

General Index

Italic page numbers refer to illustrations. Authors are listed in this index only when their ideas or works are discussed; full listings of works as cited in this volume are in the Bibliograph-

ical Index. Manuscripts, maps, and charts are usually listed by title and author; occasionally they are listed under the city and institution in which they are held.

- ‘Abbās I, Shāh, 47, 63, 65, 67, 409
 “Jahāngir Embracing Shāh ‘Abbās”
 (painting), 408, 410, 515
 ‘Abd al-Karīm al-Miṣrī, 54, 65
 ‘Abd al-Raḥmān Efendī, 68
 ‘Abd al-Raḥmān ibn Burhān al-Mawṣilī, 54
 ‘Abdūlaziz ibn ‘Abdūlgānī el-Erzincānī, 225
 Abdur Rahim, map by, 411, 412, 413
 Abraham ben Meir ibn Ezra, 60
 Abu, Mount, Rajasthan
 on Jain triptych, 460
 religious map of, 482–83
 Abū al-‘Abbās Aḥmad ibn Abī ‘Abdallāh Muḥammad
Kitāb al-durar wa-al-yawāqīt fi ‘ilm al-raṣd wa-al-mawāqīt (Book of pearls and sapphires on the science of astronomy and timekeeping), 39, 54
 Abū al-Faḍl ibn Mubārak
Ā’in-i Akbarī, 379, 428
 Abū al-Fida’ Ismā’il ibn ‘Alī, 8, 101, 111, 143, 168 n.47
 calculation of measurements, 177–78
 and length of degree, 181
 and longitude of Alexandria, 102
Taqwīm al-buldān (Survey of countries), 157, 170 n.58
 Abū Ḥanīfah, 240
 Abū al-Ḥasan
 “Jahāngir Embracing Shāh ‘Abbās,” 408
 Abū al-Ḥasan ‘Alī, 34
 Abū al-Ḥasan al-Marrākushī, 102
 Abū Ishāq al-Ṣābi, 42
 Abū Ishāq al-Zajjāj, 53
 Abū Ja‘far Muḥammad ibn Muḥammad al-Khāzin, 109
 Abū Ma‘shar Ja‘far ibn Muḥammad al-Balkhī, 103, 103 n.66
 Abū Ya‘qūb Ishāq ibn Aḥmad al-Sijistānī. *See* al-Sijistānī
 Abū Yūsuf Ya‘qūb ibn Ishāq al-Kindī. *See* al-Kindī
 Abū Zayd Aḥmad ibn Sahl al-Balkhī. *See* al-Balkhī
 Abyssinia
 on geographic globe in Mughal painting, 409 n.37
 on seven-*kishvar* earth, 80
 on South Asian world maps, 393
 Abywn (Abiyūn) al-Baṭrīq (Apion the Patriarch), 26
 Accuracy
 of Arabic measurements of length of degree, 181
 of Bharat Kala Bhavan globe, 397
 of al-Bīrūnī’s calculation of Ghazna’s longitude, 188
 of al-Bīrūnī’s celestial mapping, 37
 of globes in paintings, 409 n.36
 of al-Idrisī’s sectional maps, 163
 of Islamic celestial globes, 46–47
 of *Kitāb-i bahriye*, 231, 233
 of map of north-central India, 421, 422
 of maps in Gentil’s atlas of Mughal Empire, 428–29
 of *Mecmū‘a-i menāzil*, 239 n.48
 of Nepali maps, 432
 of Ottoman illustrated histories, 228
 of *Shahid-i Ṣadiq*, 403, 404, 404–5
 of South Asian cosmographic globe, 396
 of South Asian topographic maps, 407, 407–8, 416, 417, 423, 425
 of South Asian world maps, 391, 392, 393–94, 399, 400
Acta Cartographica, 298
Adab (general culture), 511
 Adakale, Ottoman siege plan of fortress on, 213, 214
 Adam’s Peak, 122, 393
 Aden, 118, *pl.*40
Adhai-dvīpa. *See* Earth, two-and-a-half-continent; Manuṣyaloka
 Adriatic Sea, 210, 278
 ‘Aḍūd al-Dawlah, 54
 Aegean Sea, 164, 283–84, 284, 287
 Afghanistan, 390, 405
 Africa. *See also* North Africa; Maghreb
 on Cantino map, 261
 on geographic globe in Mughal painting, 409, 409 n.37
 on Ḥājj Abū al-Ḥasan chart, 265
 on Ḥamad Allāh Mustawfi’s world map, 150
 on Ibn al-Wardī’s world map, 143
 on al-Idrisī’s maps, 160, *pl.*12
 and Ka‘ba, 191
 in *Kitāb-i bahriye*, 232–33, 278–79
 in *Kitāb ṣurat al-arḍ*, 169
 in *Nuzhat al-mushtāq*, 169
 on Piri Re’is’s world map, 270, 271
 in Ptolemy’s *Geography*, 169
 al-Qazwīnī’s world maps, 144
 on South Asian world maps, 393, 394, 400
 in view of world landmass as bird, 90–91
 in Walters *Deniz atlası*, *pl.*23
 Agapius (Maḥbūb)
Kitāb al-‘imwān, 17
 Agnese, Battista, 279, 280, 282, 282–83
Agnicayana, 308–9, 309
 Agra, 378 n.145, 403, 436, 448, 476–77
 Agrawala, V. S., 321
 Aḥmad (king of Abdali dynasty), 379
 Ahmadabad, 414–15, 417
 Lalbhai Dalpatbhai Institute of Indology, map collections of, 302
 Aḥmad al-Ayyūbī, 32
 Aḥmad ibn al-Bukhturī al-Dhāri‘, 179
 Aḥmad al-munajjim al-Sinjāri (Aḥmad the astronomer of Sinjār), 19
 Aḥmad al-Sharafī al-Ṣifāqsi, 287. *See also* al-Sharafī al-Ṣifāqsi family
 Ahmad, S. Maqbul, 8, 10, 114
 Ahmadnagar, 436
 Ahmad Shāh Durrānī, 466, 469
 Aḥmed I, 235 n.27, 246
 Aḥmed Feridūn
Nūzhetū’l-ahbār der sefer-i Sigetvār
 (Chronicle of the Szigetvár campaign), 228–29, 247, 248, 254
 Ailly, Pierre d’, 138, 146, 148
Ā’in-i Akbarī, 325 n.143, 429, 435
 Air. *See also* Elements
 in Ibn al-‘Arabī’s cosmography, 86
 in Nāṣir Khusraw’s cosmography, 86
 sphere of, 75, 76, 77
 Airāvata, 341, 372
Aitareya Brāhmaṇa, 334
‘Ajā’ib al-buldān (Wonders of the countries), 390
‘Ajā’ib al-Hind (Wonders of India), 90
 Ajajgarh, 422
 Ajanta Mountains, 343 n.52, 423
 Ajit Singh, 421–22

- Ajmer
in Gentil's atlas of Mughal Empire, 429
oblique secular representation of, 480–81
in *Shahid-i Šadiq*, 403
sketch map of, 448
on topographic maps of Rajasthan and Gujarat, 414, 416
- Akademii Nauk SSR, Otdeleniya Instituta Vostokovedeniya, Leningrad, al-Iṣṭakhri's manuscripts in, 132–33
- Akbar I, 65, 324, 325 n.143, 361 n.99, 377, 378
drawing of tomb of, 469, 471
- Akhhār al-Šim wa-al-Hind* (Traditions about China and India), 90
- ‘Alā’ al-Dīn Kayqubād, 233
- Alaknanda River, 396
- ‘Ālam al-dīn (World of religion), 83, 85
- ‘Ālam al-ibda‘ (World of creation), 83, 85
- ‘Ālam al-inbi‘āth al-thāni (World of the second emanation), 83, 85
- ‘Ālam al-jism (World of matter), 83, 85
- Alanya, 233, 234
- Ala Singh, 436 n.117
- Albategni. *See* al-Battāni
- Albatenius. *See* al-Battāni
- Albuquerque, Afonso de, 256, 257
- Alchemy
in cosmographical diagrams, 71
Jābirian, 81
- Allep (Halep)
in *Mecmū‘a-i menāzil*, 240, 243
qibla of, 192
- Alexander the Great, 182 n.39, 257, 270, 271, 394, 395, 396, *pl.*29
- Alexandria, Egypt
in *Kitāb-i bahriyye*, 232
longitude of, 101–2
- Alfonso el Sabio (Alfonso X of Castile), 29
Libros del saber de astronomia, 28, 42, 45, 60, 202
- Algeria, 232, 279
- ‘Ali, shrine of at Najaf, 243
- ‘Ali Çelebi, 276
- Alidade, 24, 198
- ‘Ali ibn Aḥmad ibn Muḥammad al-Sharafi al-Šifāqsi, 285–87. *See also* al-Sharafi al-Šifāqsi family
qibla diagram by, *pl.*13
sacred geography, 194–95
world map by, 262, *pl.*24
- ‘Ali ibn Ḥasan al-‘Ajāmi, 161
- ‘Ali ibn Ḥasan al-Hūfi al-Qasimī, *pl.*11
- ‘Ali ibn ‘Isā al-Aṣṭurlābi, 19, 26, 44, 57, 179
- ‘Ali ibn Khalaf, 28, 29, 31
- ‘Ali Kashmīri ibn Lūqmān, 48
- ‘Ali Mācār Re‘is, atlas of, 279–82, 283
- ‘Ali Mardān Khān, 438
- ‘Ali Moḥammad Khān, 417
- ‘Ali Shāh, 239
- ‘Ali (‘Alā) al-Wadā‘ī, 31
- Allahabad (Prayāga), 372, 377, 378 n.145, 396, 403, 461 n.172
- Almagià, Roberto, 271
- Almucantars, 21, 35 n.73, 41
- Alokākāša, 341
- Alphabets, difficulties in translation, 99 n.38, 99–100
- Alps, 120
- Altair (star), 52
- Altars, Vedic, 308 n.65, 308–9, 310, 376, 379, 381, 512
- Altitude
determining, 183–84, 184
measuring with astrolabes, 24
- Alvan (Arran), 114
- Amarkantak, 422
- Amarnath, religious map of, 482–83
- Amar Singh, 436 n.117
- Amber (Amer)
on the Bharat Kala Bhavan globe, 355, 396
city plan of, 447, 448
on an eclectic world map, 395
oblique paintings on walls of palace at, 450
planimetric secular map of, 476–77
route map for irrigation project near, 440–41
- Amir Khosrau, 377
- Amir Sayyid Husayn Khingsawāi, Taragarh, pilgrimage map to tomb of, 461–62 n.173
- Amirutztes, George, 210
- Amritsar
Maharaja Ranjit Singh Museum, atlas of Kashmir in, 413
religious map of, 482–83
- Anaphoric clock dials, 32
- Anasagar Lake, 417
- Anatolian Peninsula, 120
- Ancona, 231
- Ancona, Cyriaco d’, 238
- Andalusia, 94. *See also* Iberian Peninsula
- Andaman-Nicobar Islands, 262
- Andhra Pradesh State Archives, Hyderabad, map collections of, 302, 438
- André, Noel, 69
- Andromeda, 51, 52
- ‘Ankabūt, 18. *See also* Astrolabes; Retes
- Anotata, Lake (Manasarowar), 389
- Anquetil-Duperron, Abraham H., 324–25, 427
- Antinoüs, 63, 66, 69
- Anville, Jean-Baptiste Bourguignon d’, 429
- Anwā’*, 53
- Āpastambiyāśulvasūtra, 329 n.175
- Apian, Peter
Astronomicum Caesareum, 62
Horoscopion generale, 61–62, 62
- Apous Indica (bird of paradise), 63
- Aqālim* (climates), 7–8, 93–94, 95–96, 102, 114, 157, 390, 391, 392, 393, 394, 409 n.36
- Aqšā mosque, 244
- Aquarius. *See also* Astrology; Astronomy; Zodiac
constellation
on al-Bīrūnī's cylindrical projection, 35
and corresponding pre-Islamic asterisms, 51
- on Islamic celestial globes, 44
on qibla map, 199
- zodiac sign
on astrolabe rete, 21, 22, 30
in Islamic correspondences, 77, 78
in Nāṣir Khusraw's cosmography, 86
- Arabia. *See also* Saudi Arabia
in *kishvar* system, 94
maps of, 117–18, 118, 119
from Balkhī school, 114, 122
by Ibn Ḥawqal, 118, 119
by Ibn al-Wardī, 143
by al-Muqaddasī, 122, 123, 124
by al-Qazwīnī, 144
South Asian, 390, 400
pilgrimage routes, 117
on seven-*kishvar* earth, 80
in view of world landmass as bird, 91
in *Zij al-Šabi‘*, 98
- Arabian Sea, 399, 409 n.37
- Arabic, early Islamic maritime charts in, 288
- Arabic miles, 175, 177–78
- Arabic numerals, 360
- ‘Arabi Hint *ḥartisi*, 257
- Arabs. *See also* Islamic society
geodesy, 175–88
influence on Cantino map, 262
metrology, 177–78
portolan charts, 263–65
star compasses compared with Indian compass cards, 495
- Aral Sea, 122, 144
- Aranea* (spider), 18
- Aratus of Soli, 59
Aratea, 15–18, 17
- Aravalli Mountains, 403, 405, 415
- Arbasthān. *See* Arabia; Saudi Arabia
- Archer, Mildred, 429
- Architecture
Brahman, 329 n.170
and city plan for Baghdad, 90
cosmography in, 379–82
drawings, 466–72
Jaipur, 322, 323
in *Kitāb-i bahriyye*, 231
paintings, 303 n.46
palm-leaf manuscript on, 320
plans, 321, 389
Indian, 317–20
Ottoman, 215–16, 217, 218, 219
- Arcs (as climate boundaries), 138, 145
- Ardra, 338
- Aries. *See also* Astrology; Astronomy; Zodiac
constellation
on al-Bīrūnī's flattened astrolabe, 36
on al-Bīrūnī's globular projection, 37
on ceiling at Quṣayr ‘Amrah, 16 n.12
on Islamic celestial globes, 44
on qibla map, 199
- zodiac sign
on astrolabe rete, 21, 22, 30
combined with planets, 64
in Islamic correspondences, 77, 78
in Nāṣir Khusraw's cosmography, 86

- ‘Ārifī (Fethullāh ‘Ārifī Çelebi)
Fütühāt-i cemīle (Book of five conquests),
 246, 247, 254
Süleymānname (History of Sultan
 Süleymān), 229, 236, 254
- Arin. *See* Ujjain
- Aristotle, 74, 81
- Arkeoloji Müzesi Kitaplığı, Istanbul, Ibn
 Hawqal’s manuscripts in, 132–33
- Armas, Duarte de
Livro das fortalezas do reino, 246 n.64
- Armenia, 114, 190, 191
- Armillary spheres, 49–50, 51
- Arnaldus, Stephanus
De sphaera solida, 45
- Arran (Alvan), 114
- Arslanhane (menagerie), Istanbul, 237
- Arunachalam, B., 301, 494, 495, 496, 497,
 498, 499
- Aruṇavara Ocean, 375
- Āryakhaṇḍa, 369
- Aryans
 sacrificial rites, 308
 town planning, 319–20
 Vedic altars, 308–9
- ‘Aṣāt al-Ṭūsī (staff of al-Ṭūsī), 31
- Asher, Frederick M., 311 n.70
- Asia. *See also* South Asia
 on Bodleian world map, 145
 on geographic globe in Mughal painting,
 409, 409 n.37
 on al-Idrisī’s maps, 157
 on al-Sharafī al-Şifāqsi chart, 288
 on South Asian world maps, 392
 in view of world landmass as bird, 91
- Asia Minor, on seven-*kishvar* earth, 80
- Aśoka, 317, 328, 376–77
- Asop, 415
- Assam, 326, 326 n.156, 396
- Aṣṣamātrkāś, 455
- Āstān-i Quds Raḡavī, Meshed, al-Iṣṭakhrī’s
 manuscripts in, 132–33
- Asterisms, 39, 50–60, 60–63, 66, *pl.27*. *See also*
Nakṣatras
- Astrolabes
 anthropomorphic and zoomorphic figures
 on, 65
 compared with celestial globes, 44
 cylindrical (Rāma Yantra), 362, 365
 Islamic, 5, 6
 Maldivian, 501
 Mercury using, 64
 planispheric
 basic plate design, 24
 as celestial maps, 18–34
 constellations on plates of, 66
 construction, 18–24
 defined, 18
 determining qibla with, 202–3, 203
 by Ḍiyā’ al-Dīn Muḡammad, 20, 22
 early history, 24–28
 European influence on, 65–66
 Hindu interest in, 315, 315 n.94, 324,
 360, 379, 515
 by Khafif, 19
 lunar mansions on, 54
 and mechanical calendar, 33, 33–34
 melon-shaped (*mubattakh*), 35 n.73
 by Muḡammad Maḡdī, 65–66, 66, 68,
 68 n.194
 orthographic projection in, 38 n.79
 parts of, 20
 qibla map on, 197, 201, 203
 stars on, 22
 stereographic projections and, 30, 31,
 38, 41, 70
 universal, 32
 uses of, 27
 variants of, 28–31
 Vega star on, 52
 zodiac on, 54
 zoomorphic, 52–53
 production of, 515
 purpose of, 514
 quadrant, 202–3
 Severus Sebokht’s treatise on, 12
 South Asian, 332, 335
 in Sri Ram Charan Museum of
 Indology, Jaipur, 303 n.46
 works on, 299
 spherical
 determining qibla with, 202
 Islamic, 41, 41–42
- Astrolabic mapping, 31–34
- Astrolabic quadrant, 31–32, 32
- Astrology. *See also* Constellations;
 Horoscopes; Zodiac
- Islamic
 astrolabes and, 24
 al-Bīrūnī on, 38, 39
 clockfaces as models for, 40, 40–41
 in cosmographical diagrams, 71
 and lunar mansions, 53–54
 Ptolemy’s influence on, 4
- South Asian
 divination charts, 348–51
 Indian, 314–15, 316, 334, 337, 338–39,
 347, 359
 and Indo-Islamic cosmology, 378
 Jahāngīr and, 378
 Jain, 374–75, 375
 mapping, 339
 in nautical charts, 498
- Astronomy
 Islamic
 Arab pre-Islamic, 50–53
 and Balkhī school maps, 115
 clock dials, 32
 in cosmographical diagrams, 71
 equatoria, 38–39
 instruments, 28, 187 n.58
 lunar mansions, 53–54
 meridians of reference, 175, 175 n.7
 observatories, 27, 27–28
 Ptolemy’s influence on, 4
 and Qur’ān, 12
 South Asian
 celestial mapping, 358–67
 Indian, 314–16, 334–35
 observatories, 303, 315, 360–67, 379
 path of planets, 344, 346, 347, 366
 scientific instruments in, 360, 360 n.96,
 365–66
 tables, 365, 367, 392
 telescopes, 365–66
 temples as artifacts of, 360
- Aṣṭurlāb kuri*. *See* Astrolabe, spherical
- Atatürk, Kemāl, 271, 271 n.17
- Atharva Veda*, 333
- Atlantic Ocean
 on al-Idrisī’s map of northwest Africa,
pl.12
 on Piri Re’is’s world map, 268, 269–72
 Şadiq Işfahānī’s prime meridian in, 404
 in al-Sharafī al-Şifāqsi atlas, 285
- Atlases
 Islamic maritime, 5
 Ottoman, 279–84, 288–89
 associated with ‘Alī Mācār Re’is,
 279–82
 Atlas-i hümayun (Imperial atlas), 282,
 283
 map order in, 281
 Walters *Deniz atlası*, 282–83
 by al-Sharafī al-Şifāqsi family, 285–87
 Atlas-i hümayun (Imperial atlas), 282, 283
- Attica, 279
- Attock, 408
- Aurangabad, 429, 436
- Aurangzīb, 50, 379, 408, 419, 466
- Auriga, 52, 55, 58
- Austria, 395
- Avad (Oudh), 428, 428–29
- Avala fortress, 211
- Avanti. *See* Ujjain
- Awāl Island (Bahrain), 122
- Awasthi, A. B. L., 299, 313
- Axes
axis mundi, 335, 343, 370, 377, 381, 516
 in *Hünernāme*, 250
 of Ka’ba, 190 n.7
 on qibla maps, 196
- al-‘Aynī (Abū Muḡammad Maḡmūd ibn
 Aḡmad al-‘Aynī), 68
- Ayodhya, 372, 382, 396, 461 n.172
- Ayvaldere Waterway Map, 226–27
- ‘Ayyūb
Zij Baṭlamīyūs, 96
- Azarquiel. *See* al-Zarqēllo
- Azerbaijan, 112, 114
- Azimuthal equidistant projections, 36,
 37–38, 38 n.78, 141–42, 271
- Azimuths, 21, 202, 203
- Azophi. *See* al-Şūfī
- Azores, 272
- Azov, Sea of, 106, *pl.5*
- Bābil, 93
- Babylonia, 334
- Bacon, Roger
Opus Maius, 151
- Badarikedār, 399
- Badrinath, 382, 452, 461 n.172
- Bādshāhi mosque, Lahore, architectural
 drawing of, 470 n.199

