dustry survived into the Arab period. The garments made in the district of Burs were, according to Mas'ūdī (Murūdī, vi, 59) called Bursiyya or also Khutarniyya, after the district between Burs, Bābil and Hilla (following G. Hoffmann's emendation). In Yākūt, iv, 773, Narsiyya should therefore be emended to Bursiyya.

Bibliography: Ibn Khurradādhbih, ii; Balādhurī, index; Kudāma (ed. de Goeje), 238; Masʿūdī, Murūdj, vi, 59; Bakrī, 149; Yākūt, i, 136, 565, iv, 773; M. Streck, Babylonien nach den arabischen Geographen, 16; A. Berliner, Beiträge zur Geographie und Ethnographie Babyloniens im Talmud und Midrasch, 26; G. Hoffmann, Syrische Akten Persischer Märtyrer, 26, note 206; H. Rawlinson, On the Birs Nimrūd or the Great Temple of Borsippa, in JRAS xvii (1860); H. V. Hilprecht, Explorations in Bible Lands, 182 ff.

(E. HERZFELD)

BIRÛN, in Persian 'outside', the name given to the outer departments and services of the Ottoman Imperial Household, in contrast to the inner departments known as the Enderûn [q.v.]. The Bīrūn was thus the meeting-point of the court and the state, and besides palace functionaries included a number of high officers and dignitaries concerned with the administrative, military, and religious affairs of the Empire.

Bibliography: D'Ohsson, Tableau général de l'Empire Othoman, vii, Paris 1824, 1-33; Ismail Hakkı Uzunçarşılı, Osmanlı Devletinin Saray Teşkilâtı, Ankara 1945, 358 ff.; Gibb and Bowen, 1/1, 72, 82 ff., 346 ff., see further SARAY.

(B. Lewis)

AL-BİRÜNİ (BĒRŪNĪ) ABU 'L-RAYḤĀN MUḤAMMAD B. AHMAD, also sometimes called by the nisba AL-Khwārizmī by certain Arabic authors (e.g., Yāķūt) and also, at the risk of a confusion of names, by some modern Orientalists (see AL-KHWĀRIZMĪ), was one of the greatest scholars of mediaeval Islam, and certainly the most original and profound. He was equally well versed in the mathematical, astronomic, physical and natural sciences and also distinguished himself as a geographer and historian, chronologist and linguist and as an impartial observer of customs and creeds. He is known as al-Ustadh, "the Master". He was born of an Iranian family in 362/973 (according to al-Ghadanfar, on 3 Dhu'l-Hididia/ 4 September - see E. Sachau, Chronology, xivxvi), in the suburb (birūn) of Kāth, capital of Khwārizm (the region of the Amū-Daryā delta, now the autonomous republic of Karakalpakistan on the southern shores of the Aral Sea). He spent the first twenty-five years of his life in his homeland, where he received his scientific training from masters such as Abū Naşr Manşūr b. 'Alī b. 'Irāķ Dillānī, the mathematician. Here he published a few early works and entered into correspondence with Ibn SInā, the young prodigy of Būkhārā, his junior by seven years. It would appear that he went in person to see the Sāmānid sultan Manşūr II b. Nūḥ (387-389/997-999), whom he praised as his first benefactor. Next, he went for a long stay to Djurdjan, south-east of the Caspian Sea, apparently in 388/998 when the Ziyarid sultan Abu 'l-Ḥasan Ķābūs b. Washmgīr Shams al-Macali returned from exile; from there he was able to go as far as Rayy (near Tehran). It was at the Court of Djurdjan that he wrote his first great work, on the subject of calendars and eras, and important mathematical, astronomical, meteorological and other problems. This was dedicated to Kābūs, probably about 390/1000, without prejudice to much later emendations and alterations; the K. alĀthār al-Bāķiya 'an al-Kurūn al-Khāliya (Chronologie orientalischer Völker, published by Edward Sachau. Leipzig 1878, reprinted by helioplan, Leipzig 1923; English translation entitled The Chronology of Ancient Nations, London 1879). Brought up in the Iranian dialect of Khwarizm, al-Biruni spoke Persian, but deliberately chose to use the Arabic language in his scientific writings, though some later works may have been written in Persian or in Arabic and Persian simultaneously. Having returned to his own country before 399/1008, and having been received by Prince Abu 'l-Ḥasan 'Alī b. Ma'mun, he was able to give his services for seven years to the brother of this prince, the Khwarizmshāh Abu 'l-'Abbās Ma'mūn b. Ma'mūn, and was entrusted, because of his "golden and silver tongue", with delicate political missions.

