversary of his coronation in 1930, the king spoke warmly to Kāzeruni, remarking that his factory was the source of the woolen clothes and uniforms that the senior officials were wearing at the ceremony. A few years later the shah paid a visit to the factory in his trip to Isfahan (Wilber, p. 134; Floor, 1984, pp. 16 f.; ʿĀbedi, p. 87; Sayfpur, p. 958).

As a result of the government policy of self-reliance and protectionism, Isfahan witnessed an industrial surge in textiles from 1934-38, when the national industrialization drive was at its peak. The spinning and weaving mills Risbāf, Zāyandarud, Naḵtāb, Ṣanāyeʿ-e pašm, Šahreżā, Barq Deheš (later renamed Nur), Pašmbāf, Etteḥād-e Šahreżā, and Raḥimzāda were launched. They were built in a specially designated industrial suburb on the south bank of the Zāyandarud along the Upper Čāharbāḡ Avenue. The machinery was imported first from England and later from Germany, and was run by German technicians and managers (Sayfpur, pp. 838-40). All these factories were

private ventures with a broad investment base; the middle classes could afford the shares, which were issued in small denominations of 1,000 rials. It achieved widespread popularity thanks to the high rates of return and dividends to shareholders (Floor, 1984, pp. 24-25). Nevertheless, by 1936 the danger of overproduction was already imminent, and after 1938 the incentive to start new factories diminished due to the real fear of overproduction as well as governmental attempts to limit profits by introducing new tariffs, which increased the level of duties on most imports (Bharier, p. 174). At any rate, the goal of gaining economical independence in textiles had been achieved by the end of Reza Shah's reign: the import of woolen textiles dropped six fold in just seven years to 124 tons in 1941 (Zāhedi, p. 39; ʿĀbedi, pp. 83-84).

Reza Shah's reign was followed by a period of decline and uncertainty. While some of the factories that were under efficient management were quite successful during World War II, the town's textile industry suffered because government control on imports diminished and cheaper, higher quality commodities flooded the home market. The difficulties over importation of machinery halted the expansion of the industry and left some factories unfinished. These problems were compounded by the lack of spare parts, the withdrawal of the German technicians and managers, and the unprofessional conduct of the *bāzāri* supervisors, factors that adversely affected those factories that were still operating (ʿĀbedi, pp. 107-8; Agah, p. 210; Sayfpur, p. 840). The demands of organized labor, widespread strikes, and vandalism sporadically paralyzed the textile mills. Several factories closed down in spite of state assistance, while those that were still operating experienced financial crises (ʿĀbedi, pp. 59-60, 108). Even in the following decades the survival of the textile factories in the times of hardship was dependent on government subsidies, injection of capital, and state contracts (Floor, 1984, p. 17; ʿĀbedi, p. 87). Some factories eventually came under the direct control of the banks and the state (Sayfpur, p. 840).

The early 1950s was a period of industrial recovery. New factories such as Šahnāz, Nāhid, and Najafābād were built, and the country actually became an exporter of textiles (ʿĀbedi, pp. 109-22, 136-37). A successful factory was Šahnāz; it was owned by the Hamadāniān brothers and grew to become one of the largest in the country by producing 120,000 m2 of textile daily and employing 5,500 personnel (Musawi-Fereydani, ch. 2). In the mid-1960s nearly half of the national textile production came from Isfahan, where 25 ginning, spinning, and weaving mills employed 18,000 to 20,000 workers, while six of

them had over 1,000 workers each. The raw wool came from Kermān, Khorasan, and Ḵuzestān and the cotton from Khorasan and other northern provinces. In addition, merino wool was imported from Australia and raw materials for artificial fibers from Germany, Italy and Switzerland (*Camb*. *Hist*. *Ir*. I, p. 107; USDP, pp. 233 ff.; see also Kortum).

The cottage textile industry outlasted the large modern mills. In the 1950s and 1960s there were 25-30,000 traditional handlooms in the Isfahan region, with a daily production of 300,000 m2, operated in houses and small textile shops. These could survive by producing cheap cloth for rural consumption. They employed throughout the province more than 100,000 workers on low wages and below the poverty line. A successful campaign was launched in the early 1950s to modernize the machinery and organize the workers in the Šerkat-e taʿāwoni-e dastbāfān-e Eṣfahān (ʿĀbedi, pp. 146-53; Bahrāmi, p. 452; *FJI*, p. 28). Many small textile shops equipped with modern machinery continue to operate in Isfahan to this date.