- Baffin, William, 409
- Baghdad
 al-Birūnī's attempts to determine longitude of, 177
 city plan for, 90
 latitude of, 177, 187
 in *Mecmū'a-i menāzil*, 239–40, 241, 243
 and prime meridians, 103
 on qibla indicator, 197
 triangulation between Ghazna and, 186
- Baghelkhand, 420, 422
- Baghor, map of fort in, 490–91
- Bagrow, Leo, 146, 504
History of Cartography, 296
- Bahādur Sah, 431, 436
- Bahdrāśva, 337
- Bahrain, 118, 122
- Bahriye*, 265
- Baḥr Jurjān (Caspian Sea), 389
- al-Baḥr al-Muḥlim (World Ocean), 106
- al-Bakri (Abū 'Ubayd 'Abdallāh ibn 'Abd al-'Azi-z al-Bakri), 143
- Balboa, Vasco Nuñez de, *pl.*21
- Balhūmal, 49, 70
- al-Balkhī (Abū Zayd Aḥmad ibn Sahl al-Balkhī), 91, 93, 96, 102, 106, 108–9, 129, 134, 511
 difficulty in examining work of, 110
 maps of, 112, 115
Ṣuwar al-aqalīm (Pictures of the climates), 109, 130
 works, 111
- Balkhī school, 108–36, 138, 517
 criticism of maps of, 512
 influence on Ḥāfiẓ-i Abrū, 170
 influence on al-Idrisī, 157, 167
 and Islamic culture, 514
 manuscripts, 124–28, 130–35
 maps, 112–28 (see also Ibn Ḥawqal; al-Iṣṭakhri; al-Muqaddasi)
 Arabic-speaking provinces, 117–20
 climate boundaries on, 126–27, 128
 compared with *mappaemundi*, 129, 129 n.83
 described, 114
 enduring use of, 512
 orientation, 518
 possible stemma for, 113
 selection of material, 114–15
 treatment of Persian provinces, 115–17
 world, 120–22
 printed editions and translations of works by authors, 136
 reference map of Islamic world at time of, 109
 stemma of texts, 111
 works of, 108–11
- Bamm, 115
- Banāt Na'sh. See Ursa Minor
- Banswara, 416
- Bapudeva
Mānamandira, 361
- Bar 'Alī, 147 n.53
- Baramūla, 396
- Barbarah, 162
- Barbari, Jacopo de', 231, 238, 278
- Bardashir, 115, 123
- Bar Hebraeus
Menāreth qudhshē (The candlestick of the sanctuary), 147 n.53, 148
- Barik River, *pl.*32
- Baroda, 417, 448
 Museum and Picture Gallery, topographic map of Rajasthan and Gujarat in, 416–17
- Barros, João de, 256, 257, 259, 262
- Bartolommeo dalli Sonetti, 276, 277–79, 279
- Barzakh*, 121
- Başbakanlık Arşivi, Istanbul, 207
- Basham, Arthur Llewellyn, 314–15, 316–17
- Basra
 on al-Iṣṭakhri's map of Arabia, 118
 and prime meridians, 103
 qibla of, 193
 on South Asian world maps, 390
- Bas-reliefs, 367, 373
- Bastian, Adolf, 298, 333, 346–47
- al-Baṭīḥah, 90
- Baṭlamīyūs. See Ptolemy, Claudius
- al-Battānī (Abū 'Abdallāh Muḥammad ibn Jābir al-Battānī al-Ṣābi'), 44, 93 n.16, 100 n.39, 100 n.41, 101, 141
 coordinate tables, 97–100
 compared with those of Ptolemy, 98–100
 number of entries, 101 n.49
 and length of Mediterranean, 102
 and longitude of Alexandria, 102
 and measurement of longitude using lunar eclipses, 103 n.67
 method for calculating qibla, 204, 205
 prime meridian used by, 103
Zij al-Ṣabi', 98
- Battle maps, 465–66
- Baudhāyanasūlvāsūtra*, 329 n.175
- Baybora, Ibrahim Kemal, 211
- Bayer, Johannes, 61
- Bayerische Staatsbibliothek, Munich, pilgrimage map in, 462 n.174
- Bāyezid II, 211, 226, 230, 236, 265–66
- Beach, Milo, 409, 466
- Beames, John, 328
- Beas River, 437
- Bedouins
 asterisms, 51–52
 conception of stars, 60
 European renderings of asterisms, 66
 lunar mansions, 53–54
- Begley, Wayne E., 377, 378
- Beijing (Khānbāligh), 198
- Belgrade, Ottoman siege plan of, 210, 211–12, *pl.*14
- Bellini, Gentile, 210
- Bengal
 in *Shahid-i Ṣadiq*, 405
 on South Asian cosmographic globe, 396
 on South Asian world maps, 390
 surviving maps from, 505–6
- Bengal, Bay of, 165, 166, 258–59, 261, 262
- Bentinck, William, 450
- Berlin
 Museum für Islamische Kunst
 maps in, 145–46, 394
 Staatsbibliothek Preussischer Kulturbesitz
 al-Iṣṭakhri's manuscripts in, 130–31
 al-Muqaddasi's manuscripts in, 134–35
- Berlinghieri, Francesco, 210
- “Bernardo Arabico ouero Saracino,” 45
- Bernoulli, Jean, 325
- Bertius, Petrus, 172, 517
- Bertran, Jaime, 289 n.1
- Bhāgavata Purāṇa*, 348, 379
- Bhairavas, 455
- Bhakkar, 403
- Bhaktapur, maps of, 455, 482–83
- Bhaṇḍaras*, 367
- Bhandarkar Oriental Research Institute, Pune, ink drawing at, 355
- Bhārata, 336, 337, 340, 369, 372, *pl.*26. See also India; South Asia
- Bharata Itihasa Samshodhaka Mandala, Pune
 maps of forts in, 465 n.175
 Maratha topographic maps in, 424, 425
- Bhāratavarṣa, 336, 336 n.24, 341, 353, 354–55, 358, 397, 399
- Bharat Kala Bhavan, Varanasi
 cosmographic globe in, 352, 354, 355–57, 389, 396–97, 397, *pl.*40
 scroll maps in, 436–38
- Bhardwaj, Surinder Mohan, 311 n.70
- Bharuch, 417
- Bhatant, 397
- Bhatt, Narmadashankar, 417
- Bhavabhūti, 321–22
- Bhavacakra* (wheel of life), 313, 343 n.52
- Bhavasagar, proposed dam at, 439
- Bhimashankar, 423
- Bhimberka, Madhya Pradesh, 304
- Bhiwai, map of fort in, 490–91
- Bhiwai fort, map of siege of, *pl.*38
- Bhojpur, plans for Shiva temple at, 466
- Bhu Ali Qalander, mausoleum of, 438
- Bhubaneswar, temple at, 466, 467
- Bhudargad, map of fort in, 490–91
- Bhūgolam* (Globe/Geography), 346, 359
- Bhūgolas*. See Cosmographical globes, South Asian
- Bhuvanakośas*, 312, 339, 512
- Biblioteca Apostolica Vaticana, Rome, planispheric map in, 38 n.78
- Biblioteca Universitaria, Bologna, al-Iṣṭakhri's manuscripts in, 130–31
- Bibliotheek der Rijksuniversiteit, Leiden
 Ibn Ḥawqal's manuscripts in, 113, 134–35
 al-Iṣṭakhri's manuscripts in, 132–33
 al-Muqaddasi's manuscripts in, 134–35
- Bibliothèque Nationale, Paris
 Ibn Ḥawqal's manuscripts in, 113, 134–35
 al-Iṣṭakhri's manuscripts in, 132–33
 manuscripts of al-Idrisī's *Nuzhat al-mushtāq* in, 173
 map of central India in, 420–22
- Bidar, 429
- Bihar, 429

- Bijapur
 city plan of, 447, 448
 planimetric secular map of, 476–77
- Bilād al-Sūdān, 119
- Bir, 423
- Birds
 altars in shape of, 308 n.65, 308–9, 310
 Islamic view of world landmass as, 90–91
- Bird's-eye views. *See also* Oblique views
 decline of Ottoman use of, 250
 of Istanbul, 234, 237, 238, 239, 249–50, 251
 in *Kitāb-i bahriye*, 234, 235 n.27
 in *Mecmū'a-i menāzil*, 237, 238, 239
 in Ottoman illustrated histories, 228, 249
 on Ottoman siege plan of Belgrade, 211
 on pilgrimage scrolls, 244
 on South Asian scroll map, 436
 in *Tāriḥ-i fetḥ-i Şaklāvān*, 245, *pl.*19
 of Venice, 238
- al-Bīrūnī (Abū al-Rayḥān Muḥammad ibn Aḥmad al-Bīrūnī), 26, 55, 77, 80, 103 n.66, 137, 138, 145, 161–62, 235, 323–24, 336, 360 n.96
 angular and longitudinal differences between pairs of places, 188
 on celestial mapping, 34–38
 and climatic (zone) maps, 147–48
 and coordinate tables, 141–42
 criticizes rectangular projection, 105
 and distribution of land and sea, 142
 geodetic researches of, 176
 influence on Ḥāfiẓ-i Abrū, 170
Kitāb al-āthar al-bāqiyah min al-qurūn al-khālīyah (The chronology of ancient nations), 34, 35, 36, 36 n.74, 54
Kitāb al-durar fī saṭḥ al-ukar (Book of pearls concerning the projection of the spheres), 34
Kitāb fī taṣṭīḥ al-ṣuwar wa-tabṭīḥ al-kuwar (The book of the projection of the constellations and the flattening of the sphere), 34
Kitāb isti'āb al-wujūh al-mumkinah fī ṣan'at al-aṣṭurlāb (Comprehensive study of all possible ways of making an astrolabe), 33, 35, 35 n.71, 36 n.74
Kitāb al-qānūn al-Mas'ūdī fī al-hay'ah wa-al-nujūm (The Mas'ūdī canon), 141, 175, 177, 179, 182–84, 184 n.53, 186, 187–88, 196, 324
Kitāb al-taḥfīm li-awā'il ṣina'at al-tanjīm (Book of instruction on the principles of the art of astrology), 38, 39, 58, 58–59, 142, 390
Kitāb taḥdīd nihāyat al-amākin li-taṣṭīḥ masāfat al-masākin (The determination of the coordinates of positions for the correction of distances between cities), 94, 178, 178 n.24, 179–80, 182, 183 n.43, 184, 184 n.53, 186, 323
 and length of degree, 178
 longitude and latitude values, 104, 176, 187
 measurement of earth's radius, 182–84
 measurement of height of mountains, 184
 and orthographic projection, 35 n.72
 prime meridian used by, 404
 quadrant used by, 185
 on spherical astrolabes, 42
Ta'ri-kh al-Hind (Description of India), 323
 theories not used practically, 154–55
 and trigonometry, 176–77
 world map by, 390
- al-Biṣṭāmī ('Abd al-Raḥmān al-Biṣṭāmī)
Miftāḥ al-jafī al-jāmi' wa miṣbah al-nūr al-lāmi' (A key to the comprehensive *jafr* and a lamp of brilliant light), 221 n.34
- Bitlis gorge, 240, 242
- Black (*sawdā'*) cubits, 177, 178, 178 n.23, 179
- Black Sea, map of regions north of, 226
- Blaeu, Joan
Atlas Maior, 218
- Blaeu, Willem Janszoon, 63
- Blake, Stephen P., 326 n.155
- Blanpied, William A., 360 n.96, 361, 361 n.99, 363–64, 365–66, 379
- Bloch, Edgar, 499
- Bodleian Library, Oxford
 eighteenth-century Indian manuscript in, 378
- Ibn Ḥawqal's manuscripts in, 113, 134–35
 al-Iṣṭakhri's manuscripts in, 132–33
 manuscripts of *Nuzhat al-mushtāq* in, 174
 world map in, 145, 150, *pl.*10
- Boğaz, 237 n.38
- Bologna, Biblioteca Universitaria,
 al-Iṣṭakhri's manuscripts in, 130–31
- Bombay, 393, 399
 Prince of Wales Museum of Western India
 maps of forts in, 465 n.175
 Maratha maps in, 423, 425, 425 n.81
 State Archives of Maharashtra, Maratha topographic map in, 423–24
- Boner, Alice, 466, 468
- Boötes, 63, 69
- Bordone, Benedetto, 277, 282
- Bosporus, 119, 238
- Boudier, Claude, 365
- Brahma, 334, 341, 344, 346, 359, 360, 380
- Brahmaloka, 374, 375, 376
- Brahmāṇḍa (egg of Brahma), 333, 336, 344, 346
- Brahmans
 architecture, 329 n.170
 education, 330
 mapmaking, 309–10, 328–29
- Brahmasphuṭasiddhānta*, 175 n.6
- Braj
 indigenous maps of, 472–73
 as lotus, 417–18, 419, 452, 504, 506
 topographic maps from, 417–20
- Braj Yatra *Pichhvāi*, *pl.*31
- Braun, Georg, 251
Civitates orbis terrarum, 240–41, 246
- Brazil, 270
- Brice, William C., 264, 266, 278
- Bricks, Harappan, 307
- Bridges
 on maps in *Tāriḥ-i qal'ah-i Kashmir*, 414
 on South Asian pilgrimage maps, 441
 on topographic map from Kashmir, 413
- Brindaban, 419
- Britain. *See* Great Britain
- British Library, London. *See also* India Office Library and Records
 hybrid map in, 427
 al-Iṣṭakhri's manuscripts in, 132–33
 topographic map of Kashmir in, 411
- British Museum, London
 cosmographic globes in, 352, 357–58, 358 n.89, 396
 volume of architectural drawings in, 470 n.199
- Broach, 405
- Brohier, R. L., 426–27, 501
- Brooklyn Museum, Jain pilgrimage route map in, 441–42
- Brown, Lloyd A., 298
- Brown, William Norman, 301, 302, 441, 442
- Buda, plan of fortress of, 213, 215
- Buddha, 312
- Buddhists, 332
 cartography, 317–18
 conceptions of universes, 341, 342–43
 cosmography, 333–34, 342–43
 in architecture of, 380
 continents in, 335–36
 ethicization of cosmos, 334
 four-continent earth, 313, 336, 352, 353
 geography in, 340
 trees in, 335
 cosmology, 333
 importance of maps to, 328–29
 monastery plans, 318, 466
 theology, 330
- Budhasvāmin
Bṛhatkathāślokaśamgraha, 321
- Bukhara, 90
- Būlāq, 232, 233
- Bulgar, 390, 391
- Bundelkhand, 420, 422
- al-Būnī (Muḥyī al-Dīn Abū al-'Abbās Aḥmad ibn 'Alī al-Būnī al-Qurashi)
Shams al-ma'arif al-kubrā wa-laṭā'if al-'awārif, 53–54
- Buondelmonte, Cristoforo, 277
- Burhanpur, 403, 423
- Burhan-ul-mulk, 436 n.117
- Burnes, Alexander, 499, 501, 502
- Burrow, Reuben, 326
- Busbecq, Ogier Ghislain de, 250
- Bust
 oblique painting of, 449, 450
 oblique secular representation of, 480–81
- Bylica, Martin, 61
- Byzantium, 94. *See also* Constantinople; Istanbul

- Cadastral maps
 Nepalese, 430, 432
 of precolonial Indian states, 317
- Ca'feriyyes*, 270, 270 n.13
- Caillat, Collette, 298, 345, 372, 373
- Cairo
 Dār al-Kutub
 al-Iṣṭakhri's manuscripts in, 130–31
 manuscript of al-Idrisi's *Nuzhat al-mushtāq* in, 173
 in *Kitāb-i bahriyye*, 232, 233
 qibla of, 192
- Cakras*, 338, 351
- Cakraḡala* (world disk), 340, 343 n.53
- Calcutta, 355, 395, 396, 400
 National Archives of India, maps in, 302
- Calendars
 astronomical observatories and, 366
 on Ḥājj Abū al-Ḥasan chart, 267
 mechanical, 33, 33–34
 on al-Mursi chart, 264
 scales, 24
 in al-Sharafī al-Ṣifāqsi atlas, 285
- Calendrical tables, 44
- Calipers, 28
- Calligraphy, and Islamic mapmaking, 6
- Cambay, 403, 405
- Camere ottiche*, 249
- Campā, 442
- Campaign journals, Ottoman, 245
- Canary Islands (Insulae Fortunatae), 391. *See also* Prime meridians
- Cancer. *See also* Astrology; Astronomy; Zodiac
 constellation
 on al-Birūnī's flattened astrolabe, 36
 on al-Birūnī's globular projection, 37
 on qibla map, 199
 zodiac sign
 on astrolabe rete, 22, 30
 combined with planets, 64
 in Islamic correspondences, 77, 78
 in Nāṣir Khusraw's cosmography, 86
- Candras* (moons), 373
- Candrasūri
Trailokyadīpikā, 370
- Canepa, Albino da, 265, 266
- Canonical (*shāf'ī*) cubit, 177
- Canopus, 190 n.7
- Cantino, Alberto, 260
- Cantino map, 260, 260–62, 269, 270
- Cape of Good Hope, 265
- Capricorn. *See also* Astrology; Astronomy; Zodiac
 constellation, 63
 on al-Birūnī's cylindrical projection, 35
 on Islamic celestial globes, 44
 on qibla map, 199
 day of (winter solstice), 374
 zodiac sign, 360
 on astrolabe rete, 21, 22, 30
 in Iskandar Sultan's horoscope, 64
 in Islamic correspondences, 77, 78
 in Nāṣir Khusraw's cosmography, 86
- Caravans, 115
- Cardinal directions
 and Ka'ba, 193, 194
 on map of Nandīśvaradvīpa, 373
 on qibla indicator, 198
 on South Asian maps, 427, 446, 498, 508
- Cardinal points
 on South Asian cosmographic globe, 352
 on topographic maps of Rajasthan and Gujarat, 415
- Carlisle, Archibald, 304
- Carré, Barthélemy, 324
- Carta Marina of Martin Waldseemüller, 260
- Cartography. *See also* Chartmaking; Maps
 comparative, 510–12
 development of, 510
 European, al-Idrisi's lack of influence on, 172
 Islamic, 5–7
 beginnings of, 90–107
 European denigration of, 9
 European influence on, 3
 foreign geographical influence on, 93
 Greek influence on, 4
 historiography, 8–10
 by al-Idrisī, 156–74
 later developments, 137–55
 materials used in, 6
 stemma of later maps, 138
 terminology, 7–8
 theory and practice, 7
- Ottoman
 atlas of regional maps, 225
 European influence on, 217–18, 221–22
 guild for, 284
 introduction, 206–8
 as private enterprise, 216–26
 problems in study of, 207–8
 regional maps, 222–26
 scope and organization, 206
 in service of state, 209–16
 terminology, 206–7
 waterway maps, 226–27
 and society, 512–16
- South Asian, 509
 Brahman, 309–10, 328–29
 Buddhist, 317–18
 cosmographic globes, 352–58
 European influence on, 507
 Hindu, 318–19
 influence of other parts of Asia on, 506–7
 lack of Western interest in, 504
 in Nepal, 430
 and pilgrimages, 330
 published historical writings on, 296–302
 for religious purposes, 303–4
 repositories for, 302–4
 scope, 295
 signs, 335
 surviving, 295
 swastikas in, 317–18
- Caspian Sea
 on Aḥmad al-Ṭūsī's map, 125
 on Balkhī school maps, 114, 122
 on al-Muqaddasi's maps, 122
 on al-Qazwini's world maps, 144
 on South Asian world maps, 391, *pl.29*
- Cassiopeia, 52
- Castagnari, Alessandro, 286
- Cathay, 409 n.37
- Catur-dvīpa vasumatī*. *See* Earth, four-continent
- Caucasus, 90–91
- Caurasi, temple in, 466
- Caverio, Nicolò de, 260
- Celestial bodies, personification of, 63–65
- Celestial diagrams, Islamic, 75–76
- Celestial globes
 Islamic, 42–48
 accuracy of, 46–47
 basic design of, 43, 44
 compared with astrolabes, 44
 constellations on, 70
 drawn from al-Ṣūfī's *Ṣuwar al-kawākib*, 56
 influence on planispheric maps, 60
 Islamic influence seen on, 61
 lunar mansions on, 54
 manufacture of, 48–49
 types of, 46–47
 South Asian, 299, 315, 332, 335, 360, 379
- Celestial mapping
 development of, 514
 European, influence on Islamic, 65–70
 Islamic, 12–70
 al-Birūnī on, 34–38
 early Syrian origins, 12–18
 influences on, 12, 65–70
 and planispheric astrolabes, 18–34
 three-dimensional, 41–50
 South Asian, 358–67, 379
 Jain, 373–75
- Celestial spheres, 75, 76
- Cellarius, Andreas, 68
- Cemā'at-i Naqqāṣān-i Rūmiyān (Guild of Rumi painters), 280
- Central America, 272, *pl.21*
- Cepheus, 16, 52, 61, 62
- Chaghatai, Muhammed Abdulla, 470
- Chahār Gulshan* (Four Gardens), 435, 435–36
- Chakra Yantra, 363
- Chamaeleon (chameleon), 63
- Chambers, Robert, 389
- Chambur, religious map of, 482–83
- Champaner, 417
- Chand, Lakhshmi, 470
- Chandni Chowk, architectural drawing of, 468–69, 470
- Chāndogya Upaniṣad*, 333–34
- Charles V (Habsburg emperor), 62, 245 n.60
- Chartmaking. *See also* Cartography
 Islamic, 263–92
 by Piri Re'is, 265–79
- Charts. *See also* Maps; Portolan charts; and *names of individual charts and chartmakers*
 in Islamic navigation
 in Indian Ocean, 256–62