After the assassination in 407/1016-17 of the Khwārizmshāh by his rebellious troops and the conquest of the country by the powerful Ghaznawid sultan Mahmud b. Subuktakin, many prisoners were led away to Ghazna in Sidjistan (Afghanistan) in the spring of 408/1017, including learned and wise men among whom were al-Birūni, Abū Nașr already mentioned, and the physician Abu 'l-Khayr al-Husayn b. Bābā al-Khammār al-Baghdādī. Ibn Sīnā must have left Djurdjāniyya for Djurdjān of his own free will in 398/1008 together with the Christian physician, Abū Sahl 'Īsā b. Yaḥyā al-Masīhī al-Djurdjani. This physician had collaborated closely with al-Bīrūnī, even to the point of writing a series of works in his name, as did also Abū Naşr (see below). Al-Bīrūnī, henceforth retained at the Court of Ghazna, possibly as official astrologer, accompanied Sultan Mahmud on seveal of his military expeditions to north-west India. Here he taught the Greek sciences and received in exchange, with his initiation into Sanskrit and various dialects, the incalculable sum of knowledge which he put into his Description of India, completed in 421/1030 short y after the death of Mahmud: the K. Ta'rikh al-Hind (Al-Beruni's India, ed. E. Sachau, London 1887; English translation, 2 vols., London 1888, 2 1910). The previous year, al-Biruni had written an abstract of geometry, arithmetic, astronomy and astrology: the K. al-Tafhīm li-Awā'il Sinā'at al-Tandjīm, English translation facing the text by R. Ramsay Wright, London 1934.

It was to Sulțān Mascud b. Mahmud (421-432/ 1030-41) that the Master dedicated this third principal work in 421/1030, reserving the right to add the finishing touches later: the K. al-Kanūn al-Mas'ūdī fi 'l-Hay'a wa 'l-Nudjūm (Canon Masudicus, Ḥaydarābād (Dn) 1954-56, 3 vols.). According to Yākūt, Ma'sūd offered the author an elephant-load of silver pieces for this work, but al-Bīrūnī refused the gift. In spite of this, he was provided with the means of carrying out his scientific and literary work to the end of his life. The treatise on mineralogy which he wrote during the reign of Sultan Mawdud b. Mas'ud (432-441/1041-49) has come down to us; it is the K. al-Djamāhir fī Macrifat al-Djawāhir, ed. F. Krenkow, Ḥaydarābād, (Dn) 1936. In a last important work, still unpublished, the K. al-Şaydala fi 'l-Tibb on medicinal drugs, (see H. Beveridge, An Unknown Work of Albiruni, in JRAS 1902, 333-5; M. Meyerhof, Das Vorwort zur Drogenkunde des Berünk (ed. and trans.), Berlin 1932) the Master declared himself to be over 80 (lunar) years old. The date of his death, usually fixed in 440/1048, according to al-Ghadanfar, must therefore be put back a little. Al-Bīrūnī must have died after 442/ 1050, probably at Ghazna.

