

189; *Cambridge history of India*. iv. *The Mughul period*, ed. Sir R. Burn, Cambridge 1937, 188 ff. See also the *Bibl.* to ʿĀDIL-ŠĀHŠ.

(M. Hidayet Hosain*)

MUḤAMMAD B. ILYAS [see ABŪ ʿALĪ].

MUḤAMMAD B. ʿĪSĀ [see ʿĪSĀWĪYYA].

MUḤAMMAD B. ʿĪSĀ B. AḤMAD AL-MĀHĀNĪ, Abū ʿAbd Allāh, Persian mathematician and astronomer of the 3rd/9th century, who is known to have made observations at Baghdād from the years 239/854 to 252/866.

The following mathematical works are attributed to al-Māhānī: (1) Commentaries on Books I, V of Euclid's *Elements*; in the last of these, al-Māhānī worked out a list of "plane" numerical irrational quantities (corresponding to the irrational segments considered in Book X) and "solid" (composed of roots to the third). (2) A revision (partial: up to proposition II, 10) of the notoriously deficient translation of the *Spherics* of Menelaus; al-Tūsī considered it—as also the new version of al-Harawī (see *Bibl.*)—as "in error". (3) A commentary on Book II of Archimedes' *On the sphere and the cylinder*; it is said that al-Māhānī tried in this to solve algebraically the equation of the third degree resulting from the problem, posed by Archimedes, of the cutting of a sphere by a plane so that the two parts have a given relationship (even if this was a failure, this attempt makes al-Māhānī a precursor of the Italian algebraists of the later Middle Ages). (4) A treatise on relationship (*fi l-nisba*), in which the comparison of two relationships is made not in the Euclidean manner, using the equimultiples (a:b:c:d if na≡mb involves nc≡md for every pair of natural integers n,m; a:b:c:d if m,n exist like one has ma>nb with mc≡nd), but—as certain of the Greeks did before Euclid—by considering the result of partial quotients resulting from each of the two relationships by the application of "Euclid's algebra" taught at the beginning of Book X. (5) A treatise on the squaring of the parabola, which Ibrāhīm b. Sinān mentions as consisting of some auxiliary arithmetical theorems and five or six propositions establishing the result by reduction to the absurd (in this case, by the so-called exhaustion method).

In astronomy, apart from some observations, we possess from him a treatise on the determination of the azimuth, which explains graphic methods, sometimes used numerically. A work *On the latitude of the stars* is known only by its title. Finally, Ibrāhīm b. Sinān mentions at the beginning of his *K. fi ālāt al-aẓlāl* that al-Māhānī was said to have composed a work on the determination of the ascendant with the aid of the solar clock.

Bibliography: Life and works. The most complete information is in Sezgin, *GAS*, v, 260-2, vi, 155-6, vii, 404 (who refers also to the older biographies and to the new ones like those of Suter and Brockelmann; to this should be added Y. Dold, *Dict. of scientific biography*, under M). Particular works. (1) On the fragment preserved of the commentary on Book X, see pp. 258-60 of G. Matvievskaya, *The theory of quadratic irrationals in medieval oriental mathematics*, in *Annals of the New York Academy of Sciences*, no. 500 (1987), 253-77. (2) Only a version of the commentary completed and improved (by al-Harawī) still exists; see M. Krause, *Die Sphärik von Menelaos aus Alexandrien in der Verbesserung von Abū Naṣr Maṣṣūr b. ʿAlī b. ʿIrāq*, in *Abh. Gesell. Wiss. Göttingen*, phil.-hist. Kl., dritte Folge, no. 171 (Berlin 1936), 1, 13, 23-32. (3) Two references—one by ʿUmar Ḳhayyām—in F. Woepke, *L'algèbre d'Omar Alkhayyāmī*, Paris 1851, 2,

96 (cf. 43, 100). (4) Analysis in E. Plooi, *Euclid's conception of ratio ... as criticized by Arabian commentators*, Rotterdam 1950, 50-1, 61. (5) Ibrāhīm b. Sinān mentions this treatise in two of his *Rasāʾil*, Ḥaydarābād 1366-7/1947-8, no. 3, at p. 69 (autobiographical fragment), and no. 5, at p. 2 (his treatise on the same subject). Al-Māhānī's methods in astronomy (or in gnomonics) are studied by P. Luckey at pp. 500-3 of his *Beiträge zur Erforschung der islamischen Mathematik*, in *Orientalia*, N.S., xviii (1948), 490-510. As for his observations, Ibn Yūnus gives them in his *Zidj al-kabir al-Hākīmī*, 102-13, 164-7 (see also 58, 60), of the edn. by Caussin de Perceval, in *Notices et extraits*, vii (1804), 16-240.