- in Mediterranean Sea, 263–92
 qibla (see Qibla, charts)
 South Asian divination, 348–51
 Charwar, map of fort in, 492–93
 Chaucer, Geoffrey, 26
 Chaucer, Lewis, 26
 Chaul, 405
 “Chaurāsī Krosh Parikramā” (Pilgrimage of eighty-four kos), 419
 Cheen, Sea of (China Sea), 390
 Cherchel, 232
 China
 on Balkhī school world map, 122
 compass cards compared with Indian compass cards, 495
 on geographic globe in Mughal painting, 409 n.37
 on Ibn Ḥawqal’s world maps, 144
 on al-Idrisī’s maps, 157
 and Ka’ba, 190, 191
 in *kishvar* system, 94
 maps of, 114
 nautical cartography, 503
 navigational charts, 259–60
 on al-Qazwīnī’s world maps, 144
 on seven-*kishvar* earth, 80
 on South Asian world maps, 391, 392, 393, 396, 398, 400
 in view of world landmass as bird, 90–91
 Chitr Gulshan, 435, 435–36
 Chittick, Neville, 503
 Chittorgarh, 415
 Chrysologue de Gy, Father, 69
 Circles
 on astrolabes, 35 n.73
 compass, 270
 concentric
 in Islamic cosmographical diagrams, 74
 in Nāṣir Khusraw’s cosmology, 83
 of constant invisibility, 42–43
 of constant visibility, 18, 42–43
 ecliptic latitude-measuring, 14–15 n.6, 16, 18, 29, 36, 37, 38 n.78, 43, 44, 46, 48, 49, 60–61, 65, 68, 69
 of equal azimuth, 41
 equatorial polar, 65
 horizon, 48
 on Islamic celestial globes, 43, 46, 47, 48
 longitude-measuring, 29, 36
 meridian, 46
 on al-Muqaddasī’s maps, 122
 polar, 15, 18, 43, 44, 47, 49, 61, 68, 69
 on qibla maps, 197
 on vault of the heavens, Quṣayr ‘Amrah, 14–15, 18
 vertical altitude, 41
 Cities and towns. *See also* Settlements
 on Balkhī school maps, 115
 Harappan, 306–7
 Indo-Aryan, planning, 319–20
 Jaipur, architectural plan of, 321, 322, 323
 on al-Muqaddasī’s map, 122
 oblique secular representations of, 449–52, 480–81
 Ottoman urban topographical illustration, 231–35
 planimetric secular maps of, 476–77
 planning, 321
 secular plans of, 446–49
 South Asian, planning, 505
 views of, in Ottoman histories, 228–55
 City Palace Museum, Jaipur. *See* Maharaja Sawai Man Singh II Museum
Climata, 78, 79, 80, 102
 Climate, and map preservation, 327, 506
 Climates, 111, 143, 159, 159 n.25, 259. *See also* *Aqalim*
 on Balkhī school maps, 126–27, 128
 on Bodleian world map, 145
 boundaries of, 138
 on Ḥāfiẓ-i Abrū’s world map, 170
 on Ḥamd Allāh Mustawfi’s world map, 150
 in al-Idrisī’s work, 157, 158, 160, 168, 169
 northwest Africa, *pl.*12
 Rawḍ al-faraj, 165, 166, 167
 world maps, 144, 161, 162
 in Islamic geographical tables, 96
 on Islamic maps, 95–96
 on al-Khwārazmī’s map of Nile River, *pl.*4
 in *kishvar* system, 94
 as part of graticule, 148–49
 in Ptolemy’s *Almagest*, 175
 on qibla indicator, 198
 in Suhrāb’s map construction, 104, 105
 Climatic (zone) maps, 146–48
 by al-Idrisī, 146–47
 by al-Qazwīnī, 147
 by Yāqūt, 146
 Clocks
 anaphoric, 32
 as astrological models, 40, 40–41
 Cohn, Bernard S., 383
 Coins
 South Asian, 311 n.71, 378–79
 with zodiacal motifs, 63
 Collection of land revenue, 316–17
 Cologne, 251
 Colom, Jacob Aertsz., 62–63, 67
 Color
 on Islamic maps, 6–7, 518
 al-Bīrūnī’s flattened astrolabe, 36
 al-Bīrūnī’s globular projection, 37
 al-Idrisī’s map of northwest Africa, *pl.*12
 al-Idrisī’s sectional maps, 163
 al-Kāshgharī’s world map, 155
 al-Kātibī’s chart, 264
 al-Khwārazmī’s coordinate tables, 100, 100 n.45, 101
 al-Muqaddasī’s maps, 122
 al-Mursī’s chart, 264–65, 266
 Ottoman bath plans, 217
 on South Asian maps, 436, 508
 cosmographic globes, 352, 356
 cosmographic painting, 360
 Gentil’s atlas of Mughal Empire, 429
 Jagannath temple map, *pl.*36
 Jain cosmographies, 367–68, 370, 374
 Jain pilgrimage map, 440
 Maratha topographic maps, 423, 424, 425
 nautical charts, 498
 Nepali scroll map, 433
 north-central India map, 422
 Tārīkh-i qal’ah-i Kashmīr, 414
 terrestrial globe, 399
 topographic maps, 402, 410, 411, 414
 world maps, 392
 Columba Noë (Noah’s dove), 63, 66, 69
 Columbus, Christopher, 268, 270–71, 272, 275
 Colures
 equinoctial, 13, 16, 21, 61, 65, 68, 69
 solstitial, 13, 14, 16, 21, 28, 29, 30, 36, 37, 41, 43, 65–66
 Coma Berenices, 63, 66, 69
 Comorin, Cape, 260
 Comparative cartographies, 510–12
 Compass, magnetic, 198
 Compass cards, from Indian *roz nāma*, 495, 498, 499, 500
 Compass roses
 on Ḥājj Abū al-Ḥasan chart, 267
 on Indian maps, 508
 on al-Kātibī chart, 265
 on Maratha map of Vijayadurg, 464
 on Nepali topographic maps, 433
 on Piri Re’īs’s world map, 272
 on al-Sharafī al-Ṣifāqsi world map, 287
 in Walters *Deniz atlası*, 283
Compasso da navigare, 279
 Concentric circles
 in Islamic cosmographical diagrams, 74
 in Nāṣir Khusraw’s cosmology, 83
 Conch, cities conceived as, 452–53, 514
 Constantinople, 199, 396. *See also* Byzantium; Istanbul
 Constellations, 512. *See also* Zodiac
 on astrolabe plate by Muḥammad Mahdī of Yazd, 66
 on al-Bīrūnī’s flattened astrolabe, 36
 illustrating *Aratea*, 16
 individual, mapping, 50–60
 on Islamic celestial globes, 42, 43, 46, 47, 70
 Islamic iconography, 54–60
 on Latin parchment manuscript, 61
 on nineteenth-century Indian planispheric map, 69, 70, *pl.*2
 on planispheric maps, 62
 pre-Islamic, 50–52
 Severus Sebokht’s treatise on, 12
 in vault of heavens, Quṣayr ‘Amrah, 13, 16, 16 n.12
 Construction
 of globes
 brass, 352
 Islamic, 48–49
 millboard/hollow wood, 399
 papier-mâché, 355
 seamless metal, 48–49
 welded, 357
 of maps
 Balkhī school, 115
 Suhrāb’s, 95, 101, 104–5, 137, 138

- Construction (*cont.*)
of Ottoman illustrated histories, 229
of planispheric astrolabes, 18–24
of roads, maps related to, 441
- Continents. *See also* Earth; and names of continents
in Hindu cosmography, 347–48, 348
in Indian cosmography, 335–36, 336 n.24, 337
in Jain cosmologies, 373, 374
Puranic view of, 337
on South Asian cosmographic globe, *pl.*26
- Conventions. *See also* Signs, cartographic; Symbolism
artistic, 300, 356, 367–68
on Balkhi school maps, 115
in Gentil's atlas of Mughal Empire, 429
on al-Idrisi's maps, 163
Islamic, 7
in *isolarii*, 277
in *Kitāb-i bahriye*, 277
on Ottoman siege plan of Belgrade, 211–12
on South Asian scroll maps, 436
on South Asian topographic maps, 402
of city plans, 448
in *Kitāb-i bahriye*, 231
on topographic maps, 508
- Coordinates
in *ʿAjāʾib al-aqālim al-sabʿah*, 168
Arabic lists of, 176
ecliptic, 28, 54
in Islamic celestial cartography, 14–15 n.6
on Islamic celestial globes, 48
Pīri Reʿīs and, 271
qibla maps based on, 196–200
tables of
adjusting latitude in, 176
adjusting longitude in, 176
by al-Battāni, 97–100, 101 n.49
al-Bīrūnī and, 141–42
by al-Farḡhānī, 96
by al-Khwārazmī, 95, 97–100, 101 n.49, 104
converting to map form, 137 n.1
by Ibn Yūnus, 101 n.49
Islamic, 8–9, 95, 96–97, 97–100
production of in Maghreb, 141
by Ptolemy, 94 n.20, 97–100, 101 n.49, 259
by Suhrāb, 101 n.49
- Copernicus, Nicolaus, 366
- Correia, Gaspar, 256
- Correlations, in Gnostic cosmographical diagrams, 81–82 n.24
- Correspondences, in Islamic cosmology, 76, 77, 78
- Corsica, 120
- Corvinus, Matthias, 246
- Cos, 350
- Cosmic man, 372, 380
- Cosmogony, 305
- Cosmographical diagrams, Islamic. *See also* Qibla, diagrams
alchemy in, 71
astrology in, 71
astronomy in, 71
concentric circles in, 74
geography in, 71
geomancy in, 71
by Ḥaydar Āmulī, 87 n.33, 87–88
by Jābir ibn Ḥayyān, 80–82, 82
mysticism in, 71
philosophy in, 71
theology in, 71
- Cosmographical globes, South Asian, 352–58, 389
abstract of Northern Hemisphere, 358
at Bharat Kala Bhavan, Varanasi, *pl.*40
colors on, 352
container in form of, *pl.*26
Hindu, *pl.*30
partial transliteration of, 397
projection for, 356
Southern Hemisphere, 357
- Cosmographies, South Asian, 504–5
ancient, 312–14
compared with European cosmographies, 507
paṭa-chitras, 323
- Cosmography, Islamic, 332
cosmographical diagrams, 71–89
general characteristics, 73–74
gnostic, 80–83
mystic, 83–88
philosophical and scientific, 75–80
scope, 71
religious, 88–89
- Cosmography, South Asian, 306, 333–34, 344, 346, 347
in architecture, 379–82
Bhūgola (Globe/Geography) (Minākṣī temple), 346
Buddhist, 333–34, 335, 342–43
continents in, 335–36, 336 n.24
distant realms in, 336
divination charts, 348–51
dvīpa, 340
earth and universe
early conceptions of, 333–34
size of, 334
earth in, 335–36
and ethicization, 334
exegesis, 298
geography in, 339–40
and gods, 334
Hindu, 333–34, 343–67
Brahmāṇḍa (egg of Brahma), 344, 346
celestial mapping, 358–67
continents in, 347–48, 348
nonastronomical painting and ink drawings, 343–51
placement of deities in, 347, *pl.*25
reasons for scarcity of, 343
Vaishnavite, 343–44, 345
world as egg/fetus, 343, 344, 345
- Indo-Islamic, 376–79
- Jain, 76, 328, 333–34, 367–75
Manuṣyaloka (world of man), 340
materials used in, 367
statistical summary, 384–85, 386–87
in temple atrium, 371–72
- Khagolam* (celestial dome) (Minākṣī temple), 346
from *Maʿrifetnāme*, *pl.*3
and mental maps, 382–83
oceans in, 335, 337, 340
Puranic, 335 n.22, 398, 399
seven-continent earth, 337
shapes in, 335
trees in, 335
views of absence of tradition, 298
world as tortoise, 337–38, 338
- Cosmology, Islamic, 71–73
Jābirian, 81, 82
Ptolemy's influence on, 75
- Cosmology, South Asian
Buddhist, 333
Hindu
Brahmāṇḍa (egg of Brahma), 333
Shaivite, 344
Indian, 333
underlying conceptions, 332–43
- Cosmos, South Asian microcosmic analogues of, 379–82
- Cowell, Edward, 313
- Craftsmen, of Ottoman illustrated histories, 229, 229 n.4
- Crawford, Charles, 430
- Crete, 119, 164, 287
- Crone, Gerald R., 298
- Cubits, 8, 183 n.43
black (*sawdaʿ*), 177, 178, 178 n.23, 179
calculation of, 177
canonical (*shafʿī*), 177
rashāshī, 160
- Cupola of the Earth, 93, 103
- Cygnus, 61, 63
- Cyprus, 119, 120, 287
- Cyril and Methodius National Library, Sofia, manuscript of al-Idrisi's *Nuzhat al-mushtaq* in, 174
- Dabhol, 405
- Dafātir* (deed records), 88
- Dāʾirah* (circle), 74, 159
- Dakṣiṇātya (Dakṣiṇāpatha), 340
- Dakṣiṇāvṛtti Yantra, 362
- Dal Lake, 409
- Dallapiccola, A. L., 444–45
- Dalorto, Angelino de, 264
- Damascus, qibla of, 192
- Damyāt, 119
- Daniel, E. Valentine, 382–83, 509
- Danube River
on al-Kātibī's chart, 264
on al-Mursī's chart, 266
on Ottoman siege map of Belgrade, 211
in *Tarih-i fetih-i Şaklāvūn*, *pl.*19
in Walters *Deniz atlası*, *pl.*23
- Daqīqahs* (degrees), 8
- Darajahs* (minutes), 8

- Dār al-Kutub, Cairo
 al-Iṣṭakhri's manuscripts in, 130–31
 manuscript of al-Idrisi's *Nuzhat al-mushtaq* in, 173
- Dārā Shikōh, 466
- Dargazin, 239 n.47
- Darian, Steven G., 311 n.72
- Dās, Rajendra Prasād, 468
- Daulatabad, oblique secular representation of, 480–81
- Dāvūd (inspector of waterways), 226
- Day, length of
 and climate divisions, 175
 in Islamic geographical tables, 96
 in al-Sharafī al-Ṣifāqsi atlas, 285
- Daylam, 90
 Balkhī school map of, 114
- Day of Judgment, "topography" of from *Ma'rifetnāme*, 88, 89
- Deccan, 435, 446
- Degrees, measurements of length of, 178–81
- Deissmann, Gustav Adolf, 270
- Dejection (of planet), 64–65
- Delhi. *See also* Shāhjahānābād
 astronomical observatory at, 361, 365
 on Mughal topographic maps, 405
 oblique painting of, 450
 oblique secular representation of, 480–81
 planimetric secular map of, 476–77
 secular city and town plans from, 446
 in *Shāhid-i Ṣadiq*, 403
 sketch map of, 449
 on South Asian cosmographic globe, 396
- Delos, 277–78
- Denmark, 393
- "Departures," 258, 258 n.16
- Deshpande, C. D., 301, 422–23, 425, 425 n.81, 465 n.175
- Devakuru, 369
- Devgarh, 424
- Dharampal, 361 n.99
- Dhātakikhaṇḍa, 368, 372, 374
- Dhāt al-kursī* (instrument with the frame), 201
- Dhira'*. *See* Cubits
- Dhruva, 353, 359, 497, 498. *See also* Pole Star
- Dhvaja*, 376
- Diagrams
 of battle of the Prut, 213
 of eclipses, 39
 Islamic celestial, 75–76
 Islamic cosmographical, 71–89
 alchemy in, 71
 astrology in, 71
 astronomy in, 71
 concentric circles in, 74
 geography in, 71
 geomancy, 71
 by Ḥaydar Āmulī, 87 n.33, 87–88
 by Jābir ibn Ḥayyān, 80–82, 82
 mysticism in, 71
 philosophy in, 71
 theology in, 71
 qibla, 512
 by 'Alī ibn Aḥmad ibn Muḥammad al-Sharafī al-Ṣifāqsi, *pl.13*
- Dictionaries, 143
- Digambara temple, Ajmer, Rajasthan, 371–72
- Digaṃśa Yantra, 362
- Digby, Simon, 301–2, 352, 355
- Digits, 177
- Dikṣā* (initiation), 441
- al-Dimashqī (Shams al-Dīn Abū 'Abdallāh Muḥammad ibn Ibrāhīm al-Dimashqī), 143
 biographical information, 152 n.66
Nukhbat al-dahr fi'ajā'ib al-barr wa-al-bahr (Gems [selections] of the age from the marvels of the land and the sea), 152, 152 n.66, 154
- al-Dimyāṭī (Zayn al-Dīn al-Dimyāṭī), 190, 191 n.11
 qibla charts, 192, 193
- Dina*, 359
- Din-i-Ilāhī, 377
- Directions
 cardinal
 and Ka'ba, 193, 194
 on map of Nandiśvaradvīpa, 373
 on nautical maps, 498
 on qibla indicator, 198
 on secular city plans, 446
 on South Asian maps, 446, 498, 508
 on topographic maps of northeastern India, 427
 and correspondences in Islamic cosmology, 76, 77, 78
 in *Mecmū'a-i menāzil*, 237
 on Mughal topographic maps, 407
 secondary, 498
 solstitial, 193
 on topographic map of Rajasthan and Gujarat, 417
- Dirhams*, 159
- Disa, 417
- Diskalkar, D. B., 317
- Disks
cakravāla (world disk), 343 n.53
 Jambūdīvīpa as, 373
 oceans as, 372
- Distances
 on Balkhī school maps, 115, 121–22
 between pairs of places, 188
 conversion between linear and angular, 176
 in Gentil's atlas of Mughal Empire, 429
 on al-Idrisi's sectional maps, 163
 on Maratha topographic maps, 425
 measurement of, 175–88
 on Mughal topographic maps, 405–6, 407
 on route map of Nahr-i Bahisht canal, 438
 on topographic map of Rajasthan and Gujarat, 417
 used by al-Idrisi, 160
- Distortion. *See* Accuracy
- Diu, 403, 417
- Dive a Mehel. *See* Maldivē Islands
- Divination charts, 348–51
- Diwali, 470, 472, *pl.39*
- Diwān-i-Khāss, 377
- Ḍiyā' al-Dīn Muḥammad ibn Qā'im Muḥammad Aṣṭurlābī Humāyūnī Lāhūrī, 20, 22, 23, 48, 50, 51
- Diyarbakır (Āmid), 240
- Djerba, 279, 280
- Dnieper River, 210
- Dniester River, 210
- Dobāshis*, 431
- Dome of a Talisman, 393
- Dome of the Rock, 244
- Dorado (goldfish), 63
- Doria, Andrea, 281
- Dorn, Hans, 61
- Draco, 52, 62
- Dragon (*Jawzahr*), 64–65
- Drainage
 comparison of patterns, 410
 on Maratha topographic maps, 424
 on topographic maps of Rajasthan and Gujarat, 415
- Drawings
 ink, in Hindu cosmography, 343–51
 South Asian architectural, 466–72
- Dubrovnik, 231
- Dulcert, Angelino, 263
- Dungarpur, 416, 417, 418
- Durazzo (Durrès), 266
- Durbār*, 450
- Dürer, Albrecht, 61, 62, 246 n.64
- Dvārakā, 382
- Dvīpas*, 340. *See also* Continents;
 Jambūdīvīpa; Nandiśvaradvīpa;
 Puṣkaradvīpa; Śāgarasamvṛta-dvīpa;
 Śākadvīpa
- Dwarka
 conceived as conch, 452–53, 453
 religious map of, 482–83, 484–85
 on South Asian world maps, 399
 on survey map, 461 n.172
- Earth. *See also* Elements
 al-Birūnī's measurement of radius, 182–84, 184 n.53
 and celestial spheres, 75, 76
 circumference of, 178–79
 Cupola of the, 93, 103
 distribution of land and water on, 142
 four-continent, 313, 336, 352, 353
 geodesy, 175–88
 in Ibn al-'Arabī's cosmography, 86
 al-Idrisī on, 158–59 n.25
 in Indian cosmography, 335–36
 Ka'ba-centered, 80
 in Nāṣir Khusraw's cosmography, 86
 in Qur'ān, 72
 seven-climate system, 77, 78, 79, 80, 102
 seven-continent, 337, 353
 sphere of, 39
 spherical nature of, 175 n.1
 tortoise-shaped, 347–48, 348
 two-and-a-half-continent, 340, 368, 370, 371, 507
- Ebennesophy. *See* al-Ṣūfi
- Eck, Diana L., 336, 382

- Eclipses
 ascending and descending nodes, 334
 cycle of, 346, 347
 deities associated with, 358, 360
 and determination of longitude, 102, 103
 n.67, 176
 diagrams of, 39
 plane of, 21
 prediction of, 315
 Rāhu, causer of, 360
 solar, 365
- Ecliptic latitude-measuring circles, 14, 14–15
 n.6, 15, 16, 18, 29, 36, 38 n.78, 43,
 44, 46, 48, 49, 60–61, 65, 68, 69
- Ecliptics
 on ‘Alī Mācār Re’īs’s world map, 282
 on armillary spheres, 49
 on al-Bīrūnī’s flattened astrolabe, 36
 in al-Bīrūnī’s *Tahdīd*, 184 n.53
 and calculation of latitudes, 175 n.3
 on celestial globes, 43
 coordinates, 28, 30, 54
 on flattened projection, 36
 grids, 29
Horoscopion generale and, 62
 on Islamic celestial globes, 44, 47, 48
 and lunar mansions, 53
 and lunar nodes, 64
 plane of, 35 n.72, 38 n.79
 on planispheric astrolabes, 65
 poles, 43
 on spherical astrolabes, 41, 202
- Education, Brahman, 330
- Eger, proclamation of conquest of, *pl.17*
- Egging, Julius, 308 n.65
- Egypt
 on Balkhī school maps, 114, 115, 118,
 119, 120, 121
 on geographic globe in Mughal painting,
 409 n.37
 on al-Idrisī’s sectional maps, 165
 influence on *Mecmū’a-i menāzil*, 241
 and Ka’ba, 190
 in *kishvar* system, 94
 in *Kitāb-i bahriyye*, 232, 232–33, 275, 279
 map of, 112
 qibla of, 193
 on seven-*kishvar* earth, 80
 on South Asian world maps, 390, 391
- El Cruzero Hispanis (Spanish cross), 63
- Eldem, Halil Ethem, 270
- el-Dimāškī (Ebū Bekr ibn Behrām
 el-Dimāškī), 218
- Elements. *See also* Air; Earth; Fire; Water
 and correspondences in Islamic
 cosmology, 76, 77, 78
 in Ibn al-‘Arabī’s cosmography, 86
 in Jābirian alchemy, 81, 82
 in Nāṣir Khusraw’s cosmography, 86
 in al-Sijistānī’s cosmography, 82
 spheres of, 76
- Eli, Mount, 256
- Elizabeth I of England, 67, 409 n.36, 507
- Elizabeth II of England, 378
- Elliptical curves, 35 n.73
- Elphinstone, Mountstuart, 436
- Encircling Ocean. *See* Oceans, Encircling
 Ocean
- Encyclopaedia of Islam*, 10
- Engineering works, route maps related to,
 438–42
- England. *See* Great Britain
- Equator, celestial
 on armillary spheres, 49
 on celestial globes, 43
 on Islamic celestial globes, 44, 47
 on nineteenth-century Indian planispheric
 map, 68
 on planispheric astrolabes, 18, 21, 65
 on planispheric map from
Sarvasiddhantatattva-cūḍāmaṇi, 69,
 70
 and qibla determination, 201
 on spherical astrolabes, 41, 202
 on vault of heavens, Quṣayr ‘Amrah, 15
- Equator, terrestrial
 on Balkhī school maps, 126
 on Bharat Kala Bhavan globe, 397
 on Cantino map, 262
 on climatic (zone) maps, 148
 al-Idrisī on, 158–59 n.25
 on al-Khwārazmī’s maps, 105, *pl.4*
 in orthographic projection, 35 n.72
 on South Asian globes, 358, 396
 in Suhrāb’s map construction, 104, 105
 on terrestrial globe, 399
- Equatoria, 38–39
- Equatorial polar circle, 65
- Equatorial stereographic projections, 28
- Equidistant cylindrical projection, 34
- Equinoctial colures, 13, 16, 21, 61, 65, 68, 69
- Equinoxes
 autumnal, 69
 in globular projection, 36
 and lunar mansions, 53
 on nineteenth-century Indian planispheric
 map, 68
 procession of, 43, 314–15
 vernal, 69
- Erciṣ, ruins of, 239, 240
- Ertuğrul, 235 n.32, 236
- Erzurum, 237 n.38, 243
- Escarments, 422, 429
- Eski Istanbul, Lesbos, 231 n.14
- Esztergom
 bird’s-eye view of siege of fortress, 245,
pl.19
 in *Tārīḥ-i feth-i Şaklavūn*, 247
- Ethiopia
 in *kishvar* system, 94
 on qibla map, 199
 qibla of, 191, 193
- Eton College, al-Iṣṭakhri’s manuscripts at,
 130–31
- Euboea, 276, *pl.22*
- Euphrates River, 118, 222, 223
- Europe
 accounts of Indian maps, 324–27
 on Balkhī school map of Mediterranean,
 119
 cosmographies, compared with South
 Asian cosmographies, 507
 denigration of Islamic cartography, 9
 on geographic globe in Mughal painting,
 409
 al-Idrisī’s lack of influence on cartography
 in, 172
 on al-Idrisī’s maps, 157
 influence on geographic globe in Mughal
 painting, 409
 influence of Islamic asterism mapping on,
 60–63
 influence on Islamic cartography, 3, 65–70,
 263
 influence on Ottoman cartography, 209,
 210, 213, 215, 217–18, 221–22
 influence on Ottoman illustrated histories,
 228, 245, 250, 251
 influence on South Asian cartography, 295,
 463–65, 503, 507
 maps of, 114
 on al-Qazwīnī’s world maps, 144
 Renaissance, 4
 on al-Sharafi al-Şifāqsi chart, 289
 on South Asian world maps, 392, 398
 spread of astrolabe in, 26–27
 terrestrial maps, compared with South
 Asian maps, 507–8
 in view of world landmass as bird, 91
- Evliyā Çelebi, 284
Seyāhatnāme (Book of travels), 224
- Exaltation (of planet), 64–65
- Eyüp, 238, 239, 249
- Faizabad, oblique secular representation of,
 480–81
- Faiz Bazār, architectural drawing of, 468–69
- Falconer, Hugh, 411
- Falsafah* (philosophy), 73
- Faraj, 232
- Farang (Land of the Franks), 393. *See also*
 Feringhī; France; Franks
- al-Farghānī (Abū al-‘Abbās Aḥmad ibn
 Muḥammad al-Farghānī), 34–36, 35
 n.70, 36 n.74, 63, 95, 97, 101
 and length of degree, 178
 longitude and latitude tables, 96
 and nilometer renovation, 177
 and seven-climate system, 102
- al-Fārisī (Muḥammad ibn Abī Bakr al-Fārisī),
 191 n.11
*Tuḥfat al-rāghib wa-turfat al-ṭālib fi
 taysīr al-nayyirayn wa-ḥarakāt
 al-kawākib* (The sun, the moon, and
 the movements of the fixed stars
 made easy as a gift to the desirous
 and a luxury for the seeker), 192–93,
 194
- Farrukhabad, 422
- Fars, 112, 114, 115–16
- Farsakhs*, 8, 160, 175, 177, 178, 178 n.23,
 186, 187 n.59, 198
- Fath ‘Alī Shāh, 242 n.51
- Fathpur Sikrī, 377
- Fatimids, 111, 111 n.23

