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PEARL II. ISLAMIC PERIOD

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Introduction. In the Islamic era pearls have been widely used as jewels. They have been pierced and strung to make necklaces or sewn onto textiles (garments, tents, cushions); used to decorate hats, crowns, daggers, and scabbards; employed in a wide array of other objects of art; and carried as an easily convertible and eminently form of portable wealth (in 1520, the Jabrid Amir Moqren b. Ajwad, d. 1524, whose rule extended from Bahrain to the interior of Oman, brought pearls with him on a pilgrimage to Mecca; Caskel, p. 67). Abu Rayḥān Biruni noted that he had only ever come across two prior studies on the subject of precious stones, *Ketāb al-jawāher wa'l-ašbāh* in Arabic by Yusof b. Esḥāq Kendi and a treatise (*resāla*) in Persian by Naṣr b. Yaʿqub Dinavari, both apparently lost (Biruni, p. 103; Krenkow, p. 401). His own, detailed chapter on pearls contains sections on the names and characteristics of pearls in lexicographic works; the condition of fresh pearls; the terms used by jewelers to describe pearls; prices; weights; the piercing of pearls; the repair of "diseased" pearls (*eṣlāḥ fawāsed al-laʾāli*); the small pearl known as *marjān*; terms used for the sea; shells and the position of pearl; diving for pearls, its timing and circumstances (Biruni, pp. 188-261; Krenkow, pp. 403-421).

For details on the nomenclature of pearls, see Biruni, pp. 191-205, 207-14, Krenkow, pp. 405-6; Donkin, 1998, pp. 109-11.

There is a rich body of symbolic, metaphorical and realistic references, to pearls in later Arabic and Persian prose and poetry (Donkin, 1998, pp. 116-19). Describing the approach of pilgrims towards the Kaʿba (here referred to as the "Arabian queen") at dawn, the poet Ḵāqāni Šarvāni (521-95/1127-99) wrote: *Ruz o šab-rā ke ba aṣl az Ḥabaš o Rum ārand / Piš-e ḵātun-e ʿArab jawhar o lālā binand* ("They see night and day, which have their origin in Abyssinia and Byzantium / as `Pearl' and `Shining' before the Arabian queen"; Ḵāqāni, p. 98 v. 9; tr. Beelaert, p. 111).

The Persian Gulf has always been the most important source of pearls for the countries surrounding it. The pearls found there are produced mainly by the bivalves Pinctada radiata and P. margaritifera, collectively referred to as "pearl oysters," although the latter is more important as a source of mother-of-pearl than of pearls themselves (Bosch et al, p. 220). Traditionally, the Arabs of the Persian Gulf distinguished three main types of oysters. The smallest variety, often containing seed pearls, was known as *maḥḥāra* (pl. *maḥḥār*), and was found throughout the Persian Gulf in areas up to 18 feet deep. The large, thick-shelled oysters that produced excellent mother-of-pearl were called *ṣadaifiya* (pl. *ṣadaifi*). Found principally on the Persian side of the Persian Gulf near Lāvān, Hendarābi and Kiš islands, this variety produced the largest pearls, albeit only 5-6 per 100 shells collected. Finally, the *zanniya* (pl. *zanni*) was found around Ḵārg and Ḵārgu islands, at depths of 15-18 fathoms, but it was known to yield relatively few pearls of inferior quality (Lorimer, I/2, pp. 2222-23; Floor, 1982, pp. 213, 221-22).

Pearl oysters can be found at known places on the seabed, referred to as "pearl banks," at depths ranging from three to twenty fathoms (Rentz, 1951, p. 398). Given the depths at which pearl oysters occur, they can only be procured by divers. Since the pearl banks are often located 50 km or more offshore, the divers must be transported there by boat.

Pearling vessels. During the late 19th and early 20th century, the favored vessels for pearling were the *batil*, *baqāra* and *šuʿay* (Lorimer, I/2, pp. 2322-326; Facey, p. 200). Around 1913-14, according to Moḥammad b. Ḵalifa Nabhāni's history of Bahrain **(pp. 15-20),** the *sanbuq* and *jalbut* (jolly boat) were used for pearling, although previously the *bāgla*, *batil*, *bum* and *baqāra* had been used in the past (apud Rentz, 1951, p. 397). James Hornell noted that the tranky (Portuguese terraquin, Dutch tranquin / trankie / trankey), "an open, undecked sailing craft, sharp and pointed at both ends," was another vessel type used for pearling and was so called from the word *tranka*, for a

pearl-diver's net bag (Hornell, p. 32; according to Agius, p. 185, the word is Persian). Hornell also noted that the *batil* was "much used formerly in pearl fishing and piracy" (Hornell, p. 33). In the mid-1940's, the generally single-masted, round-bottomed, shallow-draft *jalbut*, was frequently used for pearling (Bowen, 1949, p. 102). The anchor type favored by pearl fishermen because of its ability to grip in muddy and sandy sea-beds was the *senn* "a stone anchor with a metal pin pointed at each end called garn ... wedged with wood to fit a hole at the lower end of the triangular-shaped anchor" (Agius, p. 189).