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The total number of his works is considerable. In his Risāla fi Fihrist kutub Muhammad b. Zakariyya al-Rāzī, ed. P. Kraus, Paris 1936) he includes (in 427) the Fihrist of his own writings, of which 103 are completed, 10 unfinished (among which are the Chronology and the Canon Mas'ūdicus), 12 have been written in his name by Abū Naṣr, 12 by Abū Sahl and 1 by Abū 'Alī al-Ḥasan b. 'Alī al-Đilī; making a total of 138.

Taking into account works written after the Fihrist, and also certain omissions in this list, the total number of works is 180, differing widely from one another in length, from brief treatises on specialised matters to major works embracing vast fields of knowledge. Apart from the edited texts referred to above, 4 mathematical and astronomical treatises have been published in Haydarabad (1948) in a single volume entitled Rasā'il al-Bīrūnī: 1. K. fī Ifrād al-Makāl fī amr al-czlāl; 2. Fī Rāshīkāt al-Hind (cf. E. Wiedemann, Über die Lehre von den Proportionen nach al-Birūni, in SBPMS Erlg., Beiträge, 48, 1-6, 1916); 3. Tamhīd al-Mustaķarr li-Taḥķīķ ma^cnā al-mamarr; 4. Maķāla fi Istikhrādj al-awtār fi 'l-Dā'ira bi-Khawāṣṣ al-Khatṭ al-Munḥanī fī-hā (translation and commentary by H. Suter in Bibliotheca Mathematica, iii, folio XI, 11-78, Leipzig 1910-11). A volume entitled Rasā'il Abī Naṣr ilā 'l-Birūnī was published separately in Haydarābād in 1948. This includes 15 mathematical and astronomical treatises by Abū Naṣr among which are most of these written in the name of al-Bīrūnī. Manuscripts, some partially edited, others unedited, of about twenty other works of al-Bīrūnī have come down to us, among which are: the K. Taḥdīd Nihāyāt al- Amākīn li-Taşhih Masāfāt al-Masākin (geographical extracts in Birūni's Picture of the World by A. Zaki Velidi Togan in Memoirs of the Archaeological Survey of India, no. 53, New Delhi, 1941; the MS. Fātiḥ 3386 completed at Ghazna in 416 is possibly in his own hand); the K. fī Istīcāb al-Wudjūh al-Mumkina fī San'at al-Asturlāb (cf. E. Wiedemann and J. Franks, Allgemeine Betrachtungen von al-Birūni in seinem Werk über die Astrolaben, in SBPMS Erlg., Beiträge, 52-3, 97-121, 1920-21); the Makāla fī 'l-Nisab allatī bayna 'l-filizzāt wa 'l-djawāhir fī 'l-hadim (cf. E. Wiedemann, Über Bestimmung der spezifischen Gewichte, in SBPMS Erl., Beiträge, 38, 163-166, 1906); the Tardiamat K. Bātandiali fi 'l-Khalās min al-Irtibāk (cf. H. Ritter, La traduction du Livre de Patanjali par Berūni, communication in Persian in the Livre du Millénaire d'Avicenne, ii, 134-148, Tehran 1955).

Bibliography: Since lack of space makes it impracticable to provide an exhaustive list of the work done on al-Bīrūnī, of which there is a fair volume, though very inadequate for such an important figure, I refer the reader to my study: L'Oeuvre d'al-Bērūnī: Essai Bibliographique, in MIDEO, ii, 161-256 and iii, 391-396, 1956; taking up the work of H. Suter and E. Wiedemann, Über al-Bīrūnī und seine Schriften, in SBPMS Erlangen, Beiträge, 52-53, 55-96, 1920-21, we have listed 180 works of the Master, provided a bibliographical index as complete as possible for each one, with tabular summaries. The main studies of the life and works as a whole of al-Bīrūnī are listed below, as well as a few studies of special subjecs.