- al-Fazārī (Muḥammad ibn Ibrāhīm al-Fazārī), 26, 95, 103, 157
Kitāb al-Zīj, 93 n.13
- Fer, Antoine de, 67
- Ferdinand of Austria, *pl.19*
- Feringhi (Land of the Franks), 390, 391. *See also* Farang; France; Franks
- al-Fiḍḍāh (island), 138, 140, 144
- Fields (depicted on maps), 447
- Figuerda, Emmanuel de, 365
- Fire. *See also* Elements
 in Ibn al-ʿArabī's cosmography, 86
 in Nāṣir Khusraw's cosmography, 86
 sphere of, 75, 77
- Firūz Shāh III, 315, 376–77
- Flags
 on Ḥājī Abū al-Ḥasan chart, 265, 267
 on al-Kātibī chart, 264
- Florida, 272, *pl.21*
- Forma Urbis Romae*, 512
- Forschungsbibliothek, Gotha
 Aḥmad (Muḥammad) al-Ḥūsī's manuscripts in, 134–35
 al-Iṣṭakhri's manuscripts in, 108, 124–25, 130
- Fort Khyber, 393
- Forts, maps of, 462–66, 490–93
- Fortunate Islands (Canary Islands), 391
- France. *See also* Farang; Feringhi; Franks
 on geographic globe in Mughal painting, 409 n.37
 in *Kitāb-i baḥriye*, 278
 on South Asian world maps, 395, 400
- Francis I of France, 245
- Frank mils*, 160
- Franks, 94. *See also* Farang; Feringhi; France
- Freducci, Ottomano, 280
- Frontal perspective, 450, 452, 453, 470
- Furūsiyah* manuscripts, 235 n.30
- Fyzabad, 422
- Gabhastikhaṇḍa, 355
- Gagraun fort, map of, 465, 492–93
- Gait, Edward Albert, 326 n.156
- Galata
 in *Hünernāme*, 249
 in *Kitāb-i baḥriye*, 235 n.27
 in *Mecmūʿa-i menāzil*, 238
 on reference map of Istanbul architectural monuments, 239
- Gallois, Lucien, 277–78
- Gama, Vasco da, 30, 256, 257, 259, 265, 295, 324, 394–95
- Gandak (Saligrama) River, 432
- Gāndharvakhaṇḍa, 355
- Gaṇeśas, 455, 457
- Gaṅgādhara, 323
- Ganga (Ganges) River, 461
 on South Asian maps, 311 n.71
 cosmographic globes, 354, 356, 358, 396
 eleventh-century stone slab, 311–12
 fifth-century bas-relief, 311, 312
 geographic globe in Mughal painting, 409
- Indo-Islamic cosmography, 377
- Jain conception of Jambūdvīpa, 341, 369, 372
- Mughal topographic maps, 405
- Padma Purāna*, 313
- painting of Varanasi, 452
- pilgrimage maps, 439, 441
- religious maps of Varanasi, 454
- Shahid-i Ṣādiq*, 403, 405
- world maps, 393, 399
- Gangasagara, 396
- Gardens
 on late premodern maps from Kashmir, 409
 on map of Kashmir by Abdur Rahim, 412
 on secular plans of cities and towns, 447
- Shāh Jahān and, 377–78
- on South Asian scroll maps, 436
- on topographic map from Kashmir, 411
- Gargasambhita*, 338
- Gastaldi, Giacomo, 279, 280, 282
- Gaya, 396, 461 n.172
- Gaz*, 440, 448
- Geerarts, Marc, the Younger, 409 n.36
- Gemini. *See also* Astrology; Astronomy; Zodiac
 constellation
 on al-Birūnī's flattened astrolabe, 36
 on al-Birūnī's globular projection, 37
 and corresponding pre-Islamic asterisms, 51
 on Islamic celestial globes, 44
 on qibla map, 192, 199
- zodiac sign
 on astrolabe rete, 22, 30
 combined with planets, 64
 in Islamic correspondences, 77, 78
 in Nāṣir Khusraw's cosmography, 86
- Gemma Frisius, 29
- Gentil, Jean Baptiste Joseph, 299, 325 n.143, 378, 378 n.146, 422, 446, 469, 507
Empire Mogol divisé en 21 soubas ou gouvernements tirés de differens écrivains du pais en Faisabad en MDCCLXX, 427–28
 and hybrid maps, 427–29
Recueil de toutes sortes de dessins, 427
- Gentil atlas, 427–29
- Geodesy, 175–88
- Geographers, Balkhī school of, 108–37
 manuscripts, 124–28, 130–35
 maps of, 112–28
 Arabic-speaking provinces, 117–20
 described, 114
 selection of material, 114–15
 treatment of Persian provinces on, 115–17
 world maps, 120–22
 works of, 108–11
- Geography
 in cosmographical diagrams, 71
 in early Islamic literature, 90–93
 geographical tables, 96–97
 in Indian cosmographies, 339–40
 on Islamic maps, 7
- Islamic sacred, 190–96, 197
 of Italian peninsula, 210
- Geomancy, 71
- Geometry, 359, 373
- Germany, 393, 395
- Ghāzān Khan, 239
- Ghazna
 al-Birūnī's attempts to determine longitude of, 177
 longitude of, 177, 184–88, 187
 triangulation between Baghdad and, 186
- Ghogha, 417
- Gibbs, Sharon, 299, 315 n.94
- Gibraltar, Strait of, 119
- Girnar, Mount
 on Jain pilgrimage route map, 442
 on Jain triptych, 460
 religious map of, 484–85
 on survey map, 461 n.172
- Giustinian, Marc' Antonio, 221 n.36
- Giza, pyramids of, 232, 233
- Globe construction
 brass, 352
 Islamic, 48–49
 millboard/hollow wood, 399
 papier-mâché, 355
 seamless metal, 48–49
 welded, 357
- Globe gores, 62–63
- Globes. *See* Celestial globes; Cosmographical globes; Terrestrial globes
- Globular projection, 36–37, 37–38, 141–42
- Gnomons, 41, 44, 181
- Gnosticism, 73, 80–83
- Goa, 405
- Godapora Maharaja, 426
- Godavari River, 261, 262, 382, 399, 423
- Gods. *See also* Brahma; Krishna; Vishnu
 Indian, 334
 in Islamic cosmography, 74
 in Jain cosmologies, 373
 planetary, 358–59
 in Qurʾān, 71
- Goeje, Michael Jan de, 8, 108, 110, 111, 112–13, 130, 190
- Gog and Magog. *See also* Yājūj and Mājūj
 on seven-*kishvar* earth, 80
 on South Asian world maps, 390, 391, 393, 396, 507, *pl.29*
- Gogerly, Daniel John, 343 n.53
- Gokarn, 425
- Golden womb (*hiranyagarbha*), 333–34, 343
- Gole, Susan
 on *Chahār Gulshan*, 435
Early Maps of India, 299
 on Gentil atlas, 378 n.146
 and geometric diagrams from Rajasthan, 348, 349–50, 351
 and hybrid maps, 427
Indian Maps and Plans: From Earliest Times to the Advent of European Surveys, 296, 299, 317 n.108, 389, 390, 400, 416, 417, 507–8
 Indian world map found by, 304, 393, 394
India within the Ganges, 299, 424

- Gole, Susan (*cont.*)
 on irrigation route maps, 439–50
 on Jain scroll paintings, 460
 on map by Abdur Rahim, 411
 on map of north-central India, 422
 on maps in *Tārīkh-i qal'ah-i Kashmīr*, 413–14
Maps of Mughal India: Drawn by Colonel Jean-Baptiste-Joseph Gentil, Agent for the French Government to the Court of Shuja-ud-daula at Faizabad, in 1770, 299, 428
 and Maratha topographic map, 424 n.73
 and South Asian architectural plans, 468, 469, 470
 and South Asian city and town plans, 446, 448, 450
 and South Asian cosmographic globes, 352
 and South Asian fort maps, 466
 on South Asian pilgrimage maps, 441
 on South Asian route map, 438
 on South Asian scroll maps, 436
 and South Asian temple ground plans, 318–19
 on topographic maps from Kashmir, 411, 413 n.46
 Golius, Jacob, 63, 67 n.191
 Golkonda, oblique secular representation of, 480–81
 Gombrich, R. F., 332–33, 334
 Goodrich, Thomas D., 282, 283
 Gorakhpur, 396
 Gordon, D. H., 304
 Gosain Lake, 432
 Gosselin, Pascal François Joseph, 340
 Goswamy, B. N., 444–45
 Gotha, Forschungsbibliothek
 Aḥmad (Muḥammad) al-Ṭūsi's manuscripts in, 134–35
 al-Iṣṭakhri's manuscripts in, 108, 124–25, 130
Gouwas (Sinhalese miles), 426
 Govardhan, 419
 Govardhan, Mount, 379, 419, *pl.31*
 Govardhan Puja (sacrifice), 379
 Govindgarh fort, map of, 490–91
Grahas (planetary deities), 358–59, 360, 373
 Graticules, 148–51, 259. *See also* Grids
 Great Britain
 colonies of, on South Asian world maps, 396
 disdain for South Asian maps, 303, 303 n.47, 504, 506
 on South Asian world maps, 390, 393, 400
 use of astrolabes in, 27
 Greece
 on Balkhī school map of Maghreb, 120
 influence on Islamic cartography, 4, 94–95
 influence on Islamic high culture, 73
 Greenland, 272
 Grids. *See also* Graticules; Latitude; Longitude
 in Islamic mapping, 259
 on Arab navigational charts, 258
 for converting latitude and longitude tables to map form, 137 n.1
 and copying of portolan charts, 258 n.16
 ecliptic, 29
 globular projections used as, 37
 on qibla indicator, 198
 on qibla maps, 196, 197, 200, 202
 rect-azimuthal, 198
 on al-Sharafī al-Ṣifāqsi's world map, 262
 on al-Zayyāni's world map, 171
 used by al-Khwārazmī, 100
 in South Asian mapping
 on architectural drawings, 468
 on Bharat Kala Bhavan globe, 397
 on city plans, 448
 on Indian maps, 508
 on map of north-central India, 422
 on Marino Sanudo's map of Palestine, 517
 in *Shahīd-i Ṣadiq*, 403, 404–5
 on topographic maps, 388, 416, 424, 433
 Grosset-Grange, Henri, 259 n.20
 Grueber, Johan, 430
 Grus (crane), 63
 Gudea, 177
 Guimet, Musée, Paris, painting in, 449
 Guinea, Gulf of, 270
 Gujarat
 in Gentil's atlas of Mughal Empire, 429
 hybrid map of, 427
 Jain pilgrimage map from, 440, 441–42, 460
 maps of, 422–26
 nautical maps from, 502
 secular city and town plans from, 446
 on South Asian cosmographic globe, 396
 topographic maps from, 414–17, 418
 Gunther, Robert T., 299
 Gupta, Samudra, 311 n.70
 Gurjar, Laxman Vasudeo, 361 n.99, 362
 Gurkha, oblique secular representation of, 480–81
 Gurung, Harka, 430, 431, 432
 Gurung, Kesav, 431
 Gwalior, sketch map of, 448–49
 Ḥabash al-Ḥāsib (Aḥmad ibn 'Abdallāh Ḥabash al-Ḥāsib al-Marwazi), 36, 41, 41 n.85, 103, 202
Kitāb al-ajrām wa-al-ab'ād (Book of bodies and distances), 178–79
Kitāb fi ma'rīfat al-kurah (Book of the knowledge of the globe), 44
 and length of degree, 178
 method for calculating qibla, 204, 205
 Habib, Irfan
An Atlas of the Mughal Empire: Political and Economic Maps with Detailed Notes, Bibliography and Index, 325 n.143
 "Cartography in Mughal India," 301, 400, 403
 on Ḥāfiẓ-i Abrū, 390
 on Ṣadiq Iṣfahāni, 391–92, 403
 on South Asian route maps, 436 n.118
 Habsburgs, 228, 246
 Ḥācī Aḥmed, 221 n.36
 Ḥācī Meḥmed, 266, 267 n.10, 270
 Haçova/Mezőkeresztes, plan of battle of, 213 n.20
 Ḥadds, 190
 Hadith
 and cosmology, 71, 72, 73
 geography in, 90
 Hadrian, 63
 Ḥāfiẓ-i Abrū ('Abdallāh ibn Luṭf Allāh al-Bihdāmi), 259, 390 n.8
 influences on, 170
 maps by, 127–28
Tārīkh-i Ḥāfiẓ-i Abrū, 170
 use of graticule, 149 n.63, 149–50
 world maps by, 151, 170, 390
 Hagia Eirene, Istanbul, 237, 250
 Hagia Sophia, Istanbul, 237
 Hahfizjee, hybrid map by, 427
 Hairanyavata, 341
 Ḥajj Abū al-Ḥasan, 265, 267, 272
 al-Ḥajjāj ibn Yūsuf, 90
 Ḥajji Malang Hill, Kalyan, pilgrimage map of, 461–62 n.173
 al-Ḥākīm, 141 n.20
 Halkalı water-supply system, Ottoman map of, 226
 Hamburg, Staats- und Universitätsbibliothek, al-Iṣṭakhri's manuscripts in, 124, 130–31
 Ḥamd Allāh Mustawfi (Ḥamd Allāh ibn Abī Bakr al-Mustawfi Qazvini), 138, 145, 390
 compared with Ṣadiq Iṣfahāni, 391–92
 map of the Middle East, 152
Nuzhat al-qulūb, 149 n.63, 149–50, 150, 152, 259
 use of graticule, 149–50, 150
 al-Hamdāni (al-Ḥasan ibn Aḥmad al-Hamdāni)
 and prime meridians, 103
Ṣifat jazirat al-'Arab (History of the Arabian Peninsula), 117
 al-Ḥāmīdī (Ibrāhīm ibn al-Ḥusayn al-Ḥāmīdī)
Kanz al-walad (Treasure of the son), 83
 Hamilton, Francis (Buchanan), 430
 Hapgood, Charles H., 271
 Ḥaram al-Sharīf, 244
 Harappan culture
 cartographic achievements, 306–8
 standardization of, 306–7
 survey instruments, 307
 Hardwar, 441, 461 n.172
 Hari Parbat fort, Srinagar, 409, 492–93
 Harita, 206
 Harivarṣa, 341, 358
 al-Ḥarrāni (Aḥmad ibn Ḥamdān al-Ḥarrāni), 138, 143 n.35
Jāmi' al-funūn (The gatherer of the sciences), 143, 144
 world map by, 144
 Hartner, Willy, 16 n.12
 Ḥarūn al-Rashīd, 4
 Harvey, P. D. A., 296

- Ḥasan (artist), 229, *pl.17*
 Ḥasan (inspector of waterways), 216, 219
Ḥaṣṣa mi'marları, 215
 Hastings, Warren, 429
 Ḥaydar Ḥmulī (Sayyid Bahā' al-Dīn Ḥaydar ibn 'Alī al-'Ubaydī al-Ḥusaynī Ḥmulī), 74
 cosmographical diagrams by, 87 n.33, 87–88
 Kitāb āfāqī (Book of horizons), 87
 Kitāb anfusī (Book of souls), 87
 Ḥaydar Re'īs, 276
 Ḥayreddīn Barbarossa, 245, 285, *pl.20*
 Ḥazratbāl mosque, 409
 Heavens, in Jain cosmology, 373, *pl.28*
 Hells, in Jain cosmology, 372, *pl.28*
 Helmand River, 405
 Helt, Hugo, 35 n.72, 38 n.79
 Hemakūṭa Mountains, 396, 399
 Hemispheres
 Northern
 abstract of on South Asian cosmographic globe, 358
 constellations of on astrolabe plate, 66
 constellations of on planispheric star map, 67
 Southern
 constellations of on astrolabe plate, 66
 constellations of on planispheric star map, 67
 on South Asian cosmographic globe, 357
 Hercules, 16, 58, 61
 Hering, Loy, 246 n.64
 Hermann of Carinthia, 24–25
 Heron of Alexandria, 175 n.5, 176
 Hevelius, Johannes, 69
 Ḥijāz, 94, 118
 Himāchala Mountains (Himachal, Himagiri, Himalayas)
 in *Shāhid-i Ṣādiq*, 403, 405
 on South Asian cosmographic globes, 354, 356, 396, 397, *pl.30*
 in South Asian mental mapping, 382
 on South Asian world maps, 393, 399
 Himachal Pradesh, 436, 437
 Himavat Mountains, 341
 Hindus, 332
 cartography, 303, 318–19
 conceptions of universes, 341
 cosmography, 333–34, 343–67
 Brahmāṇḍa (egg of Brahma), 344, 346
 celestial mapping, 358–67
 continents in, 335–36, 347–48, 348
 cosmographic globe, *pl.30*
 cosmos as egg/fetus, 343, 344, 345
 ethicization of cosmos, 334
 four-continent earth, 313, 336, 352, 353
 geography in, 340
 nonastronomical painting and ink drawings, 343–51
 placement of deities in, 347, *pl.25*
 reasons for scarcity of, 343
 seven-continent earth, 337
 in temple architecture, 379–80
 Vaishnavite, 343–44, 345
 cosmology
 Brahmāṇḍa (egg of Brahma), 333
 Shaivite, 344
 importance of maps to, 328–29
 importance of rivers to, 311–12
 influence on Islamic cartography, 93
 and mapmaking, 506, 509
 monasteries, 452
 Muslim interaction, 323–24
 temples, plan for, 319
 theology, 330
 al-Ḥinī, Muḥammad Jāber 'Abd al-'Āl, 130
 Hipparchus, 25, 103 n.67, 361
 Hippodrome (Atmeydanı), Istanbul, 237
Hiranyagarbha (golden womb), 333–34, 343
 Histories, Ottoman illustrated
 accuracy of, 228
 compilation, 229–30
 development of, 228–29
 European influence on, 228
 materials used for, 229
 selected manuscripts related to, 252–55
 topographical illustration, 230–35, 245–52
 European influence on, 245, 250, 251
 Hungary's importance in, 246–49
 in later histories, 245–52
 in *Mecmū'a-i menāzil*, 235–45
 Hodgson, Brian Houghton, 431
 Hodgson, Marshall G., 512
 Hoefnagel, Georg, 251
 Hogenberg, Frans, 251
Civitates orbis terrarum, 240–41, 246
 Holland
 colonies of on South Asian world maps, 396
 on South Asian world maps, 390, 393
 Homem, Lopo, 262
 Hondius, Henricus, 409 n.37
 Honigmann, Ernst, 96, 100, 175 n.2
 Hoogly Bunder, 393
 Horizon circle, 48
 Horizon rings, 42, 43, 44, 47
 Horizons, and measurement of earth's radius, 182, 182–83
 Horizontal rings, and qibla determination, 201
 Horoscopes. *See also* Astrology
 of Iskandar Sultan, 63–64, 65, *pl.1*
 of Nau Nihāl Singh, 68
 Hour lines, 41
 Hours, lines of unequal, 21
 Houses, plans for, 470
 Houtman, Frederick de, 63, 66, 69
 Hsu, Mei-ling, 503
Hubāṭ (dejection), 64–65
Ḥudūd al-'ālam, 139–40
 Hülāgū Khān, 57
 Humāyūn, 65, 379
 Humors, bodily, 86
 Hungary
 on geographic globe in Mughal painting, 409 n.37
 importance in Ottoman topographical illustration, 246–49
 Ottoman-Habsburg rivalry for, 246
 Ottoman map of, 217
 in *Tāriḥ-i fetḥ-i Ṣaklavūn*, 245–46
 al-Ḥusayn, 55
 shrine of at Karbala in *Mecmū'a-i menāzil*, 243, 243 n.53, 244
 Ḥusayn, Shāh, 38 n.79, 68 n.193, 124
 Hybrid maps (South Asian in European style), 427–29
 Hyderabad, 425, 476–77
 Hydrus (small serpent), 63
 Iberian Peninsula. *See also* Andalusia; Portugal; Spain
 in Atlas-i ḥumayun, 283
 on Ibn Ḥawqāl's world map, 145
 on al-Idrīsī's world map, 145
 in al-Sharafī al-Ṣifāqī atlas, 287
 on South Asian world maps, 390
 Ibn 'Abd al-Ḥakam (Abū al-Qāsim 'Abd al-Rahmān ibn 'Abdallāh ibn 'Abd al-Ḥakam), 90–91
 Ibn al-'Arabī (Muḥyī al-Dīn Muḥammad ibn 'Alī ibn al-'Arabī), 73, 74, 83–87
 cosmography of, 86
 al-Futūḥāt al-Makkīyah (Meccan revelations or conquests), 85
 Insha' al-dawā'ir (Production of spheres), 83, 85
 Ibn al-Bannā', 29
 Ibn Bashrūn, 157
 Ibn Faḍl Allāh al-'Umārī (Aḥmad ibn Yaḥyā ibn Faḍl Allāh al-'Umārī), 517
Masālik al-abṣār fī mamālik al-amṣār (Ways of perception concerning the most populous [civilized] provinces), 150–51
 world maps by, 150–51, 153
 Ibn al-Faqīh (Aḥmad ibn Muḥammad ibn al-Faqīh al-Hamadhānī), 114, 178
 Ibn Fāṭimah, 170
 Ibn al-Ghulām al-Qunawī (al-Ḥāliq ibn al-Ghulām al-Qunawī), 58
 Ibn Ḥawqāl (Abū al-Qāsim Muḥammad ibn Ḥawqāl al-Naṣībī), 8, 128, 138
 and al-Balkhī, 110
 biographical knowledge, 110
 and *Ḥudūd al-'ālam*, 139–40
 and al-Idrīsī, 157, 169 n.51
 and al-Iṣṭakhrī, 109, 110, 137
 Kitāb sūrat al-arḍ (Picture of the earth), 108, 110, 136
 maps by, 112, 113–14, 115, 117
 Arabia, 118, 119
 compared with maps in
 Forschungsbibliothek, Gotha, 125
 Egypt on, 121
 influences on, 129
 Kirman, 116
 later recensions, 137–39
 Maghreb, 120
 Mediterranean Sea, 120
 world maps, 122, 123, 140, 144–45
 and maps in Staats- und
 Universitätsbibliothek, Hamburg, 124
 and al-Muqaddasī, 111, 122