Size of the fleets and labor forces involved in pearling. To a great extent, the boats used for pearling were crewed by men who sailed ocean-traveling vessels to India, southeast Asia, and east Africa during the remainder of the year; but they were available for pearl fishing in the summer, during the interval between the two monsoons (the southwest monsoon used for sailing east and the northeast monsoon used for sailing west), while the long-distance vessels were beached for necessary repairs (Tibbetts, p. 50). Carsten Niebuhr, who visited the Persian Gulf in 1765 and indicated the location of the pearl banks between Bahrain and Abu Dhabi on his map, put the population of Kuwait at about 10,000 and its pearling and fishing fleet at 800 vessels (apud Lockhart, p. 264). Berghaus estimated in 1831 that the pearl fishery of Bahrain employed 2,400 boats with crews of between 8 and 20 men (Berghaus, p. 32). A few years, later H. H. Whitelock put the number of boats in the entire Persian Gulf at 3,230, distributed as follows: Bahrain and its dependencies, 2,430 boats; Sharjah and Ras al-Khaimah, 350; Abu Dhabi and other towns on the Trucial Coast, 350; towns on the Persian coast, including Bandar-e Lenga and Bandar-e ʿAsaluya, 100. These were said to employ approximately 29,070 men (Whitelock, p. 42, 45). In the 1860s, Lewis Pelly put the figure at 4000-5000 pearling vessels in the entire Persian Gulf, roughly 1500 of which hailed from Bahrain (Pelly, 1867, p. 33). In the late 19th century the emirates along the Trucial Coast had fleets as follows: Abu Dhabi, 410 boats; Sharjah, 360 boats; Dubai, 335 boats; Umm al-Qaiwain, 70 boats; Ras al-Khaimah, 58 boats; and ʿAjmān, 40 boats (Abdullah, p. 167).

In the late 19th century Kuwaiti pearl fishers paid for passage to the Bahrain islands in order to dive on the pearl banks there (Cuinet, p. 276). The Ottoman provincial almanac for Basra from 1900 lists the best pearl fishing vessels as coming from Bahrain, followed by Oman and Qatar, and finally Qatif and Kuwait, each manned by between 30 to 100 pearl divers (Kornrumpf, p. 88). In

1906, L. Schott estimated the total number of men involved in the Persian Gulf region at about 64,000, 17,500 from Bahrain alone, with a yearly average of 30,000 more on the order (Schott, pp. 72).

According to statistics published in 1929, Bahrain's pearl fishery consisted of about 1500 boats (the same as Pelly's estimate in 1866, see Pelly, 1867, p. 33; only 1025 according to Tewfik, p. 415). So great was the demand for labor that many men walked or sailed from the Bāṭena coast of Oman to the Trucial Coast of the Persian Gulf for the diving season, and some boats came from as far away as Socotra in the Indian Ocean (Bowen, 1951, p. 169) and Hażramawt in southern Arabia (Rentz, 1951, p. 397).

Method of diving. The method of pearl diving has been described many times by various authors, including Abu Rayḥān Biruni and Abu ʿAbd-Allāh Edrisi in his description of Bahrain in 1154 (Biruni, pp. 236-51; Edrisi, 1970-, fasc. 4, pp. 387-91; tr. Jaubert, p. 373; Ebn Baṭṭuṭa, tr., I, pp. 306-7). More recent descriptions are provided by John Lorimer (I/2, pp. 2227-231) and by Lewis Pelly, who uses Arabic terminology borrowed from Nabhāni (Rentz, 1951, pp. 397-98): "Hundreds of boats may be seen anchored at a time on the banks [*ḥayr*]. As a rule the diving may be in water of four to seven fathoms in depth. Fifteen fathoms a diving is considered to be extremely prejudicial to longevity, and occasionally proves fatal. In any case the crew is told off into divers [*ḡayṣ*] and ropeholders [*sayb*, assisted by a *rażif* or, if younger, *tabbab*], the former diving while the latter keep the boat and stand by to hand the diver up (in the early 20th century many of the best divers were slaves, while freemen worked the ropes [Bowen, 1951, p. 169]). Each diver has his comrade for this purpose. The diver strips, closes his nostrils with horned-pincers [*feṭām*] [plugs his ears with wax], has a rope [*ida*] attached to his girdle, and a stone or other weight [*raṭl*] to his foot. He then drops over-board feet foremost [each descent is a *tabba*], and on reaching the bottom collects his Oysters until he can no longer remain below, when he pulls at the string, lets go the stone weight and is hauled on board by his comrade. The stone weight is attached to a second rope, by which it is afterwards hauled up. The Oysters are collected into a bag or other receptacle [basket called *dayyin*] attached to the diver's chest and waist" (Pelly, 1867, p. 34; se also Lorimer, I/2, pp. 2227-31).