A. Bibliographies and Studies of the Works as a Whole: Bīrūnī, Risāla fī Fihrist, op. cit. ed. P. Kraus; the Arabic text and the autobiographical section are also to be found in E. Sachau's introduction to the Chronology (Arabic text); German

trans. in H. Suter and E. Wiedemann, op. cit., 71-79; biographical development in the other sections of this work, and also in E. Sachau's introductions to the Chronology (Arabic text and English translation) and in India (Arabic text and English translation); Ibn Abī Uşaybi'a, 'Uyūn al-Anbā', ii, 20-21 (cf. E. Wiedemann, Biographie von al-Birūni, in SBPMS Erlg., Beiträge, 44, 117-8, 1912); Yāķūt, Irshād al-Arīb, ed. Margoliouth, vi, 308-14 (German trans. by E. Wiedemann and J. Hell, Über al-Bīrūnī, in MGMN, xi, 314-21, 1912); Zāhir al-Dīn al-Bayhakī in his Ta'rīkh Hukamā' al-Islām, MS. Berlin, 10052 (cf. E. Wiedemann, Einige Biographien nach al-Baihaķī, in SBPMS Erlg., Beiträge, 42, 66, 1910); 'Ali b. Zayd al-Bayhaķī, Tatimmat Şiwan al-Ḥikma, ed. Muh. Shafic, Lahore 1935, 62-4; Suyūți, Bughyat al-Wu'a, Cairo 1326, 20; Brockelmann, I, 475, S I, 870-1; Suter 98-100; G. Sarton, Introduction to the History of Science, Baltimore 1927, I, 707-9; L. Leclerc, Histoire de la médecine arabe, i. 480-2. Paris 1876; Carra de Vaux, Penseurs de l'Islam, ii, 75-87, 215-7; Syed Hasan Barani, Al-Biruni: His Life and Works (in Urdu), 'Aligarh 1927; idem, Ibn Sina and al-Beruni. A Study in Similarities and Contrasts, in Avicenna Commemoration Volume, Calcutta 1956, 3-14; H. Ritter, Werke al-Bīrūnī's, in Orientalia, Istanbul 1933, i, 74-78; A. Zeki Velidi Togan, Neue geographische und ethnographische Nachrichten, and in Geographische Zeitschrift 1934, 363 ff.; R. Ramsay Wright, Preface to the Book of Instruction (K. al-Tafhīm), op. cit.: Zia ud-Din and F. Krenkow, in Islamic Culture, vi, Jul.-Oct. 1932; M. Meyerhof, Études de Pharmacologie arabe, in BIE 1940, 22, 133-52; Wüstenfeld, in Lüddes Zeitschr., i, 36, in Die Arab. Arzte no. 129 and in Die Geschichtsschreiber der Araber no. 195; F. Taeschner, in ZDMG, 77, 31 ff.; M. Krause, Albīrūnī ein iranischer Forscher, in Isl., 26, 1-15; M. Ya. al-Hāshimī, Nazariyyat al-iķtisād 'inda al-B., in MMIA, 15, 456-65; Academy of Sciences of the U.S.S.R., history and philosophy section, Birūni, Moscow-Leningrad, 1950; Iran Society, Al-Biruni. Commemoration volume. A.H. 362-A.H. 1362, Calcutta 1951.

B. Detailed Studies: E. Wiedemann (besides the works already quoted) Astronomische Instrumente. Über trigonometrische Grössen. Geodätische Messungen, in SBPMS Erlg., Beiträge, 41, 26-78, 1909; idem, Ein Instrument, das die Bewegung von Sonne und Mond darstellt nach al-Birūnī, in Isl. iv, 5-13, 1913; idem, Über die verschiedenen, bei der Mondfinsternis auftretenden Farben nach al-Birūni, in Eders Jahrbuch für Photographie, 1914; idem, Über Erscheinungen bei der Dämmerung und bei Sonnenfinsternissen nach arabischen Quellen, in Archiv für Geschichte der Medizin, xv, 43.52, 1923; idem, Meteorolog. Zeitschr., 199-203, 1922; idem, Über Gesetzmässigkeiten bei Pflanzen nach al-Bīrūnī, in Biolog. Zentra!blatt, xl, 413-16, 1920; idem, Geographisches von al-Birūni, in SBPMS Erlg., 44, 1-26, 1912; E. Wiedemann and J. Hell, Geographisches aus dem Mascudischen Kanon von al-Birūni, ibid., 119-25; E. Wiedemann, Über den Wert von Edelsteinen bei den Muslimen, in Isl., ii, 345-58, 1911; idem, Über die Verbreitung der Bestimmungen des spezifischen Gewichtes nach Bīrūnī in SBPMS Erlg., Beiträge, 45, 31-4, 1913 (cf. Mīzān); H. Suter, Über die Projektion der Sternbilder und der Länder von al-Biruni Tastik al-Şuwar wa-tabţih al-kuwar, in Abhandlungen zur