- Ibn Ḥawqal (*cont.*)
 printed editions and translations of, 136
 select list of manuscripts, 132–33
 use of graticule, 149
 works, 111
- Ibn Khaldūn, 286 n.66
 influences on, 170
Kitāb al-ʿibar, 170, 171
 world map, 170, 171
- Ibn Khallikān (Aḥmad ibn Muḥammad ibn Khallikān), 25
- Ibn Khuradādhbih (Abū al-Qāsim ʿUbayd Allāh ibn ʿAbdallāh ibn Khuradādhbih), 99, 114, 116, 117, 118
 biographical information on, 91 n.9
 influence on Balkhī school maps, 128–29
Kitāb al-masālik wa-al-mamālik (Book of routes and provinces), 91–92, 169 n.51, 190–91
 scheme of sacred geography, 190
 as source for al-Idrisī, 169 n.51
- Ibn Mājid (Aḥmad ibn Mājid), 8, 256, 257, 260–61
Asrā al-bahr, 394
- Ibn al-Nadīm (Muḥammad ibn Ishāq ibn al-Nadīm), 25, 26
Fihrist, 96, 168 n.47
- Ibn Qutaybah (Abū Muḥammad ʿAbdallāh ibn Muslim ibn Qutaybah), 53
- Ibn Raḥīq, 191 n.11
- Ibn Rustah (Abū ʿAlī Aḥmad ibn ʿUmar ibn Rustah), 93
- Ibn Ṣaffār (Abū al-Qāsim Aḥmad ibn ʿAbdallāh ibn Ṣaffār), 26
- Ibn Saʿīd (ʿAlī ibn Mūsā ibn Saʿīd al-Maghribī), 143, 145
 influences on, 170
Kitāb baṣṭ al-ardʿ fi ṭūliḥā wa-al-ʿardʿ (Exposition of the earth in length and breadth), 102 n.60, 150–51, 170
 method of dividing climates, 157
- Ibn al-Sarrāj, 31, 32
- Ibn al-Shāṭir (ʿAlāʾ al-Dīn Abū al-Ḥasan ʿAlī ibn Ibrāhīm ibn al-Shāṭir), 32
- Ibn Surāqah (Muḥammad ibn Surāqah al-ʿĀmirī)
 instructions for finding qibla, 195
 and sacred geography, 191 n.11, 191–92
- Ibn al-Wardī (Sirāj al-Dīn Abū Ḥafṣ ʿUmar ibn al-Wardī), 138, 143 n.35, 155
Kharīdat al-ʿajāʿib wa-farīdat al-gharāʿib (The unbored pearl of wonders and the precious gem of marvels), 127, 143, 194, 195, 196, 221 n.34
 and qibla charts, 192
 world maps, 113, 143, *pl.8*
 Ottoman version of, 220
- Ibn Yūnus (Abū al-Ḥasan ʿAlī ibn ʿAbd al-Raḥmān ibn Yūnus), 96
 and length of degree, 178, 180–81
 and longitude of Alexandria, 102
 number of entries in coordinate tables, 101 n.49
al-Zij al-kabīr al-Ḥakīmī (Hakimite tables), 141, 141 n.20, 179
- Ibrāhīm Ḥaḳḳī (Erzurumlu İbrāhīm Ḥaḳḳī), 85, 87
Maʿrifetname, 76
 levels of being in, 87
 religious cosmos from, *pl.3*
 topographic rendering of Day of Judgment from, 88, 89
- Ibrāhīm al-Mursī, 264–65, 266
- Ibrāhīm Mütefferīka, 218
 map of Ottoman Empire, 225, 225–26
- Ibrāhīm Paşa, 232, 236, 237, 272, 275
- Ibrāhīm ibn Saʿīd al-Sahli al-Wazzān, 45
- Iceland, 393
- al-Idrisī (Abū ʿAbdallāh Muḥammad ibn Muḥammad al-Sharīf al-Idrisī), 8, 102, 102 n.60, 111, 114, 129, 138, 140, 142, 143, 154, 513, 517
 biographical information, 156
Book of Roger, 156, 170
 cartography, 156–74
 influence on later authors, 170–72
 influence on al-Şifāqī family, 285, 287
 instructions for making world map, 158–59
 longitude and latitude on maps of, 259 n.23
 manuscripts of works of, 173–74
 as mapmaker, 156–58
 map of compared with Cantino map, 262
 northwest Africa from map of, *pl.12*
Nuzhat al-mushtaḳ fi ʿkhtirāq al-afaq (The book of pleasant journeys into faraway lands), 7, 8, 156, 157, 158–63, 164, 165, 166, 169, 170 n.58, 172, 173–74
 index of sectional maps in, 162
 sources for, 167–70
 orientation of maps, 518
Rawḍ al-faraj wa-nuzhat al-muhaj (Gardens of pleasure and recreation of the souls), 146–47, 157–58, 163, 165–67, 168, 170 n.58, 174, 518
 sectional maps by, 162, 162–63, 164, 165, 166, 171–72, 172
Uns al-muhaj wa-rawḍ al-faraj (Intimacy of souls and gardens of pleasure), 157–58
 world maps by, 144, 161, 162, 515, *pl.11*
- al-ʿIjlī, 26
- al-ʿIjlīyah, 26
- İlavṛta, 343, 358
- Iliryus (Leros), 277
- Illustration, Ottoman. *See* Histories, Ottoman illustrated
- Ilyās of Morea the Reconnoiterer, 210–11
- Imago Mundi*, 298
- Imārat Kārḳhāna, 442
- Imber, Colin H., 266
- India. *See also* Bhārata; Maṅṣūrah; South Asia
 ancient and medieval architectural plans, 317–20
 astrolabes in, 26
 astrology, 338–39
 astronomy, 314–16
- cartography
 cosmographic globes, 352–58
 repositories for, 302–4
 surviving, 295
- celestial symbolism in, 65
- conceptions of universes, 341–42
- cosmography, 333–34
 ancient, 312–14
 continents in, 335–36, 336 n.24
 distant realms in, 336
 divination charts, 348–51
 early conceptions of earth and universe, 333–34
 Francis Wilford’s drawing of, 300
 geography in, 339–40
 Mesolithic depiction of, 306
 microcosmic analogues, 379–82
 size of earth and universe, 334
 world as tortoise, 337–38, 338
- cosmology, 332–43
- European influence, 295
- geography, ancient knowledge of, 309–12
- gods, 334
- Harappan achievements in, 306–8
 influence on Islamic high culture, 72–73
 in *kishvar* system, 80, 94
 lack of surviving artifacts, 295
 literacy in, 328–29
 on maps, 114
 Balkhī school world map, 122
 geographic globe in Mughal painting, 409
 Hindu cosmographic globe, *pl.30*
 al-Idrisī’s sectional map, 165
 al-Qazwīnī’s world maps, 144
 Şadiq Işfahānī’s topographic maps, 400
 South Asian cosmographic globe, 396
 South Asian world maps, 391, 392, 394, 395
 topographic, 420–22, 427
- maps from
 British disparagement of, 303, 303 n.47
 cave paintings, 304–5, 305, 306, 313
 European accounts of, 324–27
 prehistoric and tribal, 304–5
 and reincarnation, 382
 Mauryan Empire, surveying of, 316–17
 nature of corpus, 304–31
 and prime meridians, 103
 rivers, 311–12
 temples as astronomical artifacts, 360
 types of materials produced, 304–27
 Vedic altars, 308–9, 379
 in view of world landmass as bird, 90–91
- Indian Ocean (Persian Sea)
 on Balkhī school maps, 114, 120, 122, 125, 126, 127
 on Cantino map, 260, 260–62
 Ḥāfīz-i Abrū’s map of, 150
 on Ibn Ḥawqal’s world maps, 144
 on Ibn al-Wardī’s world map, 143
 on al-Idrisī’s maps, 160, 164
 Islamic navigation charts for, 256–62
 on al-Khwārazmī’s world map, 157
 in *Kitāb şūrat al-ardʿ*, 106, 169

- in *Nuzhat al-mushtāq*, 169
in Walters *Deniz atlası*, 283
- India Office Library and Records (British Library), London. *See also* British Library
- indigenous maps in Hodgson Collection at, 474–75
- al-Iṣṭakhri's manuscripts in, 132–33
manuscript of al-Idrisi's *Nuzhat al-mushtāq* in, 173
map collections of, 302
Nepali maps in, 431
scroll maps in, 436
topographic map from Kashmir in, 411
- Indo-Christians, 332
- Indra, 379
- Indrakhaṇḍa, 355
- Indravarman, 370
- Indus (native holding spear), 63
- Indus culture. *See* Harappan culture
- Indus River
on Balkhī school world map, 122
on Mughal maps, 405, 408, *pl.*32
in *Shāhid-i Ṣādiq*, 405
on South Asian world maps, 393, 399
- Institut für Geschichte der Arabisch-Islamischen Wissenschaften, Frankfurt, 9
- Instruments. *See also names of instruments*
astronomical, 28, 360
accuracy of, 362, 364–65
at Jaipur observatory, 362–64, 365, 366
scientific, in South Asian astronomy, 360, 360 n.96
- Insulae Fortunatae (Canary Islands), 391
- Iqlim* (climate). *See* *Aqālim*
- Iran
and Balkhī school maps, 114–15
grid on map of, 259
Ḥamd Allāh Mustawfi's map of, 150
influence on Islamic high culture, 72–73
influence on *Mecmū'a-i menāzil*, 241
on qibla indicator, 197
on seven-*kishvar* earth, 80
on South Asian world maps, 391, 392
- Iraq (Lower Mesopotamia)
Balkhī school map of, 114
and Ka'ba, 190
qibla of, 191
- Iraqi Academy of Science, Baghdad, 158
- Irrigation, route maps for, 438–41
- Irwin, John, 377
- Isaac ibn Sid (Iṣḥāq ibn Sid), 42
- Iṣba's* (digits), 258, 258 n.18, 262, 497, 500
- Isfahan, 198
- Iṣḥāq ibn al-Ḥusayn
Ākāṁ al-marjān, 169 n.51
Iskandarnāmah, 394, 395, 396
- Iskandar Sultan, horoscope of, 63–64, 65, *pl.*1
- Islamic society. *See also* Arabs; Ottoman Empire
asterism mapping, 60–63
cartography, 303
early, 90–107
European denigration of, 9
- European influence on, 3
foreign geographical influence on, 93–95
Greek influence on, 4
historiography, 8–10
later developments, 137–55
terminology, 7–8
theory and practice, 7
- celestial mapping, 12–70
early Syrian origins, 12–18
influences on, 12
- constellation iconography, 54–60
- cosmography, 332
religious, 88–89
- cosmology, 71–73
Ptolemy's influence on, 75
and destruction of Hindu sites, 328
early geographical literature, 90–93
European influence on chartmaking, 263
and gardens, 377–78
geodesy, 175–88
Hindu interaction, 323–24
and Indo-Islamic cosmography, 376–79
influence of European celestial mapping on, 65–70
influence on high culture, 72–73
influence on Indian astronomy, 315–16
- mapmaking, 5–7, 506
grids in, 259
materials used, 6
- navigation charts
in Indian Ocean, 256–62
in Mediterranean Sea, 263–92
reference map of world of, 109
relationship between maps of and manuscripts, 4–5
and science, 72–73, 189
stemma of later maps, 138
time chart, 92
view of world landmass in shape of bird, 90–91
- Ismā'īlis, 73, 81–83
- Isolarii*, 231, 276, 277, 279, 280, 287
- al-Iṣṭakhri (Abū Iṣḥāq Ibrāhīm ibn Muḥammad al-Fārisi al-Iṣṭakhri), 8, 128
and al-Balkhī, 109, 110
biographical information, 109–10
compared with Ibn Ḥawqal, 110, 137
and *Ḥudūd al-ālam*, 139–40
Kitāb al-masalik wa-al-mamālik (Book of routes and provinces), 108, 109, 117, 136
Liber climatum, 136
maps by, 112–13, 114, 115
Arabia, 117–18, 118
in British Library manuscript, 125–26, 127
Egypt, 121
Kirman, 116
Mediterranean Sea, 118–19, 120
North Africa and Spain, 121, *pl.*6
in Staats- und Universitätsbibliothek, Hamburg, 124
world, 121, 121–22, 126, 127, 144, *pl.*7
and al-Muqaddasi, 111, 122
- printed editions and translations of, 136
select list of manuscripts by, 130–33
works, 111
- Istanbul. *See also* Byzantium; Constantinople
Arkeoloji Müzesi Kitaplığı, Ibn Ḥawqal's manuscripts in, 132–33
bird's-eye views of, 234, 237, 238, 239, 249–50, 251
chartmaking in, 263
in *Hünernāme*, 249–50
in *Kitāb-i bahriye*, 234, 234 n.25, 234–35 n.27
Köprülü Kütüphanesi, manuscript of al-Idrisi's *Nuzhat al-mushtāq* in, 174
in *Mecmū'a-i menāzil*, 237
reference map of architectural monuments, 239
on South Asian world maps, 390
Süleymaniye Kütüphanesi
Arabic translations of Ptolemy's *Geography* in, 210, 210 n.9
Ibn Ḥawqal's manuscripts in, 134–35
al-Iṣṭakhri's manuscripts in, 130–31
manuscript of *Nuzhat al-mushtāq* in, 173
manuscripts of *Rawḍ al-faraj* in, 174
al-Muqaddasi's manuscripts in, 134–35
al-Ṭūsi's manuscripts in, 134–35
- Topkapı Sarayı
Ibn Ḥawqal's manuscripts in, 108, 113, 134–35
al-Iṣṭakhri's manuscripts in, 130–33
manuscript copies of Ptolemy's *Geography* in, 210 n.8
non-Ottoman maps in, 209
Ottoman map of Kiev in, 210–11
Timurid scientific manuscript in, 108, 126–27, 128
uncataloged holdings, 207
world map in, 390 n.8
- Istanbul Üniversitesi Kütüphanesi, uncataloged holdings, 207
- Istituto Italiano per il Medio ed Estremo Oriente, 158
- Istituto Universitario Orientale di Napoli, 158
- Italy
in 'Alī Mācār Re'īs's portolan atlas, 281
on Balkhī school map of Maghreb, 120
on Ibn Ḥawqal's world map, 145
on al-Idrisi's world map, 145
influence on Ottoman cartography, 206
in *Kitāb-i bahriye*, 231–32, 278
in al-Sharafī al-Ṣifaqsi atlas, 287
in Walters *Deniz atlası*, *pl.*23
- Itineraries, 228–55
- Ivan the Terrible, 67
- Jabal al-Qilāl, 119, 122
- Jabarūt*, *pl.*3
- Jābir ibn Ḥayyān
cosmographical diagrams, 80–82, 82
Kitāb al-mizān al-ṣaghir (Book of the small balance), 81
Kitāb al-taṣrif (Book of conjugation), 81

- Jacob ben Machir ibn Tibbon, 29
 Jacob of Edessa, 180
 Jafarabad, 417
 Jagannath
 on map of north-central India, 422
 map of temple, *pl.36*
 on South Asian cosmographic globe, 396
 on South Asian world maps, 400
 Jagannātha, 365
 al-Jaghmini, 204, 205
 Jahān, Shāh, 325 n.143, 326 n.155, 377–78, 379, 393, 405, 409 n.36, 449
 Jahāngīr, 63, 65, 378, 378 n.145, 408, 409, 469–70, 507
 “Jahāngīr Embracing Shāh ‘Abbās” (painting), 408, 410, 515
 Jaigarh Fort Museum, architectural drawings in, 468
 Jains, 296, 298, 332. *See also* Pilgrimages, South Asian
 cartography, 303
 materials used in, 302
 cosmography, 76, 328, 333–34, 341–42, 342, 367–75
 anthropomorphic representation of universe, *pl.28*
 in architecture, 380
 continents in, 335–36
 ethicization of cosmos, 334
 geography in, 340
 Jambūdvipa, 340, 341
 Manuṣyaloka (world of man), 340, 367–69, 368
 materials used in, 367
 seven-continent earth, 337
 statistical summary, 384–85, 386–87
 in temple atrium, 371–72
 mapmaking, 505, 506, 509
 maps
 importance of, 328–29
 for pilgrimages, 440, 441, 441–42
 scrolls (*viñāptipatras*), 460–61, 461
 paṭa-chitras, 323
 temple architecture, 468
 theology, 330
 triptych, 460
 Jai Prakāśa, 362, 363–64, 364, 364–65, 366
 Jaipur, 355, 395
 architectural plan, 322, 323
 astronomical observatory, 361–66
 instruments of, 362–64, 364, 365, 366
 plan of, 363
 city plan of, 321
 divination chart centered on, 349, 350
 Maharaja Sawai Man Singh II Museum
 architectural drawings in, 468
 city plans in, 448
 irrigation maps at, 438–51
 map collections of, 303
 road construction maps at, 441
 topographic map in, 410–11
 map for constructing road at, 441
 planimetric secular map of, 476–77
- Sei Ram Charan Museum of Indology,
 map collections of, 303 n.46
 terrestrial globe from, 397, 399
 Jaisalmer
 religious map of, 484–85
 on topographic maps of Rajasthan and Gujarat, 414, 416
 Jai Singh, Mirza Rāja, 468
 Jai Singh II, Sawai, 303, 315, 332, 361–67, 379, 440, 507, 511, 515
 and telescopes, 365–66
 Zij-i Muḥammad Shāhi, 361–62, 365, 366
 Jalalabad, 408
 Jalore, 417
Jam. *See* *Zam*
 Jamāgird. *See* Yamakoṭī
 Jamāl al-Dīn, terrestrial globe by, 221–22, 221–22 n.38
 Jambūdvipa, 389 n.3
 and Bhāratavarṣa, 336 n.24
 concept of, 335
 on cosmographic globes, 352, 353, 354, 358, *pl.26*
 depictions of mountain range, 370–71, 371
 Hindu conception, 343, 344, 346, 347
 in Jain universe, 340, 341, 367, 368, 369, 370–71, 372, 373, 374, 375, *pl.28*
 Puranic conception, 337
 statistical summary of Jain cosmographies centered on, 384–85
 Uttarakuru, 369
 Jambukeswaram, Shaivite temple in, 457
Jambū tree, 335, 358, 369
 James I of England, 67
 Jammu, maps of, 476–77, 482–83
 Janjira, map of fort in, 492–93
 Jānoji Bhonsle, 421–22
 Jantar Mantar, Delhi (astronomical observatory), 361
 Japan, 396, *pl.29*
 Jarmī (Aksum), 199
 Jaswant Singh, 408
 Jaubert, Pierre Amédée Emilien Probe, 8, 158
 Jaunpur, astronomical observatory at, 379
 Java, 256, 262, 502
Jawzahr (dragon), 64–65
 Jayasthiti Malla, 430
 al-Jayhānī (Abū ‘Abdallāh Muḥammad ibn Aḥmad al-Jayhānī), 117, 132
 Kitāb al-masālik wa-al-mamālik (Book of routes and provinces), 92–93, 139–40, 169 n.51
 maps attributed to, 125–26
 as source for al-Idrīsī, 169 n.51
 al-Jazārī (Ibn al-Razzāz al-Jazārī), 65
 Kitāb fi ma‘rifat al-ḥiyāl al-handasiyah (Book of knowledge of ingenious mechanical devices), 40
 al-Jazirah (Upper Mesopotamia), 112, 114, 190, 391
 Jazirat al-Jawhar (Island of the jewel), 105. *See also* Yāqūt
 Jehat Singh, 421
- Jehuda ben Moses Cohen, 45
 Jerusalem, 190
 on pilgrimage scroll, 244
 on qibla indicator, 197
 qibla of, 191, 192
Jey-pergās (Light of Jai). *See* Jai Prakāśa
 Jhelum River, 409, 411, 413
 Jibal, map of, 114
 Jiddah, 500
Jihabs, 190
 Jiruft, 115
 Jñānamati, Āryikā, 370 n.127
 Jodhpur
 map of, *pl.34*
 planimetric secular map of, 476–77
 in *Shahid-i Šādiq*, 403
 on survey map, 461 n.172
 on topographic map of Rajasthan and Gujarat, 417
 Johan Daspa, 45
 Johnston, Alexander, 501
 Jomard, Edme François
 Les monuments de la géographie, 287
 Jones, William, 317 n.108
 Joshi, N. P., 311–12, 352
 Junagadh, 417
 Jupiter, 188. *See also* Planets
 in Iskandar Sultan’s horoscope, 64
 in Islamic correspondences, 78
 in Nāṣir Khusraw’s cosmography, 86
 personification of, 63
 realm of, 84
 in South Asian celestial mapping, 358, 359
 sphere of, 39, 75, 76
 Jurjāniyah (Gurgānī), 186, 186 n.54, 187
 Jyotiṣas, 373–74
- Ka’ba. *See also* Mecca; Qibla
 axes of, 190 n.7
 azimuth of, 514
 al-Dimyātī’s diagram of directions of, 192
 eight divisions of world about, 193
 explained, 190
 Ottoman map of, 217
 on pilgrimage scroll, 244
 qibla charts centered on, 189–96
 and sacred geography, 190–96
 on al-Sharafī al-Šifāqī qibla diagram, *pl.13*
 world centered on, 80
 Kabul
 in *Chahār Gulshan*, 436
 on South Asian maps, 400, 408, 436
 Kabul fort, *pl.32*
 Kabul River, *pl.32*
 Kadalivana, 396
 Kadesia (Qadisiya), 118
 Kahle, Paul, 270, 271
 Kailāsa, Mount, 348
 Kale, D. V., 422, 425
 Kalinjar, 422
 Kāloda Ocean, 341, 374
 Kālodhadi (Black-Water Ocean), 368
Kalpavṛkṣa (wish-granting tree), 369
 Kalyān Singh, 421
 Kamal, Youssouf, 9, 210 n.9