To protect their fingers from the rough oysters, divers generally wore ten leather caps [*ḵabaṭ*, sing. *ḵabata*] over each finger, of either cow or camel hide (Lorimer, I/2, p. 2230; Rentz, 1951, p. 401, n. 28). Although generally naked apart from a loincloth, "a costume consisting of long trousers and a blouse

with a hood made from thin dark blue gauze is sometimes used to protect the diver against the poisonous stinging jellyfish" (Hansen, p. 17).

Regarding other dangers of pearl diving, sharks were rated much less of a menace than saw fish (*Pristis* sp.), of which divers who spoke with H. H. Whitelock in the early 1830's said, "they had seen people cut absolutely in two by these fearful monsters." Inflamed eyes were also common, and were treated with antimony applied to the interior of the eyelid using "the end of a smooth rounded piece of mother of pearl" (Whitelock, p. 44). Indeed, in 1885 or 1886 some 250 pearl divers are said to have died as a result of their work (Curzon, II, p. 456; Schott, p. 73).

The pearling season. Conflicting testimony can be found on the subject of the opening and closing dates of the pearl season. Pedro Teixeira (1586-1605) described the pearl fishery of Bahrain as follows: "The fishery of Barhen begins in some years in June, but more usually in July and goes on during that month and August. A fleet is formed of about two hundred *terradas*, more or less – a hundred from Barhen, fifty from Julfar [Jolfār in northern Ras al-Khaimah], fifty from Nihhelu [Raʾs-e Naḵilu, on the Persian coast]. They commonly go to fish at Katar [Qatar], a port of Arabia, ten leagues south of the Isle of Barhen" (tr. Sinclair, p. 176).

According to other sources, the pearl fishery was active from April to October (Bieber, p. 992; Tewfik, p. 415; see also Masʿudi, *Moruj*, ed. Pellat, sec. 359) or mid-April to late September (Kornrumpf, p. 88). Other sources put the great diving (*al-ḡawṣ al-kabir*) from May to September and the return (*redda*) in October (Charteris, p. 8); from June "until the equinox in September," when the water was "very warm, and seldom disturbed for any length of time by the wind" (Whitelock, p. 42); or from June to the first week of October off eastern Saudi Arabia, or late October off Abu Dhabi (Bowen, 1951, p. 170). Some authorities say that the *al-ḡawṣ al-bāred*, or "cold diving" season, ran from April to May, and the *majanna*, when boys waded along the shore at low tide, from October to March (Bowen, 1951, p. 170; Rentz, 1951, p. 399). Continuous diving only took place during the four months from June to early October, when the surface water temperature was about 29.4 C (85 F; Bowen, 1951, p. 170; Lorimer, I/2, pp. 2228-29).

Principal sites of pearling. Pelly estimated that there were approximately 180 pearl banks between Kuwait and Ras al-Khaimah, as well as scattered beds around Ḵārg Island and along the Persian coast (Pelly, 1867, p. 32; Lorimer, I/2,

pp. 2262-80). The principal pearl banks, in alphabetical order, are as follows.

ʿAjmān. In 1831 the entire population of ʿAjmān, a town on coast of Oman, with about 140 vessels, was engaged in pearl diving, producing a profit of c. $12-15,000 (Berghaus, p. 24).

Bahrain. Nāṣer-e Ḵosrow commented on the presence of pearl fishing around Bahrain in 1051, stating that "half of the pearls taken by the divers belong to the chiefs [*salāṭin*] of Laḥsā [al-Ḥasā]" (Nāṣer-e Ḵosrow, p. 116; Wilson, p. 89). According to Ebn Baṭṭuṭa, the sultan of Hormuz had a rosary of pearls "such as eyes had never seen, because the pearl fisheries are under his authority" (Donkin, 1998, p. 115; Ebn Baṭṭuṭa, tr., I, p. 302). This dates to a time when Bahrain was a possession of the Kingdom of Hormuz, which consequently possessed its rich pearl banks (Belgrave, 1935, p. 618; according to Teixeira, the Hormuz control over Bahrain, which had been episodic since the 14th century, was finally lost for good in 1602, cf. Schwarz, 1914, p. 542, n. 1; for an exposé of both the medieval political and economic history of the Persian Gulf and of the kingdom of Hormuz's role within it, see Lowick, p. 324 ff,). The Arab navigator Aḥmad b. Mājed (2nd half of the 15th cent.) noted, "Around Bahrain are pearl fisheries and a number of islands all of which have pearl fisheries and connected with this trade are about 1,000 ships" (tr., p. 222, cf. p. 213). A short time later the Italian traveler Ludovico de Varthema described pearl fishing in the Persian Gulf, which he said took place "at a distance of three days' journey" from Hormuz, where "they fish up the largest pearls which are found in the world" (tr., p. 108). Writing of Bahrain around 1518, Duarte Barbosa (d. 1521) said, "Around it grows much seed pearl, also large pearls of good quality; merchants of the island themselves fish for pearls and have great profits…hither come Hormuz merchants to purchase seed pearls, which they sell in India" (apud Belgrave, p. 620). In his *Ketāb-e baḥriya*, the Ottoman admiral Piri Raʾis provides a description of pearling and diving techniques around Bahrain at this time (pp. 159-63). In 1689 John Ovington wrote, "at one Season of the Year, which is in *June*, *July* and *August*, the Pearl-Fishing of the Island Baharem [Bahrain], which lies higher up in the Gulf, renders that place of more Note and Fame [i.e., than Muscat], yielding to the *Persian* Emperour yearly, the value of Five hundred Thousand Ducats" (p. 245).