(J. SESIANO)

MUḤAMMAD B. ISHĀḲ [see ABU ʿL-ʿANBAS, in *Suppl.*; IBN ISHĀḲ; IBN AL-NADĪM].

MUḤAMMAD B. AL-ḲĀSİM [see AL-ANBĀRĪ].

MUḤAMMAD B. AL-ḲĀSİM IBN ḤAMMŪD, al-Mahdī [see ḤAMMŪDIDS].

MUḤAMMAD B. AL-ḲĀSİM AL-ṬHAḲAFĪ, a military commander of the Umayyad dynasty and conqueror of Sind.

A highly respected member of the tribe of Ṭhaḳfī (*ashraf Ṭhaḳfī fi zamānīhi*), he was a favourite of al-Ḥajjīdjādī who even considered him a suitable match for his sister Zaynab (*Aghānī*, vi, 28-9). His fame is due chiefly to his military exploits in the western Indian province of Sind. Al-Ḥajjīdjādī appointed him to lead an expedition to Sind between 89/708 and 92/711 (for various dates, see F. Gabrieli, in *East and West*, xv [1965], 282, n. 1 *ter*, and Ibn al-Aṭhīr, iv, 425-7), after two commanders failed to punish Dāhīr, the ruler of Sind, for his inability (or unwillingness) to restrain pirates who had interfered with Muslim shipping near the coast of his province. Muḥammad b. al-Ḳāsim prepared the military expedition with great care. His main army took the land route across the desert of Makrān; further supplies and reinforcements were brought by sea. The first Indian city to be conquered by Muḥammad b. al-Ḳāsim was the port of Daybul [*q.v.*], situated at the mouth of the Indus. Having established a Muslim settlement there, Muḥammad b. al-Ḳāsim advanced to the north-east, killed Dāhīr in battle, and conquered a number of cities. The most important of these was Multān [*q.v.*], which was famous for its temple and served as an important centre of Hindu pilgrimage.

Muḥammad b. al-Ḳāsim's career came to an abrupt end after the deaths of al-Walīd b. ʿAbd al-Malik and al-Ḥajjīdjādī and the accession of Sulaymān b. ʿAbd al-Malik in 96/715. Together with other supporters of the former régime, he was relieved of his command, put in prison and tortured to death.

Only seventeen (or fifteen) years old at the time of his Indian campaign, Muḥammad b. al-Ḳāsim became the paragon of a successful military career at an unusually early age (Ibn Kutayba, *ʿUyūn al-aḫḫbar*, Cairo 1925, i, 229). His conquests and dealings with the vanquished rulers and populations constitute a main theme in the famous Indo-Muslim history, known as the *Čac-nāma* [*q.v.* in *Suppl.*]. According to this work, Muḥammad b. al-Ḳāsim was executed not as a result of the change of government in Damascus, but because Dāhīr's two daughters, seeking vengeance for their father's death, falsely accused him of indecency towards them while they were in his custody before being sent to the court of the caliph (ʿAlī b. Ḥamid b. Abī Bakr Kūfī, *Čac-nāma*, ed. U. Dāūdpoṭa, New Delhi 1939, 243-7; for translation, see *Bibl.*). The utterance attributed to him, according to which "the idol temple is similar to the churches of

the Christians, (to the synagogues) of the Jews and to the fire-temples of the Zoroastrians" (*mā al-budd illā ka-kānā'is al-naṣārā wa 'l-yahūd wa-buyūt nīrān al-madīyūs*) (al-Balādhuri, *Futūḥ*, 439) seems to be the earliest statement justifying the inclusion of the Hindus in the category of *ahl al-dhīmna*. While the sources make it clear that Muḥammad b. al-Kāsim's policy towards the conquered population varied from place to place, the above-mentioned utterance has caused many modern Muslim writers to consider Muḥammad b. al-Kāsim a model of religious tolerance in early Islam.