- Kamalākara
Siddhantattaviveka, 316
- Kammerer, Albert, 499, 501
- Kanchipuram, 452
- Kāñci, 382
- Kandahar, 378–79, 436
- Kangra, 436, 480–81
- Kankroli, religious map of, 484–85
- Kapāli, 362
- Kāpilaśāstra*, 502
- Karaṇas*, 315
- Karbala, 244–45, 245 n.58
- Kargil, 437
- Karnal, 438
- Kars, 248, 250
- Karta*, 206
- Kaserukhaṇḍa, 355
- al-Kāshghari (Maḥmūd ibn al-Ḥusayn al-Kāshghari)
Diwān lughat al-Turk, 153 n.68, 155
 world map by, 153, 155
- al-Kāshī (Ghiyāth al-Dīn Jamshīd Mas‘ūd al-Kāshī), 38–39, 64
- Kashmir
 atlas of, 413, 414
 on cosmographic globe, 396
 in Gentil’s atlas of Mughal Empire, 429
 and Ka‘ba, 190, 191
 maps, 409–14
 orientation, 518
 religious, 482–83, 484–85
 secular city and town plans, 446
 surviving, 505
tirthas, pl.37
 world maps, 390
- Kāśī, 382
- Kasrawad, 466
- Katha, 391
- Kathmandu
 on Nepali topographic maps, 433, 434–35
 religious map of, 484–85
- Kātib Çelebi, 218, 270 n.13
Cihānnūma (World mirror), 195, 195 n.13
- al-Kātibī (Ibrāhīm ibn Aḥmad al-Kātibī), 264, 265
- Kaulācāra, Rāmacandra
Śilpa Prakāśa, 466
- Kauṭilya
Arthaśāstra, 312, 316
- Kaveri River, 399
- Kayasthas, 328 n.168
- Kaye, George Rusby, 361, 362
- Kayqubād (‘Alā’ al-Dīn Kayqubād), 233
- Kazvin (Qazwīn), city plan for, 152–53, 154
- Kedarnath, 382, 461 n.172
- Kemāl Re‘īs, 267, 267 n.10, 270, 270 n.16, 285
- Kepler, Johannes, 183 n.48
- Kerte*, 207
- Ketu, 358, 359, 360
- Ketumāla, 337
- Keyser, Pieter Dirksz., 63, 66, 69
- Khafif, 19
- Khagolam* (celestial dome), Minākṣī temple, 359, 359–60
- al-Khalīlī (Shams al-Dīn Abū ‘Abdallāh Muḥammad ibn Muḥammad al-Khalīlī), 198, 200, 204
- Khambhat, 417
- Khanākḥ ibn Khāqān al-Kīmākī, 169 n.51
- Khaṇḍakas*, 372, pl.28
- Khaṇḍās*, 341, 351, 354, pl.26
- Khārak Island, 122
- al-Kharaqī, 143
- Khariṭab*, 7
- al-Kharkhī, 110
- Khayr Beg, 235
- al-Khazar (North Caucasus), 90–91
- Khazars, 94
- al-Khāzin (Abū Ja‘far Muḥammad ibn Muḥammad al-Khāzin), 109
- al-Khāzinī (‘Abd al-Raḥmān al-Khāzinī), 45, 201–2
- Khios, 274
- Khiri, maps of, 442
- Khoi, 243
- Khorasan, 396
- Khosrau, Amir, 377
- Khuda Bakhsh Oriental Public Library, Patna, South Asian world map at, 390
- al-Khujandi (Abū Maḥmūd al-Khujandi), 181 n.36
- Khurasan Desert, Balkhī school map of, 114, 115
- Khushal-Khatak, 408
- Khusrau Anūshīrvān, 235 n.32
- Khuzistan, Balkhī school map of, 114
- Khawāja Mu‘īn al-Dīn Chishtī tomb, Ajmer, pilgrimage map of, 461–62 n.173
- al-Khwārazmī (Abū Ja‘far Muḥammad ibn Mūsā al-Khwārazmī), 96, 122, 138, 144–45, 152, 180, 187 n.59
 coordinates of compared with those of Ptolemy, 98–100
 influence on Ibn Sa‘īd, 170
Kitāb sūrat al-arḍ (Picture of the earth), 97, 157, 168
 and length of degree, 178
 and length of Mediterranean, 102
 longitude and latitude tables, 95, 97–100, 104
 maps by, 105–6
 Nile River, 120, 225, pl.4
 Sea of Azov, pl.5
 world map, 163
 methods and purpose, 100–101
 and nilometer renovation, 177
 number of entries in coordinate tables, 101 n.49
 prime meridian used by, 102–3
 and seven-climate system, 102
Zij al-Sindhīnd al-ṣaghīr, 93 n.13, 97 n.31, 175 n.6
- Khyber Pass, 408
- Kiev, Ottoman military map of, 210–11, 211, 211 n.11
- Kifelonya (Cephalonia), 273
- Kimpuruṣa, 358
- al-Kindī (Abū Yūsuf Ya‘qūb ibn Ishāq al-Kindī), 36, 36 n.74, 98, 100, 100 n.41, 168 n.47
- King, David A., 189
- Kinnaravaṛṣa, 396
- Kipchak Desert, 391
- Kirāmam*, 382–83
- Kirfel, Willibald, 298, 333, 334
- Kırkçeşme and Halkalı water-supply system, Ottoman maps of, 216, 218, 219, 226, pl.16
- Kirkpatrick, William, 430
- Kirman, maps of, 112
 Balkhī school, 114, 115–17, 116
 modern, 117
 by al-Muqaddasī, 122–23
 in Staats- und Universitätsbibliothek, Hamburg, 124
- al-Kirmānī (Ḥamid al-Dīn Aḥmad ibn ‘Abdallāh al-Kirmānī)
 cosmic orders according to, 84, 85
Rāḥat al-‘aql (Comfort of the intellect), 82–83
- Kish, George, 296, 298
- Kishan Singh, 408
- Kishvars* (regions), 8, 77, 80, 93–94, 94, 95–96, 114, 152, 157, 168
- Kitāb al-bad’ wa-al-ta’rikh*, 79, 145, 518, pl.10
- Kitāb hay’at ashkal al-arḍ wa-miqdāruhā fi al-tūl wa-al-‘arḍ al-ma’rūf bi-jughrafiyah*, 78
- Kitāb jughrafiyah fi al-ma’mūr wa-ṣifat al-arḍ*, 168 n.47
- Kitāb’khānah-i Majlis, Tehran, al-Iṣṭakhri’s manuscripts in, 134–35
- Kitāb’khānah-i Malik, Tehran, al-Iṣṭakhri’s manuscripts in, 134–35
- Kitāb’khānah-i Markazi-i Danishgāh-i Tihiran, Tehran, al-Iṣṭakhri’s manuscripts in, 132–33
- Kitāb al-malḥamah* (Book of the battle), 98, 100, 103
- Kitāb al-masalik wa-al-mamālik* (Book of routes and provinces), 91–93. *See also* Ibn Khurradādhbih; al-Iṣṭakhri; al-Jayhānī; al-Marwazī; al-Sarakhsi
- Kitāb rasm al-rub‘ al-ma’mūr* (Book of the picture of the inhabited quarter [the world]), 101, 168 n.47
- Kloetzli, W. Randolph, 343 n.53
- Knox, Robert, 427
- Kölver, Bernhard, 301, 455, 456
- Kolzum, Sea of. *See* Red Sea
- Ḳonaqs*, 223
- Konarak, survey of temple at, 467
- Konkan, 405
- Köprülü Kütüphanesi, Istanbul, manuscript of al-Idrisī’s *Nuzhat al-mushtāq* in, 174
- Köprülü Waterway, maps of, 226
- Koran. *See* Qur’ān
- Korea, 163
- Korone, 266
- Kos, 406, 414, 425, 436, 444 n.134, 448
- Kosi River, 433
- Kos Minar*, 436
- Koşthakas*, 315

- Kotah, painting of Diwali celebration at, 470, 472
- Krachovskiy, Ignatiy Iulianovich, 9, 172
- Kramer, S. N., 308
- Kramers, J. H., 112–14, 114–15, 124
- Kramrisch, Stella, 318–19, 379–80
- Krāntivṛtti Yantra, 363
- Krishna, 344, 347–48, 348, 417, 456, *pl.25*, *pl.31*
- Krishna River, 399, 423
- Kṛittika, *pl.27*
- Kropp, Manfred, 145
- Kṛṣṇarājīs* (black fields), 374, 376
- Kṣemakarṇa, 352
- Kṣetra* (field), 453–54
- Kufa, qibla of, 193
- Kumar, Ravi, 298, 345, 373
- Kumārikākhaṇḍa, 354
- Kumbhalgarh, oblique secular representation of, 480–81
- Kuṇḍagāma, 441
- Kunsthistorisches Museum, Vienna, sundial in, 25
- al-Kurah* (sphere), 201
- Kurmācakra*, 347–48, 348
- Kūrmāniveśa* (tortoise abode), 337–38, 338
- Kūrmāvibhāga* (world as tortoise), 337–38, 338, 347–48, 348, 349, 351
- Kuru, 336
- Kuruḥṣetra, 356
- Kurus*, 369
- Kuruvarṣa, 358
- Kuṣāṇas, 358
- Kutch, landscape paintings produced in, 444–45
- Labrador, 272
- Laccadive Islands, 262, 500
- Lāft (Qishm Island), 122
- Laghubbāskariyavivarāna*, 360
- Lagna*, 360
- La Hire, Philippe de, 365
- Lahore
- in *Chahār Gulshan*, 436
 - map of historical growth of, 450 n.146
 - on Mughal route map, *pl.32*
 - oblique painting of, 449–50, 451
 - oblique secular representation of, 480–81
 - on South Asian scroll map, 436
- Lahūt*, *pl.3*
- Lakes
- on Balkhi school maps, 115
 - in Gentil's atlas of Mughal Empire, 429
 - in *Mecmū'a-i menāzil*, 237
 - on South Asian topographic maps, 402, 411
- Lālāh Balhūmal Lāhūrī, 45, 49
- Lalbahai Dalpatbhai Institute of Indology, Ahmadabad, 302
- Landscape paintings, South Asian, 444–46
- Language, in eighteenth-century India, 394
- Lañkā, 340. *See also* Sri Lanka
- on prime meridian, 103
 - on South Asian cosmographic globes, 352, 353, 356, 358, 396, 397, *pl.30*
 - on South Asian world maps, 399
- Lannoy, Richard, 381–82
- Lapland, 393
- Latarameswar temple, 432
- Latitude. *See also* Grids
- and Arab navigational charts, 258
 - astrolabes and, 20, 21, 24
 - of Baghdad, 177
 - and Balkhi school maps, 115
 - on Bharat Kala Bhavan globe, 397
 - al-Birūnī and, 186
 - on flattened astrolabe, 36
 - on globular projection, 37
 - in projections, 34
 - remeasurement of, 141
 - in *Tahdid*, 184 n.53
 - values, 187
 - on Byzantine planispheric map, 13
 - celestial, 54
 - determining, 175
 - in early Arab geography, 94 n.20
 - ecliptic and calculation of, 175 n.3
 - and geodesy, 175
 - and graticules, 148–51
 - in Ibn Sa'īd's work, 170
 - on al-Idrisī's maps, 163, 259 n.23
 - in Islamic cartography, 8
 - on Islamic celestial globes, 48
 - and navigation, 497
 - Protemy's compared with al-Khwārazmī's, 100
 - on qibla indicators, 198, 200
 - on qibla maps, 196, 197, 200
 - in *Shahid-i Šadiq*, 403
 - on South Asian maps, 391, 392, 405, 408, 416
 - tables of
 - adjustment of, 176
 - converting to map form, 137 n.1
 - Islamic, 95, 96–97, 97–100
 - in *Zij al-Šabir*, 98
- Lavaguru, 396–97
- Lavaṇa Samudra (Salt Sea), 368, 369, 372, 374
- Lavaṇoda (Salt Ocean), 341
- Lawḥ al-tarsīm* (drawing board), 159
- Legends, explanatory, 433
- Leiden, Bibliotheek der Rijksuniversiteit
- Ibn Ḥawqal's manuscripts in, 113, 134–35
 - al-Iṣṭakhri's manuscripts in, 132–33
 - al-Muqaddasi's manuscripts in, 134–35
- Lelewel, Joachim, 8, 9
- Leningrad
- Otdeleniya Instituta Vostokovedeniya Akademii Nauk SSR, al-Iṣṭakhri's manuscripts in, 132–33
 - Saltykov-Shchedrin State Public Library, manuscript of al-Idrisī's *Nuzhat al-mushtāq* in, 173
- Leo. *See also* Astrology; Astronomy; Zodiac constellation
- on al-Birūnī's flattened astrolabe, 36
 - on al-Birūnī's globular projection, 37
 - and corresponding pre-Islamic asterisms, 51
 - on qibla map, 199
 - zodiac sign, 361
 - on astrolabe rete, 22, 30
 - combined with planets, 64
 - in Islamic correspondences, 77, 78
 - in Nāṣir Khusraw's cosmography, 86
- Leo Minor, 69
- Lepanto (Naupaktos), 266
- Lévi, Sylvain, 300, 434–35
- Lewicki, Tadeusz, 156, 159 n.33
- Libra. *See also* Astrology; Astronomy; Zodiac constellation
- on al-Birūnī's cylindrical projection, 35
 - on al-Birūnī's flattened astrolabe, 36
 - on ceiling at Quṣayr 'Amrah, 16
 - on qibla map, 199
 - zodiac sign, 360
 - on astrolabe rete, 22, 30
 - combined with planets, 64
 - in Islamic correspondences, 77, 78
 - Islamic emblematic motif for, 63
 - in Nāṣir Khusraw's cosmography, 86
- Libros del saber de astronomía* (Alfonso el Sabio), 28, 42, 45, 60, 202
- Lines of unequal hours, 21
- Liṅgams*, 457
- Literacy, Indian, 328–29
- Lohargarh, map for pilgrimage to, 442
- Lokākāśa, 341
- Lokāloka, 340, 343, 346
- Lokapurusa, 372
- Lokas*, 344, 356
- Loḳmān (Seyyid Loḳmān ibn Hüseyin ibn el-ʿAṣṣūrī el-Urmevi), 229
- Hünernāme* (Book of accomplishments), 234, 247, 248, 249–50, 250–51, 251, 252, 255
- Šahanšāhnāme* (History of the king of kings), 27, 250, 254
- Šahnāme-i Selīm Ḥān* (History of Sultan Selim), 251 n.77, 254
- Süleymānnāme* (History of the Sultan Süleymān), 247–48, 249, 250–51 n.77, 254
- Sarnāme-i hümāyūn* (Book of festivals), 250 n.77, 254
- Zübdeṭü'ṭ-tevārīḥ* (Cream of histories), 220, 221
- London
- British Library
 - hybrid map in, 427
 - al-Iṣṭakhri's manuscripts in, 132–33
 - topographic map of Kashmir in, 411
 - British Museum
 - cosmographic globes in, 352, 357–58, 358 n.89, 396
 - volume of architectural drawings in, 470 n.199
 - India Office Library and Records (British Library)
 - indigenous maps in Hodgson Collection, 474–75
 - al-Iṣṭakhri's manuscripts in, 132–33
 - manuscript of al-Idrisī's *Nuzhat al-mushtāq* in, 173

- map collections of, 302
 Nepali maps in, 431
 scroll maps in, 436
 topographic map from Kashmir in, 411
 Royal Asiatic Society, painting of
 Jahāngīr's mausoleum in, 469–70
 Victoria and Albert Museum
 architectural drawings in, 468–69
 cosmographic globe in, 352, 353, 396
 Longitude. *See also* Grids
 and Arab navigational charts, 258
 on astrolabes, 21
 and Balkhī school maps, 115
 on Bharat Kala Bhavan globe, 397
 al-Birūnī and
 on flattened astrolabe, 36
 on globular projection, 37
 in projections, 34
 remeasurement of, 141
 celestial, 54, 56
 comparative, lunar eclipses used to
 measure, 103 n.67
 in coordinate tables
 adjustment of, 176
 converting to map form, 137 n.1
 Islamic, 95, 96–97, 97–100
 determining, 175
 difference between pairs of places, 188
 in early Arab geography, 94 n.20
 and geodesy, 175
 of Ghazna, 184–88
 and graticules, 148–51
 in Ibn Sa'īd's work, 170
 on al-Idrīsī's maps, 163, 259 n.23
 in Islamic cartography, 8, 93
 lunar eclipses in determining, 176
 Ptolemy's compared with al-Khwārazmī's,
 100
 on qibla indicators, 198, 200
 on qibla maps, 196, 197, 200
 in *Shahid-i Šadiq*, 403
 on South Asian maps, 391, 392, 405, 408,
 416, 424
 and triangulation, 176
 trigonometric construction to determine
 difference of, 187
 in *Zij al-Šabi'*, 98
 Longitude-measuring circles, 29
 Lopes de Castanheda, Fernão, 256
 Lorch, Richard P., 189
 Lorichs, Melchior, 250
 Lotus, 514
 Braj as, 417–18, 419, 452, 504, 506
 Islamic resemblances to concept of, 94
 universe as, 257–58, 335, 352, 357
 Loxodromes, 259
 Lucknow
 on map of north-central India, 422
 oblique secular representation of, 480–81
 Lunar mansions, 53–54, 62, 65, 264, 265
 Lunar nodes, 64, 65
 Lyra, 52, 61, 62, 66
 MacDougall, Robert, 468
 Mackenzie, Colin, 302, 302 n.43, 501
 McNaughton, W. H., 411
 Macrobius, 148
 Madagascar, 265
 Madurai
 cosmography in Minākṣī temple at, 346
 religious map of, 484–85, 488–89
 Maghreb. *See also* North Africa
 and Ka'ba, 190
 maps of, 112
 Balkhī school, 114, 115, 118, 124, 125
 portolan charts from, 263
 production of geographic coordinate
 tables in, 141
 on South Asian world maps, 390
 Maghreb chart, 263–64, 264
 Maghribī (Shams al-Dīn Muḥammad
 Maghribī), 85
 Magnesia Peninsula, 276
 Magnetic declination, 264
 Magnitude
 celestial, 54, 55
 expression of, 175 n.4
 Mahabaleshwar, 425
 Mahābhārata, 310–11, 347, pl.25
 Mahāhimavat Mountains, 341
 Mahanadi River, 400
 Maharaja Ranjit Singh Museum, Amritsar,
 atlas of Kashmir in, 413
 Maharaja Sawai Man Singh II Museum,
 Jaipur
 architectural drawings in, 468
 city plans in, 448
 irrigation maps in, 438–51
 map collections of, 303
 road construction maps in, 441
 topographic map in, 410–11
 Maharashtra, secular city and town plans
 from, 446
 Mahāvideha, 368, 369
 Mahāvira, 373, 441, 442
 Maḥbūb (Agapius)
Kitāb al-ʿunwān, 17
 Mahi River, 418
 Mahmoud Bey, 177
 Maḥmūd, 141, 184, 390
 Maḥmūd el-Ḥaṭīb er-Rūmī, 194, 221 n.34
 Maḥmūd ibn Sa'īd Maqdīsh
*Nuzhat al-anzār fi'ajā'ib al-tawārikh
 wa-al-akhbār*, 287
 Maḥmūd ibn Yahyā ibn al-Ḥasan al-Kāshī,
 64, pl.1
 Mainkar, V. B., 307
 Major axis of Ka'ba, 190 n.7
 Majrās (day's sailing), 8, 160
 al-Majrīṭī (Maslamah ibn Aḥmad al-Majrīṭī),
 25 n.23
 Majumder, N. K., 308 n.65
 Makhrūṭī projection, 34
 Makhsūdābād (Murshidabad), 400
 Malabar Coast, 390, 500
 Malakūt, pl.3
 Malatesta, Sigismondo Pandolfo, 209–10,
 235 n.30
 al-Malaṭī ('Abd al-Bāsiṭ ibn Khalīl al-Malaṭī),
 194, 198
 Malay Peninsula, 262
 Maldive Islands, 262, 390, 501
 Malemo Cana, 256
 Maloney, Clarence, 501
 Malta, map of Ottoman attack on, 212,
 212–13
 Malwa, 429
 al-Ma'mūn, 4, 9, 19, 36, 94 n.20, 98, 101,
 106, 114, 128, 156, 157, 168 n.47,
 176, 177, 270 n.13, 515
 and length of degree, 178–79, 183
 maps, 95–96, 100, 168
al-Zij al-mumtaḥan (Proved tables), 100
 n.39
 Mānasaghati, 396
 Mānasāra, 329 n.175
 Manāzil, 53
 Mandalas, 381, 381 n.164, 418, 455, 514
 Mandalgarh, 415
 Mān Mandir temple, repair plans for, 469
 Mansarowar, Lake, 439, 441
 Man Singh, 362
 al-Manšūr, 4, 26, 90, 93, 515
 Mansūra, 403
 Maṅsūrah, 190, 191
 Mantran, Robert, 278–79
 Manucci, Niccolò, 466
 Manuel I of Portugal, 246 n.64, 256
 Manuscripts
 of Balkhī school works, 124–28, 130–35
 eighteenth-century Indian, 378
furūsiyah, 235 n.30
 of Ibn Ḥawqāl's works, 113, 132–35
 of al-Idrīsī's works, 173–74
 Islamic maps' relation to, 4–5
 of al-Iṣṭakhri's works, 107, 130–33
 of *Kitāb-i baḥriyye*, 290–92
 of al-Muqaddasī's works, 134–35
 palm-leaf
 architectural drawings on, 466–68
 on architecture, 320
 of Ptolemy's *Geography*, 210 n.8
 relation to Ottoman illustrated histories,
 252–55
 of al-Ṣūfi's works, 60
 of al-Tūsī's works, 125, 126, 134–35
 Mānuṣottara Mountains, 368, 370–71, 371,
 374
 Maṅṣyaloka (world of man), 340, 367–69,
 368, 370–71, 371, 373, 374, 375. *See
 also* Earth, two-and-a-half-continent
 Manzils (stages of a journey), 8, 160
 Map construction
 and Balkhī school maps, 115
 planispheric astrolabes, 18–24
 Suhrāb's, 95, 101, 104–5, 137, 138
Mappaemundi, 6, 129, 129 n.83, 206, 512,
 514
 Maps. *See also* Charts
 astrolabic, 31–34
 celestial (*see* Celestial mapping)
 climatic, 146–48
 cosmographical (*see* Cosmographical
 diagrams; Cosmographical globes)
 hybrid, 427–29