Bandar-e Lenga. Lenga was once was a thriving emporium on the Persian coast, very active in pearl trade. In 1864 only eight or ten vessels from Lenga were engaged in the pearl fishery (Pelly, 1864, p. 239).

Great Pearl Bank (between Abu Dhabi and Qatar). In 1580 the Venetian jeweler Gasparo Balbi gave a detailed description of the pearl fishery in the Persian Gulf, complete with forty-four toponyms between Bahrain and Ras al-Khaimah, many of which can be identified as islands or villages on the mainland (Pinto, pp. 120-22).

Jolfār. According to Duarte Barbosa, there was in Jolfār, the main settlement in Ras al-Khaimah, "a very great fishery, as well of seed pearls as of large pearls, and the Moors of Hormuz come hither to buy them and carry them to India and many other lands. The trade of this place brings in a great revenue to the King of Ormuz" (tr., p. 73-74). Pedro Teixeira noted that Jolfār "had given its name to seed pearls because they were chiefly produced from its waters" (tr., p. 217; Wilkinson, p. 345).

Ḵārg. The 10th-century geographer Abu Esḥāq Eṣtaḵri mentioned the pearl banks around Ḵārg, noting that while they generally yielded fewer pearls than other areas, the good pearls produced there, known as *yatima* (*yatim* in Moqaddasi), exceeded those of other areas (Eṣtaḵri, pp. 32, 152; Moqaddasi, p. 101; Ebn Ḥawqal, p. 47, tr. Wiet, I, p. 42; see also *Nozhat al-qolub*, ed. Le Strange, p. 138; Schwarz, 1969, p. 86). According to Bozorg b. Šahriār, a *yatima* pearl belonging to the Abbasid caliph Hārun al-Rašid (r. 786-809) was valued at 70,000 dirhams (apud De Goeje, IV, p. 390).

Kiš. According to Ebn Ḵordāḏbeh (ca. 820-912), Kiš was a site of pearl fishing in the 9th century, while Edrisi referred to "good pearl fisheries" around Kiš in 1154, a point later reiterated by both Yāqut (1179-229) and Abu'l-Fedā (1273-331; Ebn Ḵordāḏbeh, p. 62; Edrisi, tr. Jaubert, p. 398; Abu'l-Fedā, p. 372; Ebn Baṭṭuṭa, tr. I, p. 306; Wilson, pp. 97, 99; Schwartz, p. 88; Badger, p. 415).

Qatar. In 1766 members of the Āl Ḵalifa family of settled at Zobāra on the western shores of Qatar peninsula in order to be close to the pearling banks there (Lockhart, p. 266). William G. Palgrave, who visited Dawḥa in 1863, wrote, "In this bay are the best, the most copious pearl-fisheries of the Persian Gulf" (Palgrave, p. 386). By about 1900, the population of Qatar was put at around 13,000, with a pearl fleet of more than 800 vessels (Facey, p. 205; Lorimer, II/B, p. 1533). According to the *Bombay Government Records* for 1856, the population of Dawḥa rose from 400 to 1200 during the pearling season (Johnstone and Wilkinson, p. 445).

Qatif. Benjamin of Tudela (1160-173) stated that the pearl banks around Katifa

were under the authority of a member of a Jewish community of about 5000 strong

(apud Fischel, p. 208; Rentz, 1978, p. 764). From about 1544 to 1679, when al-Ḥasā was a province of the Ottoman Empire, the pearl industry was the most important commercial activity around Qatif and Ottoman officials are known to have invested in pearls (Mandaville, p. 491).

Sharjah. During the pearl fishing season the population here of 1700-2000 Qawāsem, the ruling family of Sharjah and Ras al-Khaimah, plus assorted other Arab tribesmen doubled, and 300 vessels were employed (Berghaus, p. 25).

Sirāf, near the present-day Bandar-e Ṭāheri, once a major commercial center on the Persian coast. According to Ebn Baṭṭuṭa (1304-377), members of the Banu Saffāf (belonging to the Azd, see Wüstenfeld, p. 143) at Sirāf dove for pearls in the waters between Sirāf and Bahrain (Schwarz, 1969, p. 85).