Gesch. der Naturw. u. Medizin, iv, 79-93, 1922; idem, Der Verfasser des Buches "Grunde der Tafeln" des Chuwarezmi (nämlich al-Birūni), in Bibl. Math., ser. 3, iv, 127-9, 1903; C. Schoy, Aus der Mathematischen Geographie der Araber (nach dem Kānūn al-Mas 'Ūdī) etc. in Isis. v. 1922. 51-7; idem, Die Bestimmung der Geographischen Breite der Stadt Ghazna durch al-Biruni, in Annalen der Hydrographie, 1925, 41-8; idem, Die trigonometrischen Lehren des persischen Astronomen Abu 'l-Raihan Muh. Ibn Ahmad al-Biruni, Hanover 1927; Reinaud, in Geographie d'Aboulfeda (trans.) i, 1948, xcv ff.; idem, in Mémoires de l'Académie des Inscriptions, xviii, 2, 29; Mehren, in Annaler for nordisk Oldkundigheid, no. 15, 1857, 23; Elliot-Dowson, History of India, ii, 1; M. Schreiner, Les Juifs chez Albiruni, in REJ, xii, 258; M. Fiorini, Le projezioni cartographiche di Albiruni, in Bolletino della società geographica italiana, ser. III, vol. iv, 287-94; E. Sachau, Indo-arabische Studien zur Aussprache und Geschichte des Indischen, in der I. Hälfte des XI. Jahrh., Abh. d. Berl. Ak., 1888. (D. J. BOILOT)

BIRZĂL, BANÛ, a Berber tribe of the Zenata group mentioned as living in the Lower Zab (south of Msīla) at the beginning of the 4th/10th century. These Berbers, in conflict with the Fatimid Caliph, 'Ubayd Allah, who built the fortress of Msīla as a look-out against them, supported the Khāridjite agitator, Abū Yazīd [q.v.], and offered him refuge when he was pursued by the Fatimid Caliph, al-Manşûr. Although the latter pardoned them, they nevertheless took part in the rebellion of the governor of the Zāb, Djacfar Ibn al-Andalusī [q.v.] in 360/971. Fățimid repression forced them to flee; they found refuge in Spain where they formed a corps of Berber troops at the service of the Umayyad monarchs. Their chiefs supported the party of Ibn Abī 'Āmir at the death of the Caliph al-Hakam II; one of them was rewarded for this by being made governor of Carmona. During the period of anarchy in Andalusia at the beginning of the 5th/11th century, the Birzāl formed a little independent state at Carmona which tried to resist the ambitions of the 'Abbādids of Seville. They were finally obliged to submit to the king of Seville in 459/1067 and disappeared, at any rate as a group, just as they had formerly disappeared from the Maghrib.