Maps (*cont.*)

Islamic

- of asterisms, 60–63
- audience of, 5
- Balkhī school, 112–28
- Cantino map, 260, 260–62
- in al-Idrisī's *Nuzhat al-mushtaq*, 160–63
- illustrating *Aratea*, 15–16
- individual constellations and asterisms, 50–60
- from al-Khwārazmī's manuscript, 105–6
- on late Persian qibla indicator, 201
- by al-Ma'mūn, 95–96, 100
- by Marino Sanudo, 172
- order of in Ottoman portolan atlases, 281
- of Ottoman Empire, 225, 225–26
- of Ottoman waterways, 215–16, 217, 218, 219
- of region of Palmyra and Sinjār, 180
- relation to manuscripts, 4–5
- stemma of, 138
- Suhrāb's construction of, 95, 101, 104–5, 137, 138
- military, 90, 210–15, 229
- planar, 38–41
- planispheric (*see* Planispheric maps)
- purposes of, 515–16
- qibla (*see* Qibla, maps)
- reference (*see* Reference maps)
- regional, 222–26
- route (*see* Route maps)
- rural, 442–48, 474–75
- scroll (*see* Scroll maps)
- sectional (*see* Sectional maps)
- South Asian
 - battle, 465–66
 - from Braj, 417–20
 - cadastral, 317
 - celestial, 358–67, 379
 - of central India, 420–22
 - of cities and towns, 476–77
 - climate and preservation of, 327, 506
 - drainage patterns, 410
 - European accounts of, 324–27
 - European influence on, 463–65, 503
 - of forts, 462–66, 490–93
 - fragmentation of use of, 510
 - Harappan, 306–8
 - inclusiveness of, 508
 - intentional destruction of, 328
 - from Kashmir, 409–14
 - large-scale, rural areas, 474–75
 - large-scale, small localities, 442–66
 - late premodern, 409–27
 - and literacy rates, 328–29
 - Maratha, 422–26
 - in Mauryan Empire, 317
 - mental, 382–83, 383 n.173
 - Mughal, 400–409
 - of Nepal, 429–35
 - of northeastern India, 427
 - in paintings, 408–9
 - political boundaries on, 508–9

- prehistoric and tribal, 304–5
- production of, 303 n.45, 303–4
- from Rajasthan and Gujarat, 414–17, 418
- reasons for paucity of, 327–31
- and reincarnation, 382
- of sacred places, 452–62, 482–91
- in secular texts, 321–23
- of Sri Lanka, 426–27
- for taxation, 444, 444 n.134
- for tourist trade, 303–4
- world maps, 389–400
- topographic (*see* Topographic maps)
- world (*see* World maps)
- zone, 146–48
- al-Maqdisi (Abū Naṣr al-Muṭahhar ibn al-Muṭahhar al-Maqdisī), 515
- Mārakaṇḍeya Purāṇa*, 337, 338
- Maratha Confederacy, 421, 422
- mapmaking, 506
- maps, 422–26
 - compared with Nepali maps, 444
 - forts, 465, 492–93
 - rural areas, 444
 - surviving, 505
 - Vijayadurg, 464
 - world maps, 398, 399–400
- Maratha History Museum, Deccan College, Pune, topographic map in, 423
- Marḥalaḥs* (day's journeys), 8, 102, 115, 160
- al-Māridīnī (Jamāl al-Dīn al-Māridīnī), 32
- Marinus of Tyre, 34, 105, 137, 141, 157
- Geography*, 95
- Markham, Clements R., 303 n.47
- Marmara, Sea of, 235 n.27, 239
- al-Marrākushi (Abū 'Alī al-Marrākushi), 42
- Mars. *See also* Planets
- in Iskandar Sultan's horoscope, 64
- in Islamic celestial mapping, 358, 359
- in Islamic correspondences, 78
- in Nāṣir Khusraw's cosmography, 86
- personification of, 63
- realm of, 84
- sphere of, 39, 75, 76
- Martaban, Gulf of, 262
- Marwar, 396
- al-Marwarrūdhī (Khālīd ibn 'Abd al-Malik al-Marwarrūdhī), 36, 36 n.74, 179
- al-Marwazī (Abū al-'Abbās Ja'far ibn Aḥmad al-Marwazī), 93 n.10, 117
- Kitāb al-masālik wa-al-mamālik* (Book of routes and provinces), 92
- Māsa*, 359
- Masāfat*, 258, 261, 262
- Māshā'allāh
- Kitāb ṣan'at al-aṣṭurlabāt wa-al-'amal bi-hā*, 25–26
- Masjid Āthār al-Nabī (Shrine of the Footsteps of the Prophet), 232, 233
- Maskat (Muscat), 400
- Massaio, Pietro del, 238
- Mas'ūd I, 141, 390
- al-Mas'ūdi (Abū al-Ḥasan 'Alī ibn al-Ḥusayn al-Mas'ūdi), 93, 93 n.12, 95, 157, 168

- Mater* (part of astrolabe), 21
- Maṭhas* (monasteries), 452
- Mathura, 382
 - astronomical observatory, 361
 - on map of Braj as lotus, 419
 - sketch map of, 448–49
- Maṭrākçı Naṣūh, 233, 234, 248, 249
- Cāmi'ū'l-tevāriḥ* (A collection of histories), 235 n.32, 254
- Cemal el-küttāb* (textbook on arithmetic), 235
- Fethnāme-i Ḳaraboğdān* (Book of the conquest of Ḳaraboğdān [Moldavia]), 253
- Mecmū'a-i menāzil* (The collection of halts), 229, 230, 235–45, 250, 251, 253, 514, *pl.18*
- Süleymānname* (History of Sultan Süleymān), 253
- Tāriḥ-i feth-i Ṣaklavūn (Şiklōs) ve Ustūrgūn ve Ustūnibelğrad* (Conquest of Siklōs, Esztergom, and Székesfehérvár), 245–46, 247, 253, *pl.19, pl.20*
- Tāriḥ-i Sulṭān Bāyezīd* (History of Sultan Bāyezīd), 253
- Tāriḥ-i Sulṭān Bāyezīd ve Sulṭān Selim* (History of Sultan Bāyezīd and Sultan Selim), 253
- Tuḥfetü'l-guzāt*, 235, 235 n.30
- Maulavi Ḡhulām Qādir, 436
- Maurand, Jérôme d'Antibes, 245
- Maurolico, Francesco, 183 n.48
- Maurya, Candragupta, 316
- Mauryan Empire, surveying in, 316–17
- Mawālīd*, 82
- Māya*, 381–82, 509
- Maymūnah bint Muḥammad ibn 'Abdallāh al Zardali, pilgrimage scroll of, 243–44
- Measurements
 - Arabic metrology, 177–78
 - on Balkhī school world map, 121–22
 - conversion between linear and angular distances, 176
 - of degree length, 178–81
 - of earth's radius, 182–84
 - geodesy, 175–88
 - Harappan, 306–7
 - al-Idrisī's units for, 160
 - Islamic terms for, 8
 - of "Thick Darkness Hell," 372
 - units of
 - Arabic miles, 175, 177–78
 - cos*, 350
 - cubits, 8, 160, 170, 178, 183 n.43
 - daqiqahs* (degrees), 8
 - darajahs* (minutes), 8
 - dirhams*, 159
 - farsakhs* (parasangs, leagues), 8, 160, 175, 177, 178, 178 n.23, 186, 187 n.59, 198
 - Frank miles*, 160
 - gowwas* (Sinhalese miles), 426
 - graus*, 262

- işbaʿs* (digits), 258, 258 n.18, 262, 497, 500
khaṇḍakas, 372, *pl.28*
koṇaḱs, 223
kos, 406, 414, 425, 436, 444 n.134, 448
majrās (day's sailing), 8, 160
manzils (stages of journey), 8, 160
marḥalabs (day's journeys), 8, 102, 115, 160
masāfat, 258, 261, 262
mils (miles), 8, 160, 245
parasangs, 8, 102
parganas, 411, 413, 414, 423, 427, 428, 444 n.134, 508
polegadas, 262
rajjus, 342, 373
rashāshi cubits, 160
ratls, 159
Roman miles, 177
ruʿsiyas, 160
sawdaʿ cubits, 177, 178, 178 n.23, 179
shāfʿī cubits, 177
stadest, 176, 178–79
taqwirs, 160
wams (fathoms), 498
yojanas, 335, 342, 353, 370, 373
zams (watches), 8, 496, 497, 500
Vedic altars, 308, 309
Mecca. *See also* Kaʿba; Qibla
astrolabes and, 21, 24
azimuth of, 514
in al-Birūnī's *Tahḍīd*, 184 n.53
on al-Iṣṭakhri's maps, 118
on al-Muqaddasi's maps, 122
Ottoman map of, 217
on pilgrimage scroll, 244
on qibla map, 199
on South Asian cosmographic globe, 396
on South Asian world maps, 396, 400
Mechanical calendar, 33, 33–34
Medina
on al-Iṣṭakhri's maps, 118
Ottoman map of, 217
on pilgrimage scroll, 244
on qibla charts, 192
Mediterranean Sea
Balkhi school maps of, 114, 115, 118–20, 120
al-Dimashqī's map of, 152, 154
Ḥāfīz-i Abrū's map of, 150
on Ibn al-Wardī's world map, 143
on al-Idrīsī's map of northwest Africa, *pl.12*
Islamic navigation charts for, 263–92
length of, 101–2
map of in Staats- und
Universitätsbibliothek, Hamburg, 124
on al-Qazwīnī's world maps, 144
reference map of, 273
in al-Sharafī al-Ṣifāqī atlas, 285, 286, 287
on al-Ṭūsī's map, 125
in Walters *Deniz atlası*, *pl.23*
Megasthenes, 317
Meḥmed II, 209, 210, 228, 230, 238, 249
Meḥmed III, 229, 246, *pl.17*
Meḥmed Beg, 276
Meḥmed İhlāş, 218
Meḥmed Paşa (Sokollu Meḥmed Paşa), 247
Meḥmed Reʿis of Menemen, Aegean sea
chart by, 283–84, 284
Mehta, R. N., 416–17
Meilink-Roelofs, M. A. P., 502
Melik Ümmi
Şahname (Book of kings), 228 n.3
Melitene, qibla of, 193
Mental maps, 382–83
Mercator, Gerardus, 63
Atlas Major, 195 n.13
Atlas Minor, 218
Mercator projection, 259, 392, 495
Mercier, Raymond P., 365
Mercury. *See also* Planets
in Iskandar Sultan's horoscope, 64
in Islamic celestial mapping, 358, 359
in Islamic correspondences, 78
in Nāşir Khusraw's cosmography, 86
personification of, 63
realm of, 84
sphere of, 39, 75, 76
Meridian rings, 28, 43, 44, 47, 48, 49, 70, 201
Meridians. *See also* Prime meridians
in Arab astronomy, 175
circles, 46
on early graticules, 149–50
on Islamic celestial globes, 43
and Jai Singh's *Zīj*, 365
on Maratha topographic maps, 424
in orthographic projection, 35 n.72
and planispheric astrolabes, 28, 29
and qibla determination with spheres, 201
on qibla indicators, 198, 200
on qibla maps, 197
on South Asian world maps, 391, 392
on spherical astrolabes, 202
in Suhrāb's map construction, 105 n.69
of Tadmor and Raqqa, 180, 180 n.30
of Ujjain, 93
used by al-Birūnī, 184, 186
Meru, Mount. *See also* Sumeru
on cosmographic globes, 352, 353, 354, 355, 356, 357, 358, 359
on Indian coins, 311 n.71
in Jain cosmography, 367, 369, 370, 372, 373
kishvar system compared with, 94
as lotus, 344
in Minākṣī temple painting, 346
in South Asian cosmography, 335, 336, 337, 347, 348, 378, 381, 507
Meshed, Āstān-i Quds Razavī, al-Iṣṭakhri's
manuscripts in, 132–33
Mesolithic burial ceremony, 305
Mesopotamia. *See also* Iraq; al-Jazīrah
celestial symbolism in, 65
in *Mecmūʿa-i menāzil*, 240
Meteoroscopes, 32, 62
Methone, 266
Metrology, Arabic, 177–78
Mewar, 396
Mianeh (Miyāne), 243
Middle East
Ḥamd Allāh Mustawfī's map of, 152
reference map of, 91
on al-Sharafī al-Ṣifāqī chart, 288
Mihan Singh, 413
Mihrābs, 189, 194, *pl.13*
Miles, 8, 160, 245
Arabic, 175
calculation of, 177–78
Military maps
Islamic, 90
materials used in, 229
Ottoman, 210–15
Milky Way, 16, 69
Miller, Konrad, 9, 114, 125, 158, 159 n.32, 162, 172, 259, 517
Mils (miles), 8, 160, 245
Minākṣī temple, Madurai, 346, 359, 457
Minarāye Zarrin (Topra pillar), 377
Minor axis of Kaʿba, 190 n.7
Miquel, André, 8, 9
Mir Ahmed
Tārikh-i qalʿah-i Kashmir, 413–14, 414, 508
Mir Kalān Khān, 446
Misra, V. N., 304
Mithal (representation), 74
Mleccha, 369
Moeller, J. H., 108
Mohan Singh, 428
Mokha Aden, 393
Moldavia, Ottoman map of, 217
Molla Ḳasim, 276
Molla Tifīsī (Nigāri), 276
Moluc (Malucca/Moluccas), 390
Monasteries, Buddhist, plans for, 318, 466
Monserrate, Antonio, 324, 507
Mookerjee, Ajit, 344
Moon
on armillary spheres, 49
on astrolabe and mechanical calendar, 33
computing position of, 38–39
eclipses used to measure longitude, 103 n.67
in Islamic correspondences, 78
in Jain cosmologies, 374, 375
in Jai Singh's *Zīj*, 365
lunar mansions, 53–54
in Nāşir Khusraw's cosmography, 86
personification of, 63–65
in Qurʾān, 71
realm of, 84
in South Asian celestial mapping, 358, 359, 360
sphere of, 39, 75, 76, 77
waxing and waning of, 38, 39
Moon, Mountains of the, 122, 143, 162, 224, *pl.4*
Moresby, Captain Robert, 501
Morocco, 391
Moscow, 409 n.37
Moses, 396

- Mountains. *See also* Himāchala Mountains; Jibal; Meru, Mount; Moon, Mountains of the; Sumeru Ajanta Mountains, 343 n.52, 423 Alps, 120 Aravalli Mountains, 403, 405, 415 on Balkhī school maps, 115, 116, 127 in Gentil's atlas of Mughal Empire, 429 Hemakūṭa Mountains, 396, 399 Himavat Mountains, 341 on al-Idrisī's maps, 163, 166–67 in Jain cosmologies, 373, 374 on al-Khwārazmī's coordinate tables, 100 in *Kitāb šūrat al-'ard*, 97 on late premodern maps from Kashmir, 409 Mahāhimavat Mountains, 341 Mānuṣottara Mountains, 368, 370–71, 371, 374 on map of Kashmir by Abdur Rahim, 412 on maps in *Tarikh-i qal'ah-i Kashmir*, 414 on Maratha topographic maps, 424, 425 measuring height of, 183–84, 184 in *Mecmū'a-i menāzil*, 237 Mount Abu, 460, 482–83 Mount Eli, 256 Mount Girnar, 442, 460, 461 n.172, 484–85 Mount Govardhan, 379, 419 Mount Kailāsa, 348 on Mughal topographic maps, 405 Nila (Blue) Mountains, 369 Niṣadha Mountains, 341 on Ottoman regional maps, 223 Qāf Mountain, 286, *pl.*3 Rukmin Mountains, 341 in *Shahid-i Šadiq*, 403, 405 Šikharin Mountains, 341 Siwalik Mountains, 405 South Asian, 311 n.71 in South Asian cosmography, 341, 356 on South Asian maps, 393, 399, 402, 436, 437, 441, 508 of Ṭa'ī, 118 on topographic map from Kashmir, 411 on topographic maps of Rajasthan and Gujarat, 415 Vakṣāra Mountains, 369 Vindhya Mountains, 340, 382, 392 Mount Meru. *See* Meru, Mount Mu'ayyad al-Dīn al-'Urḍī al-Dimishqī, 44, 183 n.46 Mubārak Mahal, 421 *Mubattah* projection, 35 n.73, 35–36 Mughal Empire, maps from, 400–409, 505, *pl.*32 al-Muhallabī (al-Ḥasan ibn Aḥmad al-Muhallabī), 96 world map by, 141, 141 n.21 Muḥammad (the Prophet), 12, 71, 190 Muḥammad II, Sultan, 323 Muḥammad ibn Abī Bakr al-Rashidī (al-Ibarī al-Isfahānī), 33 Muḥammad ibn Ali al-Ajhūrī al-Shāfi'ī, 161 Muḥammad ibn 'Alī ibn Aḥmad al-Sharafi al-Šifāqsi, 287, 289. *See also* al-Sharafi al-Šifāqsi family Muḥammad ibn Ja'far ibn 'Umar al-Asṭurlābī, 46, 46–47 Muḥammad ibn Maḥmūd ibn 'Alī al-Ṭabari, 56 Muḥammad ibn Mu'ayyad al-'Urḍī, 44 Muḥammad ibn Muḥammad al-Sharafi al-Šifāqsi, 286–87. *See also* al-Sharafi al-Šifāqsi family Muḥammad Mahdī al-Khādīm ibn Muḥammad Amīn al-Yazdī, 65–68, 66, 67 n.191, 203 Muḥammad Nūru'l-'Arabiyū'l-Melāmi, 85, 87 Muḥammad Shāh, 361 Muḥammad Ṭahmāsp (Muḥammad ibn Maḥmūd ibn 'Alī al-Ṭabari), 56 *Al-muḥiṭ*. *See* Oceans, Encircling Ocean *Muhūrta*, 359 Muḥyiddin Piri Re'is. *See* Piri Re'is Muḥyi Lāri *Futūḥ al-ḥaramayn* (An encomium of Mecca and Medina), 244, 245, 245 n.58, 252 Mukhrai, 419 Mukramat Khān, 326 n.155 Multan, 436, 492–93 Munich, Bayerische Staatsbibliothek, pilgrimage map in, 462 n.174 *Muni Kapila*, 502 al-Muqaddasi (Abū 'Abdallāh Muḥammad ibn Aḥmad al-Muqaddasi), 7, 93, 108 *Aḥsan al-taqāsim fī ma'rifat al-aqālim* (The best of divisions on the knowledge of the provinces), 111, 111 n.23, 136, 191 and al-Balkhī, 109, 110, 112 biographical knowledge, 110 compared with Ibn Ḥawqal, 122 compared with al-Iṣṭakhri, 122 maps by, 117, 122–23 Arabia, 124 Kirman, 116 printed editions and translations of, 136 selected manuscripts of, 134–35 works, 111 Muqāṭṭam Hills, 232, 233 *Muqayyad al-jarys*, 160 al-Muqtadir, 235 n.32 Murād (artist), 449 Murād II, 221 n.34 Murād III, 27, 226, 229, 246, 247, 248, 249 n.72, 250, 250 n.77 Mūsā (astrolabe maker), 41, 42 Mūsā ibn Qāsim al-Qurḍī, 169 n.51 *Musattah* (flat), 18 Musca (fly), 63, 66 Museo Nazionale, Naples, Islamic celestial globe in, 46 n.110 Museum and Picture Gallery, Baroda, topographic map of Rajasthan and Gujarat in, 416–17 Museum für Islamische Kunst, Berlin, 145–46, 394 Museum of the History of Science, Oxford, cosmographic globe in, 352–55, 396 Muslims. *See* Islamic society Muṣṭafā 'Āli *Cāmi' ū'l-buḥūr der mecalis-i sūr* (The gathering of the seas [meters] on the scenes of the celebrations), 229, 229 n.5 *Naṣihatū'l-mülūk*, 249 n.72 *Nuṣretnāme* (Book of victories), 229, 248–49, 255 Muṣṭafā Paṣa, 248, 250 al-Mu'tamid, 29 Mutawakkil, 177 Mūzah-i Īrān-i Bāstān, Tehran, al-Iṣṭakhri's manuscripts in, 134–35 Mysticism, Islamic, 71, 73, 83–88 Mzik, Hans von, 8, 9, 106 Nādiri (Meḥmed Nādiri) *Šahname-i Nādiri* (Nādiri's book of kings), 246 Nādir Shāh, 326 n.155 *Nadis*. *See* Rivers Nāgkhaṇḍa, 355 Nagārjunakonda, potsherds excavated at, 466 Nagaur, 414 Nagpur, 400, 422 Nahr-i Bahisht ('Alī Mardān) Canal, 405, 438 Najaf in *Mecmū'a-i menāzil*, 244–45 pilgrimage scroll devoted to, 245 n.58 Najd, 118 *Nakḳāšan*, 229, 229 n.4 *Nakḳāshbaşı* (chief painter), 229, 229 n.4, 230 *Nakḳāš 'Oṣmān*, 276 *Nakṣatras* (asterisms), 53, 334, 338, 359, 373, 495, *pl.*27. *See also* Asterisms Nallino, Carlo Alfonso, 8, 100, 101, 286 *Nanda*, 373 Nandīśvaradvīpa, 295, 296, 367, 373, 374 *Napamundi*, 206 Naples, Museo Nazionale, Islamic celestial globe in, 46 n.110 *Naqsh/Naqshah* (painting), 7 Naraka, 345 Narapati *Narapatijayacarya*, 338–39, 351 Nāri Valaya Yantra, 362, 366 Narmadā River, 382, 399 Narmashir, 115 Nasik, planimetric secular map of, 476–77 Naṣir al-Dīn al-Ṭūsi, 8, 57, 59, 113, 125, 126, 132 Naṣir ibn Šabāḥ, 245 n.58 Naṣir Khusraw (Abū Mu'īn Naṣir Khusraw Qubādiyānī) cosmography by, 86 *Khvān al-ikhvān* (Table of the brethren), 83 Naṣr ibn 'Abdallāh, 200–201, 202