Pearl grading and some examples of extraordinary pearls in history. Pearls were either small, seed pearls (*qomāš*) or large (*dāna*) (Rentz, 1951, p. 397) and were graded into three classes, using a set of three metal sieves (Ar. *maḵall*), each about 3.3 cm deep and 9 cm in diameter, with 31 to 61 holes in the bottom (smallest in the small bowl and progressively larger in the next two bowls; Hansen, p. 18). According to Ramire-Pie-Maxime Vadala, the units used for pearls were as follows: 1 *gou* (= 4 Indian gou) = 100 *dukra*; 330 *gou* = 1 *meṯqāl* (4.97 gr.) or 149 grains; 66 *ḥabba* = 1 *meṯqāl* (Vadala, p. 93). The *puna*, equivalent to 0.1927 gr. or 0.205 French carats, was also used on Bahrain (Tewfik, p. 415). The *meṯqāl* was already the standard unit of weight for pearls by the 11th century, according to Biruni (Biruni, p. 214-18; Krenkow, pp. 24-26; see also the table in Lorimer, I/2, pp. 2281-83).

A number of extraordinary pearls from the Persian Gulf have been documented over the years. The *yatima* pearl (lit. “orphan,” cf. *farida*, “unique”; denoting, according to Biruni, pearls found singly in their shells, rather than in pairs; Biruni, p. 194; Krenkow, p. 407) of Hārun al-Rašid, reportedly valued at 70,000 dirhams, came from the area between Bahrain and Ḵārg island (Bozorg b. Šahriār, apud De Goeje, IV, p. 380; Schwarz, 1969, p. 85).

In the 1670s Jean-Baptiste Tavernier witnessed the Khan of Hormuz offer the

Imam of Muscat 2000 tomans (7000 pounds) for what he described as the most beautiful pearl in the world. The Imam declined both this and a later offer of 40,000 crowns (9000 pounds) from the Great Mughal. Tavernier himself placed the value of the pearl at 30,000 pounds (Tavernier, pp. 86-88; Bidwell, p. 130).

In about 1715 Captain Alexander Hamilton saw a pearl as large as a hazel nut, and worth 3000 pounds, at Muscat, where divers often sold unopened shells to visitors, hoping they might be lucky enough to find a pearl (Hamilton, pp. 43-49; Bidwell, p. 132). A century later Captain H. H. Whitelock of the Indian Navy found that the crews of pearling boats were happy to sell unopened oysters "at the rate of two dollars a hundred," from which "we usually obtained two or three small pearls worth about a dollar each" (Whitelock, p. 43).

Division of profits and taxes. As James Belgrave wrote in 1928, "Nothing affects the people more than the result of the pearl season" (Belgrave, 1928, p. 442; cf. a similar statement several years earlier by the German traveler, Stürken, p. 81), and everyone, including the state, the boat captains (*nāḵodā*), the merchants and the divers, shared in the profits. In 1866 Lewis Pelly reported that the profits were divided as follows: 20 percent to the owner and captain of each vessel; 30 percent to the divers; 20 percent to the rope holders (one per diver); and 30 percent for provisions (Pelly, 1867, p. 33).

In a letter dated 1 November 1755, T. F. von Kniphausen and J. van der Hulst asserted that, "The pearl fishers [of Bahrain], who have to pay, per *beseel* [? Ar. *batil*,

a double-ended boat used for pearl diving], 25 rupees to the ruler of Bahrehn, do not pay anything, because they belong to different Arab castes against whom sjeek Nassier [Mir Nāṣer, of Bandar-e Rig] is unable to use force. The inhabitants of Bahrehn are also unable to pay their taxes in full on their fields, because all the abovementioned pearl fishers plunder the date and other tree fruits and even fell the trees" (Floor, 1984, p. 139).

In the 19th century the shaikhs of the Arab emirates of eastern Arabia demanded a diving tax (*ṭarāz*) from each boat, which was equal to a diver's share of the profits and was meant to pay for the shaikh's guards (hence the Persian Gulf Arabic term *moṭarrezi* for guard, lit. "the man who receives the *ṭarāz*"; Lienhardt, p. 69). In the 1830s, Whitelock put the tax at "from one to two dollars" depending on the "size and the number of men" on a boat

(Whitelock, p. 45). In 1831, Berghaus noted that the ruler of Sharjah received $1 for every diver active in Sharjah's pearl fishery, yielding him an annual income of about $2000-3000 (Berghaus, p. 25).