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AL-BIRZĀLĪ, 'ALAM AL-DĪN AL-ĶāSIM B. MUHAM-MAD B, YŪSUF, also called Ibn al-Birzālī, Syrian historian and hadith scholar. He was born in Damascus in Diumada I or II, 665/February-April, 1267. A case could be made for the earlier date, sometimes mentioned, of 663/1265, but al-Birzālī himself evidently maintained that he was born in 665. His ancestors belonged to the Birzāl [q.v.] Berbers. His great-grandfather, Zakī al-Dīn Muhammad b. Yūsuf (b. ca. 577/1181-82, d. in Hamā in 636/1239),

had settled in Syria at the beginning of the 7th/13th century. Zakī al-Dīn's additional nisba, al-Ishbīlī, shows that he himself, or one of his ancestors, had once lived in Seville. A work of his is preserved in Damascus (cf. G. Makdisi, in BSOAS, xviii/1956, 22); copies of two volumes of Ibn 'Asakir's History of Damascus written by him are preserved in Bankipore (Cat., xii, 144 ff., nos. 800-801; cf. also v, 2, 223, no. 481). Al-Birzālī's grandfather, who succeeded his father in the position of imam at the Fallus Mosque (Flus [?], according to the vocalisation indicated by J. Sauvaget, Les monuments historiques de Damas, Beirut 1932, 60; cf. al-Nu'aymī, Dâris, i, 86, ii, 361), died a young man of twenty-three years in 643/ 1245-46, leaving al-Birzālī's father, Bahā' al-Dīn, to be brought up by his maternal grandfather. Bahā' al-Dīn, an official of the judiciary and accomplished scholar, died 699/1300 in his sixtieth year (cf. Ibn Ķādī Shuhba, I'lām, anno 699).

As a member of a family of scholars, al-Birzālī, together with his sister Zaynab, received his instruction from his father and other famous scholars. Ibn Taymiyya, for instance, lectured in his home (Bankipore, Cat., v, 2, 180). He started out very young, but precocious as he was, he retained his love for scholarship all his life. He went through the full curriculum of religious studies, travelled in pursuit of his studies to other Syrian cities and to Egypt, served for a while as an official witness, but spent most of his life as professor of hadith in Damascus colleges, his principal position being that at the Nūriyya (idiāzas from his courses there in Bankipore, Cat., v, 2, 50 f., 198 f.). He undertook the pilgrimage several times and died at Khulays in the holy territory on 4 Dhu 'l-Ḥididia 739/13 June, 1339. His children, among them Muhammad and Fățima, both gifted scholars, had died before him. Among his many students and colleagues were the most prominent scholars of the time, among them al-I)hahabī. There is unanimous agreement among his biographers that he was an unusually attractive person, goodlooking, modest, generous with his books and his knowledge, blessed with a good handwriting, extremely industrious as a scholar, and enjoying the confidence of all scholarly factions, even those that were mutually hostile.

No list of his writings is available, and none of the preserved works has been published so far. His great History, ending with the year 736/1335-36, was often quoted. It was abridged and continued by later scholars. Its actual title appears to have been al-Muktafā (cf. al-Sakhāwī, in F. Rosenthal, A History of Muslim Historiography, 414, but al-Nu aymī, Dāris, i, 578, refers to a work entitled al-Muntakā [= al-Muhtafā?] as if it were different from the History often quoted by him). The Muktafā is preserved in MS. Topkapısaray, Ahmet III, 2951 (cf. al-Munadidima, in Revue de l'Institut des Manuscrits arabes, 1956, 101 f.). His voluminous Mu'djam, which was highly praised and often cited as a reference work for contemporary scholarly history, is not preserved. A small Mu'djam of his early teachers is preserved in Damascus (cf. Y. al- Ishsh, Fihrist makhtūtāt Dar al-Kutub al-Zāhiriyva, al-Ta'rīkh, Damascus 1366/1947, 228 f.). A Mu'djam al-Buldan wa 'l-Kura is cited by Ibn Tulun, Luma at (Damascus 1348), 35 and 43. A small historical work on those who participated in the battle of Badr is ascribed to al-Birzall on the strength of the handwriting of a manuscript in Damascus, said to be similar to other autographs of al-Birzālī in the Zāhiriyya Library (cf. al-'Ishsh,