Bibliography: Balādhuri, *Futūḥ*, 436-41 and index (tr. F.C. Murgotten, *The origins of the Islamic state*, New York 1924, 215-25; to be used with great care); Ya'qūbi, *Ta'rikh*, ii, 345-7; Tabari, index; Ibn Sa'd, vi, 212-13; Ibn al-Athīr, iv, 425-7, 464-5; Šafadi, *al-Wāfi bi 'l-wafayāt*, ed. S. Dederling, Wiesbaden 1959, iv, 345-6; 'Abd al-Ḥayy al-Hasanī, *Nuzhat al-khawātir*, Haydarābād, Dn. 1947, i, 12-16; Bīrūnī, *Tahkik mā li 'l-Hind min maḳūla maḳbūla fi 'l-'aql aw marḍūla*, Haydarābād, Dn. 1958, 16, 88; E.C. Sachau, *Al-Beruni's India*, repr. New Delhi 1964, i, 21, 116; M.K. Fredunbeg, *The Chachnamah, an ancient history of Sind, giving the Hindu period down to the Arab conquest*, Karachi 1900; Elliot and Dowson, *The history of India as told by its own historians*, London 1867, index; F. Gabrieli, *Muḥammad ibn Qāsim al-Thaqafi and the Arab conquest of Sind*, in *East and West*, xv (1964-5), 281-95; S.M. Jafar, *End of 'Imad-ud-Din Muḥammad ibn Qāsim, the Arab conqueror of Sind*, in *IC*, xix (1945), 54-68; Muḥammad Ikrām, *Ab-i kawthar*, Lahore 1968, 22-7; Sa'id Aḥmad, *Musalmānōn kā 'urūdī o zawāl*, Dihlī 1963, 206-11; Muḥammad al-Kādi, *Baṭal Thakif*, Baghdād 1946; 'Umar Abu 'l-Naṣr, *Muḥammad b. al-Kāsim, fātih al-Hind wa 'l-kā'id al-ṣamm li 'l-djāysh al-'arabi wa-huwa fi 'l-sabi'a 'ashra min 'umrihi*, Beirut 1947; Y. Friedmann, *The temple of Multān. A note on early Muslim attitudes to idolatry*, in *IOS*, ii (1972), 176-82; idem, *A contribution to the early history of Islam in India*, in M. Rosen-Ayalon (ed.), *Studies in memory of Gaston Wiet*, Jerusalem 1977, 309-33; idem, *The origins and significance of the Chach Nāma*, in Y. Friedmann (ed.), *Islam in Asia. 1. South Asia*, Jerusalem 1984, 23-37. (Y. FRIEDMANN)

MUḤAMMAD B. KHAḤIF: under IBN KHAḤIF reference has erroneously been made to MUḤAMMAD B. KHAḤIF, whereas the latter name is in fact that of the mystic dealt with in the article preceding the reference.

MUḤAMMAD B. KHALAF B. AL-MARZUBĀN, philologist of 'Irāk, who lived in the Bāb al-Muḥawwal quarter of Baghdād and who died in 309/921.

According to Ibn al-Nadīm (*Fihrist*, 86, 149-50), Ibn al-Marzubān was above all a transmitter of historical traditions (*akhbār*), of poetry (*aṣḥār*) and of anecdotes (*mulah*), but was also a specialist in the Kur'ānic sciences, being the author of a *Kitāb al-Hawā* in 27 volumes. Yāqūt (*Irshād*, vii, 105) adds that he translated some fifty works from Persian into Arabic and that he wrote a dozen books in the descriptive genre (*waṣf*). Out of his abundant production, only a few works have come down to us, and only one of these edited, his *Kitāb Tafṣīl al-kilāb 'alā kathīr mim-man labisa 'l-thiyāb*, by L. Cheikho, in *Machriq*, xv [1912], 515-31.

Bibliography: Brockelmann, I², 130, SI, 189-90; Kaḥḥāla, *Mu'allifin*, ix, 285; Ziriklī, *A'lām*, vi, 348; Mas'ūdi, *Murūdj*, index. (G. TROUPEAU)

MUḤAMMAD B. MAḤMŪD B. MUḤAMMAD B. MALIK-ŠĀH, Abū Shujā' Ghīyāth al-Dunyā

wa 'l-Dīn, Saldjūk sultan in western Persia 548-55/1153-9.