Yet the system was recognized as pernicious by many, largely because the vast majority of the divers were continuously in debt to their captains (e.g., for cash as well as food, Kornrumpf, p. 88) and encouraged to continue borrowing, effectively making the generally illiterate divers little better than indentured slaves (Harrison, pp. 167-70). As one observer describing reforms on Bahrain in 1923 [i.e., the *Bahrain Diving Law* and the *Bahrain Law for the Pearl Trade*; Rentz, 1951, p. 402, n. 41] noted, "In the old days the merchants and nakhudas ([*nāḵodā*] or captains of boats) used to keep often fictitious and always increasing accounts against their divers, which in practice, though not technically slavery, bound the diver to his service, and a diver's debt was carried on against his children. Now the old pearling courts, which were really almost a committee of pearl traders, have given place to the Government Courts, and the Bahrain Government insists that each diver has an account book open to inspection, and that any debt dies with him....Curiously enough, the very slump [depression] which so direly threatened the industry has hastened the reform of the conditions, because the rich man who held the divers in fee has lost his wealth, and every year more and more boats go out to the fishing financed on a share and share basis by the boat captains and divers themselves" (Dalyell of the Binns, p. 362).

Pearl markets. The port of Sirāf on the Persian coast was an emporium of Fars, with active maritime trade of a variety of commodities, including jewelry (see, e.g., Eṣṭaḵri, p. 154; Ebn Ḥawqal, p. 198; Wilson, p. 94). Tomé Pires saw pearls for sale at Hormuz during his travels of 1512-15 (Aubin, p. 166), while the English merchant Ralph Fitch, who visited there in 1583, described Hormuz as having "great store of Pearles which come from the Isle of Baharim, and are the best Pearles of all others" (Purchas, X, p. 168). Likewise, Pedro Teixeira included pearls in a list of exports from Hormuz, which were taken away by caravan to all parts of the Safavid Empire and by sea to Lahore and the east (Schwarz, 1914, p. 541).

Several Chinese sources refer to the pearl trade in the Persian Gulf as well. In the Song official Zhao Ru-gua's (1170-1231) *Zhu Fan Ji* (Records of Foreign Nations), it is said that "Pearls are fished along the coast" of Oman (Zhang, p. 101; Donkin, 1999, p. 134) and that these, along with other exotic commodities, were exported to Sanfoqi (the important maritime kingdom of Srivijaya, in

Sumatra) and from there to Quanzhou in China (Schottenhammer, p. 283).

Following the loss of Hormuz in 1622, Qatif became increasingly important as a Portuguese trading center, particularly for pearls collected on the Bahrain pearl banks, purchased with a combination of silver and textiles imported from Cambay and Sind (Rentz, 1978, p. 764). In 1658 Johan Albrechts von Mandelslo observed "many pearls" being sold at Gombrun (later Bandar ʿAbbās) which, he stressed, came not from the vicinity but from the waters off Bahrain (apud Hansen, p. 195, n. 10). In the mid-19th century, Bandar-e Lenga was an import market for goods, including pearls, largely because of its geographical position and lack of either import or export duties (Pelly, 1864, p. 238). One late 19th century estimate put the annual value of pearls sold at Lenga at approximately 300,000 to 400,000 pounds (Curzon, II, p. 408).

Normally the fleets from each region (e.g., Kuwait, Bahrain, Qatar) stayed together for the entire pearling season, calling into port only once, when divers visited their families, maintenance was performed on boats, and supplies were replenished. At such times, financial backers (*mosaqqam*) and petty pearl merchants (*ṭawwāš*) joined the crews and bazaars sprang up spontaneously, as on Dalmā island off the coast of Abu Dhabi, to service the boats (Lorimer, I/2, pp. 2227, 2231, 236; Facey, p. 206). Around 1900, S. M. Zwemer described Dalmā as "a great centre for the pearl-boats during the season, and one of the principal markets in the gulf. Merchants from the Arabian and the Persian coast meet here to secure bargains in pearls, and competition is often very keen" (Zwemer, p. 55).

During the pearl season in the 19th century, merchants came to Bahrain from Paris, London and Bombay. According to information supplied by the British consulate in Muscat in 1869, approximately two-thirds of the pearls collected in the Persian Gulf headed "north" to Persia, Russia, and Turkey, while only one-third were sold, via Muscat, to Bombay and Britain. Muscati Banyan agents were active in all parts of the Persian Gulf, buying pearls directly from the fishing boats whenever possible (Brenner, p. 37).

Commercial profit from pearl fishing. Prior to the Great Depression of 1929 and the invention of the Japanese cultured pearl a few years later, pearl fishing was by far the largest industry in the Persian Gulf, and Bahrain was its center (Charteris, p. 8). Figures for commercial profits vary widely and are often inconsistent or flatly contradictory (Bowen, 1951, p. 163). In 1831 the profit from pearl fishing was around $12,000-15,000 at ʿAjmān, $90,000-100,000 at

Sharjah, and $20,000-30,000 at Dubai (Berghaus, pp. 24-25). One year later Lieutenant Wyburd estimated the value of the Bahrain pearl industry at $300,000 (Tuson, p. 33). In 1833, Wilson estimated it at around 200,000, the equivalent of 1,000,000 to 1,200,000 German crowns, and that of the Persian Gulf as a whole, including Abu Dhabi, Sharjah, Ras al-Khaimah, etc., at about 300,000 pounds (D. Wilson, p. 284). Wellsted estimated Bahrain's pearl profits at pounds 400,000 in 1835 (Bowen, 1951, p. 163), and Pelly suggested an identical figure in 1866 (Pelly, 1867, p. 34).