Notwithstanding the relative decline of the textile industry using natural fibers (cotton and wool), in the late 1970s a large synthetic-fiber factory named Polyacryl Iran Corporation was established in Isfahan, in partnership with E. I. Du Pont de Nemours and Co. (USA). In the late 1990s its five production plants manufactured 70,000 metric tons of polyester and acryl staple, yarn, and tops, i.e., nearly 80 percent of the national production of man-made fiber. The dependence on the import of raw materials has been increasingly reduced through the expansion of the petrochemical industry (USDP, pp. 51, 240; Borjian, 1997; cf. *GEE*, 2002, p. 508).

STEEL

After several unsuccessful attempts in establishing the steel industry in Iran, in 1966 an agreement was reached with the Soviet Union to build a steel mill near Isfahan. The site was established at the villages of Čamgordān and Varnāmḵᵛāst, 50 km southwest of the city, which benefited not only from its ready access to a steady supply of water from Zāyandarud, but also from the existing pool of manpower from the densely-populated valley of Zāyandarud, including the city of Isfahan itself. These advantages overruled the alternative of relocating the steel mill to a site closer to the sources of its essential raw materials, i.e., coking coal deposits north of Kermān and iron ore mines of Bāfq, between Kermān and Yazd (Golubev; USDP, pp. 196 ff.). Moreover, the site of Čamgordān met the environmental concerns against possible pollution

as the Šāhkuh range acts as a natural barrier for the city (Knübel; cf. Brücher and Kerby).

The National Steel Company was formed to develop and operate the Āryāmehr steel mill (ASM). The construction of the four production units of ASM began in the late 1960s and its smelting plant began production in 1971. Since then the mill has gone through several phases of expansion. The production of the ASM began with a 1,033-m3 blast furnace having the production capacity of 1,600 tons of pig iron a day, two 80-ton converters, and a continuous casting unit with the capacity to produce 550,000 tons of primary steel products annually. The plant's rolling mills produced steel rods, bands, rails, and various shapes of structural steel (USDP, pp. 175-76). The output of raw steel rose from 400,000 tons to 2 million tons from 1971-98. In addition to producing iron alloys, the plant has two rolling factories with a production capacity of nearly 900,000 tons per annum (Tawḥidi, p. 209; Baḵtiāri, p. 13).

The ASM had a significant impact on the socioeconomic development of the region. It was interlinked with many auxiliary industries, including those feeding it (energy and mining of coal and iron deposits) and those that further developed its products (rolling of steel and semi-fabricated and finished metal products) and byproducts or refuse (chemicals, cement, etc.; USDP, pp. 185-86; Tawḥidi, pp. 26 ff.). The steel complex also encouraged the growth of related industries such as the manufacturing of pipes and mechanical and electrical appliances. Moreover, its transport requirements led to the construction of a railway connecting the mill to the national railway network and of a freeway between the plant and Isfahan. To provide housing for the 10,000 employees of ASM (1975), the nearby town of Āryāšahr (later renamed Pulādšahr) was built on a modernistic radial plan. It was designed to accomodate 50,000 to 80,000 residents, with an ultimate capacity of 300,000 ("Āriāšahr;" Farāsat; cf. Schafaghi, 1975). The neighboring settlements also expanded, most notably the village of Riz, which developed into the present Zarrinšahr with a population above 50,000.

Another large steel complex is Mojtamaʿ-e fulād-e Mobāraka, the biggest industrial project in the country. The complex had initially been designed by a European-American consortium for Bandar ʿAbbās but was eventually built on 35 sq km of terrain near the village of Mobāraka, located 15 km southeast of Zarrinšahr. It had the clear advantage of proximity to the ASM, the source of the raw steel which is then rolled in Mobāraka into steel sheets, plates, rods, and structural profiles of various sizes. These products are used in a large

number of different industries, from canning to buildings and machinery (Tawḥidi, pp. 264-71). The production of Mobāraka steel complex began in 1992 and gradually expanded, under a contract with three Italian companies, to an annual output of 4 million tons by the end of the decade (Baḵtiāri, p. 14; Borjian).