The death in 547/1152 of Sultan Mas'ūd b. Muḥammad [q.v.] without direct male heir instituted a period of confusion for the Great Saldjūk sultanate, in that there were left several Saldjūk princes with claims to the throne, including Mas'ūd's brother Sulaymān-Šāh and the sons of his brothers Maḥmūd and Ṭoḡrīl. All but Muḥammad, out of these contenders, were of mediocre abilities, and were largely dependent on the Turkish Atabegs and other *amīrs*, some of whom kept Saldjūk princes at their local courts whose claims they then promoted as shields for their own personal ambitions; it is only Muḥammad who is praised by 'Imād al-Dīn (in Bundārī, ed. Houtsma, 248) as the most majestic, learned and just of the Saldjūks.

Muḥammad, born in Rabī' II 522/1128, had been brought up with his brother Malik-Šāh by the Atabeg of Fārs Bozaba as a potential rival to Muḥammad's uncle Mas'ūd, but was later adopted by Mas'ūd. The latter may in fact have intended Muḥammad as his successor, for after Malik-Šāh had shown his incapacity, Muḥammad was in 548/1153 summoned from Khūzistān and made sultan by the *amīr* Khāṣṣ Beg b. Palang-Eri. Muḥammad nevertheless soon got rid of his dangerous power in the state by executing Khāṣṣ Beg, but was soon involved in a struggle to retain his throne with his uncle Sulaymān-Šāh, who had now escaped from captivity under Mas'ūd. Sulaymān-Šāh could not hold out against Muḥammad's superior force, but escaped to Baghdād in 550/1155 and became a protégé of the caliph al-Muḥtafi [q.v.], who hoped to use him against Muḥammad. This was the period of the resurgence of 'Abbāsīd power in 'Irāk, aided by the skill of al-Muḥtafi's vizier 'Awn al-Dīn Yahyā Ibn Hubayra [q.v.]; after Mas'ūd's death in 547/1152, the Saldjūk *shihna* or military representative had been expelled from Baghdād, and Saldjūk influence henceforth excluded from the city. Sulaymān-Šāh's ventures came, however, to naught with his defeat and capture by Muḥammad and his ally Mawdūd b. Zangī of Mawṣil (551/1156), and Muḥammad now felt strong enough to attack and besiege Baghdād in Dhu 'l-Ka'da 551/December 1156-January 1157, being joined in this by the Mazyadid [q.v.] *amīr* 'Alī b. Dubays. However, he had to raise the siege in the following year, on hearing news of the appearance at Hamadhān of the Atabeg of Ādharbāyḡdjan, Ildeñiz [q.v.], together with the rival Saldjūk princes Malik-Šāh and Arslan b. Ṭoḡrīl b. Muḥammad.

The last years of Muḥammad's life were spent campaigning against Ildeñiz and his protégés, now including also Sulaymān-Šāh; he defeated them at Nakhčivān and was about to march on Baghdād again when he fell ill and died at Hamadhān at the end of Dhu 'l-Ka'da 554/December 1159. He was then briefly succeeded as sultan by the ineffectual Sulaymān-Šāh.

Bibliography: 1. Primary sources. Bundārī, *Zubda*, 229-55, 285-8; Rāwandī, *Rāhat al-sudūr*, 258-70; Zāhīr al-Dīn Nīshāpūrī, *Saldjūk-nāma*, 67-72; Husaynī, *Akhbār al-dawla al-saldjūkiyya*, 126-43, Eng. tr. Qibla Ayaz, *An unexploited source for the history of the Saljuqs...*, Edinburgh Univ. Ph.D. thesis 1985, unpubl., 318-45; Ibn al-Djawzī, *Muntazam*, x, years 551-4; Ibn al-Athīr, years 551, 553-4. 2. Secondary sources. K.A. Luther, *The political transformation of the Saljuq sultanate of Iraq and western Iran*, Princeton 1964, 26-103; C.E. Bosworth, in *Camb. hist. of Iran*, v, 131-3, 169; H. Mason, *Two*