The German businessman Richard Brenner, who visited the Persian Gulf in 1869, put the profit from the pearl fishery of the entire region at $3,740,000 (Brenner, p. 37). In 1888-89, George Curzon estimated the total value of the export of pearls from Bahrain and the Arabian coast to be 430,000 pounds (Curzon, II, p. 457). While he was Political Resident in Muscat (1899-1904), Sir Percy Cox made a journey to the Great Pearl Bank off the Trucial Coast, estimating that around 20,000 men were employed there, with an annual yield of 3,000,000 pounds worth of pearls (Cox, p. 199). But the discrepancy in published figures is great. In 1906 the combined annual profit in the Persian Gulf was put at 750,000 to 1,000,000 pounds (Stürken, p. 88), but figures for subsequent years were considerably lower.

Figures published for 1909 through 1912 confirm that Bahrain was the center of the pearl trade, and a collection point for pearl fishers operating out of both Qatar and al-Qatif. The figures are as follows in British pounds: 1909-10: Muscat 33,976, Bandar-e Lenga 35,168, Bahrain 369,000; 1910-11: Muscat 2173, Bandar-e Lenga 83,904, Bahrain 732,000; 1911-12: Bandar ʿAbbās 156, Muscat 2,997, Bandar-e Lenga 40,390, Bahrain 961,900. Interestingly, however, smuggling to avoid a 0.25 percent duty and 0.5% freight charge was thought at this time to have accounted for more than the officially registered amount of pearl exports (von Sorinj, p. 205). In 1917, Barclay Raunkiær put the number at 10,000-15,000 men from Kuwait alone (Raunkiaer, p. 224; for statiscs of 1873-1905 see Lorimer, I/2, pp. 2251-255).

In the late 1920s, the yield of Bahrain's pearls, which went largely to India, amounted to 1,000,000 pounds (Bieber, p. 992). Other figures are much higher, one estimating, "The annual value of pearl, sold chiefly through Bahrein, has risen from 300,000 pounds in 1833 (200,000 to 240,000 pounds according to D. Wilson, p. 284) and 1,500,000 pounds in 1905 to 2,500,000 or 3,000,000 pounds at present prices (1927)" (Charteris, p. 9, citing Guy Coleridge, *The XIX Century* [1927], p. 55). Although annual pearl yields in the early 20th century were said

to vary only by about 10 percent, international price fluctuations meant that the exported pearls of Bahrain in 1908 were valued at 7,400,000 German marks, as against 46,000,000 German marks in 1911. According to British records, the export value of Bahrain's pearls in the first half of 1914 (before the outbreak of the World War I) was 9,200,000 German marks (Schott, p. 74). The exported pearls of Bandar-e Lenga at about this time amounted to about 800,000 marks.

Legal questions regarding "ownership" of the pearl banks. The notion of private ownership or rights to specific pearl banks in the Persian Gulf has been discussed for centuries. In his *Droit des gens* (1758), the French legal philosopher Emer de Vattel (1714-67) stated, "Who can doubt that the pearl-fisheries of Bahrein and Ceylon may be lawful objects of ownership" (apud Charteris, p. 8). After a failed attempt was made by the Ottoman governor general of Laḥsā (al-Ḥasā), Mosṭafā Pasha, at conquering Bahrain 1559, in part prompted by the belief that the revenue from the pearl trade would then flow to the Ottoman Sultan Solaymān, the captured Ottoman soldiers were ransomed with funds generated by the sale of Moṣṭafā Pasha's collection of 176 pearls (Mandaville, pp. 491, 505).

In 1602, however, the Portuguese-installed Persian governor of Bahrain, who was himself a relative of the ruling family of Hormuz, murdered a wealthy Bahraini pearl merchant and seized his valuable collection of pearls. This precipitated a popular uprising, led by the victim's brother Rokn-al-Din, which culminated in the seizure of the Portuguese fort and the annexation of the island by Allāhverdi Khan, the governor of Fars (Eskandar Beg, II, pp. 614-16, tr. Savory, II, pp. 803-5; Belgrave, 1952, p. 63).

In 1643, the Dutch East India Company (Vereenigde Oostindische Compagnie) director of trade in Persia, Carel Constant, sent merchant Costerus to the Congo [Bandar-e Kong] and Bahrain with instructions to "discover precisely once and for all the mystery of the pearl trade" (Floor, 1982, p. 210). The robbery of the Dutch merchant diminished Constant's enthusiasm for the pearl trade, and it was not until 1662 that the company sent another merchant to Bahrain to buy pearls. This, however, still did not lead to sustained Dutch interest, but, in 1690, merchant

Hoogcamer again went to the area of Bahrain with the aim of fishing for pearls rather than buying them. The difficulties attendant on this venture, particularly in regard to the pearl divers who tried to steal pearls, convinced

him that the company was better off buying pearls than fishing for them itself (Floor, 1982, pp. 211-12).