The two steel plants in Isfahan together with those in Ḵuzestān and the emerging plants elsewhere have in recent years been producing around 8 million tons of steel annually, which constitutes a meager one-percent share in the world steel production and ranks Iran in the region of 20th worldwide. Yet Iran still needs to import one third of its total domestic consumption that amounts to more than 12 million tons per annum and is increasing rapidly due to the boom in the construction sector (from various Internet sources).

OTHER MAJOR INDUSTRIES

Construction materials. The massive construction projects near Isfahan, like those of the steel mills and dams, necessitated the local production of cement. The first cement factory in Isfahan, owned by the Isfahan Cement Company (Šerkat-e simān-e Eṣfahān), was initiated by the entrepreneur, ʿAli Hamadāniān, who had realized the potential of the market and the availability of minerals. Inaugurated in 1958, it continued to expand in several phases, but was denied further expansion when another, apparently competing, cement factory was built by the government (Musawi-Fereydani, ch. 3). The latter was the Āryāmehr cement plant (now Simān-e Sepāhān), established in conjunction with the ASM, the iron blast furnace of which provided part of the substances consumed in the cement manufacturing process (Sarlak; cf. Pösch). In recent years the annual output of these factories have been 650,000 tons and 2 million tons, respectively. Together, they produce 15 percent of the national cement production (Baḵtiāri, p. 13).

Other major construction materials produced for the national market are tiles, with an average annual production of 6 km2 (ibid.), and building stones, part of it for export. For local supply, bricks and concrete are made in large amounts to cater for the ever-growing urban construction demands. The fabrication of construction supplies has grown enormously in later years, for rural adobe structures are systematically being replaced with those made from modern materials.

Food processing. Food industries of Isfahan are nationally important and

generally belong to the private sector. The vegetable oil from sesame, sunflower, and other seeds was extracted traditionally by large wooden press mechanisms, the last one of which was operating in the bazaar of Isfahan as late as the late 1950s ("Time catches up with Iran bazaar," *New York Times*, 7 Nov. 1961, p. 19). The technology began to modernize after World War II and modern plants were launched in the areas of seed production in the vicinity of Isfahan. The most outstanding plant, Nāz, supplies vegetable oil for the home market. Near Isfahan there are two large sugar refineries processing sugar beetroot. The first was established in 1961 in Ḵᵛorāsgān, east of Isfahan, with a daily beetroot intake of 4,000 tons. The second, initiated by Šerkat-e sahāmi-e qand-e Naqš-e jahān, was built in Dehsorḵ, 40 km south of Isfahan, with Polish assistance. Its output is a third of the one in Ḵᵛorāsgān (Musawi-Fereydani, ch. 4). Their total production of sugar reached 53,000 tons in 1971 (*Iran Yearbook 1977*, p. 504). The horticulture industry revived as dried fruits became a major Persian export. There are many small plants in Isfahan drying grapes for raisins, apricots, figs, mulberry, etc. More recently, canned fruits, jams, lemon and other fruit juice, and tomato paste have been made for the domestic market. Staple industries supplying local consumers are numerous. They include flour-mills and other cereal processing, poultry and livestock meat processing, milk pasteurizing, bottling soft drinks, etc. (Wezārat-e Jehād-e Kešāvarzi, XIX, pp. 49 ff.).

Aviation and defense industries. Isfahan is a major center for the nation's defense industry. These were established, with American and European assistance, in the 1950s-70s. They provided services and repairs and assembled aircrafts, tank overhaul, canons, and other weaponry and munitions. The most well-known complex is Hesa, originally an acronym for *Helicopter-sāzi-e Irān*, now *Ṣanāyeʿ-e havāpeymā-sāzi-e Irān*. Currently, it assembles, with Ukrainian technical assistance, the small passenger aircraft Iran-140 (originally Antonov-140). After the Revolution, the North Koreans and the Chinese assisted in the development of defense industries, which encompass a ballistic missile production facility.

Petrochemicals. Linked to the Isfahan refinery (see 1 above) is a petrochemical plant, which began operation in 1992. Its products (benzene, toluene, orthoxylene, paraxelene, and mixed xylems) are used in downstream line for production of aromatics, detergents, plastics, polyester fiber, paints, among others. The plant has a capacity of 193,000 tons per annum (Company brochure; cf. *GEE*, 2002, pp. 417-24; Baḵtiāri, pp. 13-14).

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