Indeed in 1754 Baron Tido F. von Kniphausen, founder of the Dutch factory on Ḵārg island and a fortress on its northeastern shore, suggested that the Dutch East India Company seize control of Bahrain in order to gain possession of its rich pearl banks, but his proposal was rejected by the company. Nevertheless, von Kniphausen convinced the company that profits of minimally 50 percent could be made on pearls and, in a report to its governor-general on the pearl fishing that he had conducted using hired sailors, divers and boats, he included a request for six glass diving bells for use in diving to depths unreachable by local divers. Unfortunately, although the diving bells arrived in 1758, they were not accompanied by instructions for their use and, judging by the company's archives, were never put to the test (Floor, 1982, p. 210). The company eventually left the island shortly after it was taken by Mir Mohannā of Zaʿābi, the chief of Bandar-e Rig in 1765 (see DUTCH-PERSIAN RELATIONS).

In 1833 Wilson wrote that only the "Shaik of Bushire, who seems to consider these islands [Kharrack, i.e. Ḵārg, and Borgo, i.e., Ḵārgu] as his immediate property," claimed an "entire monopoly of the fishery" in his particular part of the Persian Gulf (D. Wilson, p. 283). Yet only three decades later Pelly wrote, "The beds along the Arabian Coast are held to be the property of the Arabs in common; for instance, an Arab of Koweit may dive along the Bahrein or Rass-ol-Khaimah Coast and *vice versâ*. But no person other than the Coast Arabs is considered to have any right of diving. And it is probable that any intrusion on the part of foreigners would create a general ferment along the Coast line" (Pelly, 1867, p. 32). Moreover, Sir Percy Cox, Political Resident in Muscat (1899-1904) and later Bušehr (1904-1913, 1914-1920), believed "The pearl fishery is practically the whole life of the inhabitants of the western shores of the Gulf...and one of the most important tasks which we [the British] have shouldered, as being inseparable from our position of predominance and control in these waters, has been the resolute preservation for them of this industry; firstly, against piracy, and secondly against its invasion by instruments of modern science, such as diving dresses and steam dredgers" (Cox, p. 199; cf. Abdullah, pp. 167-68).

In 1905 the Wönckhaus firm made an approach to one of the Arab shaikhs in the vicinity of Bahrain, in an attempt to gain the rights to some of the pearl fisheries there. When this was prevented by the British, Wönckhaus proceeded to negotiate with the Ottoman Sultan for the lease of Jazirat al-Halul

and for pearling rights around it, but again the British blocked this (Staley, p. 379; cf. Vadala, p. 35).

In the mid-1940's the British forces threatened anyone found using "drags, dredges, and compressed air diving suits or helmets" with a fine of 30,000 rupees (ca $9,000), and indeed there was at least one case, in 1862, of a Bombay steamer, the *Johnstone Castle*, attempting to use diving equipment on the Bahrain banks, but it was apprehended by a British gunboat dispatched by the British political resident in Bušehr (Lorimer, I/2, pp. 2244-45; Bowen, 1951, p. 171).

Some social side-effects of pearling. It is noteworthy that, around 1903, some of the first schools in the Persian Gulf (the Taymiyya school in Ḥira, Aḥmadiyya school in Dubai, Ben Ḵalaf school in Abu Dhabi) were all founded by wealthy pearl merchants. The decline of the pearling industry, which coincided with the worldwide

Great Depression of 1929, witnessed the bankruptcy of numerous pearl merchants and their pearling boats, and the consequent of many schools until the late 1930s (Abdullah, pp. 171-73). Even before the Great Depression, Japanese cultured pearls had begun to depress the international demand for genuine pearls, not solely because of their lower price, but because cultured and synthetic pearls "cheapen the pearls as a precious gem in the eyes of those who wear them" (Bowen, 1951, p. 164).

Medicinal uses. Beginning in the 6th century, Indian and Pahlavi treatises on medicine, followed by those in Arabic and New Persian, variously prescribed the inclusion of pulverized or dissolved pearls (e.g,. by Yaḥyā b. Māsawayh [777-857], Abu Mansur Mowaffaq Heravi [fl. 970-80], Avicenna [d. 1037], Biruni [d. after 1050], Moḥammad Samarqandi [fl. 1220], Ebn Akfāni (d. 1348). In the late 14th century Moḥammad Damiri praised the ability of the pearl to cure palpitation, reduce biliousness, cleanse the blood and liver, and brighten the sight (Donkin, 1998, pp. 112-113 with refs.).

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