- Nathdwara
 painting from, 455–56
 religious map of, 484–85
 sketch map of, 448–49
- National Archives of India, Calcutta, maps in, 302
- National Archives of India, New Delhi, maps in, 302, 405
- National Museum, New Delhi
Chahār Gulshan in, 435
roz nāma in, 494, 494–95 n.5, 495, 496, 497
- Nau Nihāl Singh, 68
- Nautical Maps. *See also* Portolan charts
- Islamic
 for Indian Ocean, 256–62
 in *Kitāb-i bahriye*, 233
 materials used in, 229
 for Mediterranean Sea, 263–92
 South Asian, 494–509
 of Red Sea and Aden, 498–501, *pl.40*
- Navagrahas*, 358, 373
- Navarino (Pylos), 266
- Navigation, Islamic
 in Indian Ocean, 256–62
 in Mediterranean Sea, 263–92
- Navsari, planimetric secular map of, 476–77
- al-Nayrizī (Abū al-‘Abbās al-Nayrizī), 41–42
- Nebuchadnezzar II, 177
- Needham, Joseph, 298, 391, 517
- Nepal
 cosmography from, 347–48, 348
 maps
 central, 431
 compared with Maratha maps, 444
 religious, 455, 456, 457
 surviving, 505
 topographic, 429–35
 on South Asian cosmographic globe, 396
- Netherlands, 390, 393, 396
- Neumayer, Erwin, 305
- Neven, Armand, 344
- New Delhi
 National Archives of India, maps in, 302, 405
 National Museum
Chahār Gulshan in, 435
roz nāma in, 494, 494–95 n.5, 495, 496, 497
- Newfoundland, 272
- Nice, 245, *pl.20*
- Nidha Mal, 469
- Nilakaṅṭha
Jyotirmīmāṃsā, 315
- Nila (Blue) Mountains, 369
- Nile River
 on Balkhī school maps, 115, 119, 120, 122, 126, 137, 139
 on Ibn Ḥawqal’s world map, 145
 on Ibn al-Wardī’s world map, 143
 on al-Idrīsī’s maps, 145, 160, 161, 162, 165, 167
 on al-Kātibī’s chart, 264
 on al-Khwārazmī’s maps, 106, 225, *pl.4*
 in *Kitāb-i bahriye*, 232, 233, 275 n.35
 on Ottoman regional map, 223–24, 224
 on al-Qazwīnī’s world maps, 144
 on South Asian world maps, 396
- Niṣadha Mountains, 341
- Nishat gardens, 411
- Niwasi Lal, 428
- Nizām Shāh, 421–22
- Nordenskiöld, Adolf Erik, 287
- North Africa. *See also* Africa; Maghreb
 on Balkhī school maps, 114, 119, 120, 121
 chartmaking centers in, 263
 development of, 285 n.63
 on al-Idrīsī’s maps, 157
 on al-Iṣṭakhri’s map, *pl.6*
 on al-Sharafī al-Ṣifāqsi chart, 289
- Northern Hemisphere
 abstract of on South Asian cosmographic globe, 358
 constellations of on astrolabe plate, 66
 constellations of on planispheric star map, 67
- North Pole, 258
- North Star. *See* Pole Star
- Novigrad, 274, 275
- Nuremberg Chronicle, 233, 246
- Nuzhatu-l Qulūb*, 391
- Oblique views, 449–52, 460, 463, 470 n.199, 480–81, 482–93. *See also* Bird’s-eye views
- Oceans. *See also* Atlantic Ocean; Indian Ocean
 Aruṇavara Ocean, 375
 Encircling Ocean, 121–22, 159 n.25, 160
 in Indian cosmography, 335, 337, 340
 in Jain cosmography, 368
 in Jain cosmologies, 372, 373, 374
 Lavaṇoda (Salt Ocean), 341
 Kāloda Ocean, 341, 374
 Kālodhadi (Black-Water Ocean), 368
 ring, *pl.26*
 on South Asian maps, 399, 402, 425, *pl.26*
- Öljevtü, *pl.18*
- Oman, 118
- Ophiuchus, 16
- Organs, bodily, 86
- Orientation
 of Arabic maps, 394
 of astrolabes, 66
 of Balkhī school maps, 115, 118, 119, 120, 121
 of al-Dimashqī’s map of Mediterranean, 152
 of Gentil’s atlas of Mughal Empire, 428, 429
 of globe in *Portrait of Shāh Jahān* (painting), 409 n.36
 in *Hünernāme*, 250
 of Ibn Ḥawqal world map, 140
 of al-Idrīsī’s maps, 160, 161, 166, 167, 518
 of Islamic celestial globes, 43, 43 n.93
 of Islamic maps, 518
 of al-Iṣṭakhri’s maps, 116, *pl.6*
 in Jain cosmologies, 373, 375
- of Ka’ba diagrams, 194
 of al-Kāshghari’s world map, 155
 of Kazvin city plan, 152
 of al-Khwārazmī’s map of Nile River, *pl.4*
 of late premodern maps from Kashmir, 409
 of map of Kirman, 112
 of Maratha topographic maps, 423, 424, 425
 in *Mecmū‘a-i menāzil*, 237
 of al-Muqaddasi’s maps of Arabia, 124
 of Nepali cadastral maps, 432
 of planispheric maps, 16, 62
 of reference map of Istanbul architectural monuments, 239
 of secular plans of cities and towns, 446–47
 of al-Sharafī al-Ṣifāqsi atlas, 287
 of South Asian maps, 395, 399, 402, 518
 of Suhrāb’s map construction, 105
 of topographic maps, 411, 413, 415, 427
 of vault of heavens, Quṣayr ‘Amrah, and Byzantine planispheric map, 14
 of Vedic altars, 309
 of view of Istanbul in *Mecmū‘a-i menāzil*, 238
 of world map from *Kitāb al-bad’ wa-al-ta’rikh*, *pl.10*
- Origin myths, 305
- Orion, 16, 51
- Orme, Robert, 326–27
- Orosius, Paulus, 169 n.51
- Ortelius, Abraham, 251
- Orthographic projection, 34–35, 35, 35 n.72, 37–38, 38 n.79
- ‘Osman II, 246
- Österreichische Nationalbibliothek, Vienna, al-Iṣṭakhri’s manuscripts in, 132–33
- Ottoman Empire, 3. *See also* Islamic society
 architectural plans and waterway maps, 215–16, 217, 218, 219
 campaign journals, 245
 cartography
 atlas of color maps, 225
 European influence on, 209, 210, 213, 215, 217–18, 221–22
 introduction, 206–8
 as private enterprise, 216–26
 problems in study of, 207–8
 regional maps, 222–26
 scope and organization, 206
 in service of state, 209–16
 terminology, 206–7
 version of Ibn al-Wardī’s world map, 220
 waterway maps, 226–27
 early examples of topographical illustration in texts, 230–35
 European influence on, 68
 illustrated histories
 accuracy, 228
 bird’s-eye views in, 228
 compilation of, 229–30
 development of, 228–29
 European influence on, 228, 250, 251

- Ottoman Empire, illustrated histories (*cont.*)
 foreign influences on, 230
 Hungary's importance in, 246–49
 itineraries and town views in, 228–55
 materials used for, 229
 selected manuscripts related to, 252–55
 topographical illustration, 245–52
 isolation of students of, 207–8
 map of, 225, 225–26
 military maps, 210–15
 attack on Malta, 212, 212–13
 battle of Haçova/Mezőkeresztes, 213 n.20
 battle of the Prut, 213, 215, 216
 fortress on Adakale, 213
 fortress of Buda, 213, 215
 fortress of Van, 213, 214
 fortress of “Zadvarya” in Makarska, 213 n.20
 naval encounter between Ottoman and Russian fleets, 213 n.20
 Russian army maneuvers, 217
 second siege of Vienna, 213
 Szigetvár, 212, 213
 naval power, 266 n.8
 origins of state cartography, 209–10
 and Piri Re'is's chartmaking, 265–79
 portolan charts and atlases, 263, 279–84, 288–89
 qibla charts from, 193–94
 rivalry with Habsburgs for Hungary, 246
 volume of existing source materials for study of, 207
 world maps, 221–22
 Ouseley, William, 390
 Oval projections, 282, 282–83
 Oxford
 Bodleian Library
 eighteenth-century Indian manuscript in, 378
 Ibn H̄awqal's manuscripts in, 113, 134–35
 al-Iṣṭakhri's manuscripts in, 132–33
 manuscripts of *Nuzhat al-mushtaq* in, 174
 world map in, 145, 150, *pl.10*
 Museum of the History of Science, cosmographic globe in, 352–55, 396
 Padmakeśara temple (Sun Temple), architectural drawings of, 467
Pādshāhnāmāh, 449, 450
Pahari, 436, 449, 451
 Paintings
 in Hindu cosmography, 343–51
 Indian, as maps, 444–46
 maps in, 408–9
 rock, 304–5, 305, 306, 313
 Pakpattan, 405
 Palaṅkā, 353
 Palestine
 map of sacred places in, 461–62 n.173
 Marino Sanudo's map of, 517
 Palitana, religious map of, 484–85, 486–87
 Palni, 461 n.172
Pañcaviṃśa Brahmanā, 334
Pāñcha kosbi yātrā, Varanasi, 462
 Pande, B. M., 318
 Pandhi, Manubhai, 494
 Pandya, Shri Dushyanta, 494
 Panhala, map of fort in, 492–93
 Pāṇini
Aṣṭādhyāyī, 312
 Panipat, map of battle of, 466, 467
Papamundi, 206
 Paper
 surviving maps on, 327, 327 n.161
 used for Ottoman illustrated histories, 229
 Parallels, 28, 29, 35 n.72, 197, 392
 Parasangs, 8, 102
 Parasnath Peak, religious map of, 460, 486–87
Parganas, 411, 413, 414, 423, 427, 428, 444 n.134, 508
 Paris
 Bibliothèque Nationale
 Ibn H̄awqal's manuscripts in, 113, 134–35
 al-Iṣṭakhri's manuscripts in, 132–33
 manuscripts of al-Idrisi's *Nuzhat al-mushtaq* in, 173
 map of central India in, 420–22
 Musée Guimet, painting in, 449
 Parpola, Asko, 307–8
 Partabgarh, sketch map of, 448–49
Parvata, 351. *See also* Mountains
 Pasinler, 237 n.38
Paṭa-chitras, 323
 Pātālas (hells), 344, 345
 Pāthaka, Durgāshaṅkara, 68
Sarvasiddhāntatattvacūdāmaṇi (Jewel of the essence of all sciences), 69, 70, *pl.2*
 Patna, 403, 450
 Khuda Bakhsh Oriental Public Library, South Asian world map in, 390
 Pāvā, 441
 Pavagarh, 461 n.172
 Pavo (peacock), 63, 67
 Pegasus, 51, 52, 57
 Perlin, Frank, 444
 Perseus, 58
 Persia
 artistic interpretation of celestial bodies from, 63–64, *pl.1*
 astronomical texts, 315–16
 influence on Islamic cartography, 93–94
 maps of in Staats- und Universitätsbibliothek, Hamburg, 124
 Persian Desert, Balkhi school map of, 114
 Persian Gulf, 115, 122, 143
 Persian Mountains. *See* Jibal
 Persian Sea. *See* Indian Ocean
 Personification of celestial bodies, 63–65
 Perspective
 frontal, 450, 452, 453, 470
 oblique, 449–52, 460, 463, 470 n.199, 480–81, 482–93
 planimetric, 449, 450, 453, 460, 463, 470, 476–77, 508
 of secular plans of cities and towns, 447
 Peshawar, 408
 Petrus Alphonsus, 138, 147
Phalcakras, 349–50
 Pharos, 233
 Philip II of Spain, 67
 Phillimore, Reginald Henry, 298, 301, 325–26, 327, 405, 414, 424–25, 427
 Philoponus, Johannes, 24
 Philosophy, in cosmographical diagrams, 71
 Phoenix, 63
 Phonda Pass, 424
 Pica Indica (toucan), 63
 Picard, Jean, 183–84 n.48
Pichhvāis, 420, 458, *pl.31*
 Pieper, Jan, 301
 Pilgrimages. *See also* Route maps; *Tirthas*
 Islamic
 guidebooks for, 239
 and Islamic mapmaking, 91–93
 map of Arabian desert routes, 117
 routes on al-Muqaddasi's maps, 122, 123
 scrolls for, 243–45, 245 n.58
 South Asian
 guide for, *pl.31*
 Jain maps for, 440, 441, 441–42, 457, 460
 to Kashmir, 414
 and mapmaking, 330
 maps for, 388, 439, 441–42, 442, 453–55, 505, 506
 nautical charts for, 500
 and topographic maps of Braj, 417–19
 to Varanasi, 453–55
 Pingree, David, 303, 316, 327 n.161, 328 n.166, 330 n.175, 330–31 n.181, 338, 351, 359
 Pires, André
Livro de marinaria, 262
 Piri Re'is, 257, 262, 263, 287, 513
 biographical information, 266–69
 charts by, 265–79
 maritime, 288
 New World, 268, 269–72, *pl.21*
Kitāb-i bahriye, 171, 206, 231–35, 252, 266, 267, 269, 270, 272–79, 287
 list of extant manuscripts of, 290–92
 Pisces. *See also* Astrology; Astronomy; Zodiac
 constellation
 on al-Birūni's cylindrical projection, 35
 and corresponding pre-Islamic asterisms, 51
 on Islamic celestial globes, 44
 on qibla map, 199
 zodiac sign
 on astrolabe rete, 21, 22, 30
 combined with planets, 64
 in Islamic correspondences, 77, 78
 in Nāṣir Khusraw's cosmography, 86
 Planar mapping, 38–41
 Planets. *See also* names of planets
 on armillary spheres, 49

- computing position of, 38–39
 and correspondences in Islamic cosmology, 76, 77, 78
 in Jai Singh's *Zij*, 365
 motion of, 366
 in Nāṣir Khusraw's cosmography, 86
 personification of, 63–65
 in South Asian celestial mapping, 358–59, 359
 spheres of, 76
 Planimetric perspective, 449, 450, 453, 460, 463, 470, 476–77, 508
 Planispheric astrolabes. *See* Astrolabes, planispheric
 Planispheric maps
 Byzantine, 13–14, 14, 15
 constellations on, 62, 67, 70
 illustrating *Aratea*, 16, 17
 Islamic influence on, 60–61, 61
 in nineteenth-century Indian manuscript, 68–70
 Planispheric projection, 70
 Planning
 architectural, 321
 secular, of cities and towns, 446–49
 Plato, 81, 82
 Pleiades, 16, *pl.27*
 Plessner, Martin, 158
 Pleydenwurff, Wilhelm, 233, 239
 Plumb bobs, 28, 307
 Plumbing, Harappan, 307
 Poland, Ottoman map of, 217
 Polar circles, 15, 18, 43, 44, 47, 49, 61, 68, 69
 Polar stereographic projections, 13, 21, 34, 35 n.73, 62, 68, 69
Polegadas, 262
 Pole Star. *See also* Dhruva
 on Cantino map, 261, 262
 in *Khagolam*, 359
 and navigational charts, 258, 497, 499
 and qiblas, 192, 193
 Polo, Marco, 256, 257
 Pons, Pierre, 365
 Portolan charts, 206, 234 n.25, 251, 263, 495
 Arab, 263–65
 Arab navigational charts compared with, 257, 258
 compared with Cantino map, 261
 compared with *Kitāb-i bahriyye*, 234, 275–77, 279
 compared with South Asian navigational charts, 501
 copying of, 258 n.16
 by Ḥājj Abū al-Ḥasan, 265, 267
 by al-Kātibī, 264, 265
 Maghreb chart, 263–64, 264
 by Mehmed Re'is of Menemen, 283–84, 284
 by al-Mursī, 264–65, 266
 Ottoman, 279–84, 288–89
 Ottoman atlases of (map order in), 281
 Piri Re'is on, 272
 and al-Sharafi al-Ṣifāqsi's world map, 262
Portrait of Shah Jahān (painting), 409 n.36
 Portugal. *See also* Iberian Peninsula
 on geographic globe in Mughal painting, 409 n.37
 on South Asian world maps, 390, 393, 395
Pothi, 494
 Pottery
 excavated at Nagarjunakonda, 466
 excavated at Salihundam, 466
 Iznik jug, 245 n.61
Poubas (scroll paintings), 432–33, 433
Prabhāsa, 460
Prāntas, 423
 Prayāga. *See* Allahabad
 Prayer, 12
 Préaulx, Michel-François, 242 n.51
 Prime meridians
 in Africa, 196
 in Arabic cartography, 102–4
 at Canary Islands, 100, 103, 196
 of al-Idrisi's sectional maps, 163
 in *Shahid-i Ṣadiq*, 403–4, 404
 on South Asian cosmographic globes, 352, 356, 396, 397
 ten degrees east of Canary Islands, 100–101
 at Ujjain, 93, 103, 175, 175 n.6, 315, 356, 396
 used by al-Bīrūnī, 404
 used by al-Khwārazmī, 98, 100–101, 103
 Prime vertical, 48
 Prince of Wales Museum of Western India, Bombay
 maps of forts in, 465 n.175
 Maratha maps in, 423, 425, 425 n.81
 Prinsep, James, 317 n.108, 461, 495
 Printing, Islamic attempts at, 5–6
 Projections
 azimuthal equidistant, 38 n.78, 141–42, 271
 azimuthal equidistant polar, 36, 37–38
 and Balkhī school maps, 115
 al-Bīrūnī on, 34–38
 and early graticules, 149–50
 equatorial stereographic, 28
 equidistant cylindrical, 34
 flattened (*mubaṭṭah*), 35, 35 n.73, 36
 globular, 36–37, 37–38, 141–42
 makhrūṭī, 34
 Mercator, 259, 392, 495
 on nineteenth-century Indian planispheric map, 68–69
 orthographic, 34–35, 35, 35 n.72, 37–38, 38 n.79
 oval, 282, 282–83
 plane of, 35 n.72
 planispheric, 70
 polar stereographic, 13, 21, 34, 35 n.73, 62, 65, 68, 69
 Ptolemaic, 138, 154
 rectangular, 105, 138
 Rojas universal astrolabe, 68 n.193
 stereographic, 30, 31, 38, 41, 70
 Prophatius Judaeus, 45
 Protractors, 28
 Prut, Ottoman plan for battle of the, 213, 215, 216, *pl.15*
 Ptolemaic projections, 154
 Ptolemy, Claudius
 Almagest, 10, 25, 43, 54, 75, 175, 511, 513
 aqālim, 390, 391
 and circles of constant visibility and invisibility, 42
 and circumference of earth, 178–79
 and climates, 162
 coordinate tables, 94 n.20, 97–100, 101 n.49, 154, 259
 criticized by al-Bīrūnī, 141
 design for celestial globe, 43
 Geography, 10, 25, 34, 94–95, 96, 97–100, 105, 157, 159, 168–69, 176, 179 n.28, 196, 210, 270 n.13, 340, 511, 513, 515, 517
 Handy Tables, 10, 93 n.16, 96, 100 n.39, 101
 influence on Balkhī school maps, 118, 120, 121, 122, 126–27, 137, 138
 influence on Ibn Khaldūn, 170
 influence on Ibn Sa'īd, 170
 influence on al-Idrisī, 156–57, 167–70
 influence on Indian astronomy, 315–16
 influence on Islamic astronomy and astrology, 4
 influence on Jābirian alchemy, 81
 influence on al-Khwārazmī, 106
 influence on Piri Re'is, 271
 influence on South Asian world map, 394
 influence on al-Ṣūfī, 55
 Jai Singh on, 361
 length of degree, 178
 and length of Mediterranean, 101–2
 manuscripts in Florence, 238
 and measurement of comparative longitude using lunar eclipses, 103 n.67
 obliquity of ecliptic, 175 n.3
 Planetary Hypotheses, 10, 75
 Planisphaerium, 24–25, 25 n.23
 and prime meridians, 102–3, 163, 404
 star catalog, 15 n.6
 Tetrabiblos, 10, 25
 tradition of in Europe, 285
 works of in Arabic, 10–11
 Pullé, Francesco L., 298, 299
 Punarvasu, 338
 Pune, 423, 425
 Bhandarkar Oriental Research Institute, ink drawing in, 355
 Bharata Itihāsa Samshodhaka Mandala maps of forts in, 465 n.175
 Maratha topographic maps in, 424, 425
 Maratha History Museum, Deccan College, topographic map in, 423
 Punjab, surviving maps from, 505
 Puranas
 cosmography, 300, 313–14, 316, 335 n.22, 353, 357, 359, 398, 399, 512
 Jambūdvīpa, 340, *pl.26*
 world as tortoise, 337–38, 338

- Puranas (*cont.*)
 explained, 312
 problems in interpretation of, 300, 300 n.28
 view of continents, 337
 view of earth, 301, 336
- Purchas His Pilgrimes*, 409, 410
- Puri
 conceived as conch, 452–53
 map of, *pl.*36
 in mental mapping, 382
 religious map of, 486–87
 on survey map, 461 n.172
 survey of temple at, 467
- Puruṣa, 342
- Puruṣottama Deva, 467
- Pushkar, 416, 441
- Puškara, 336
- Puṣkaradvīpa, 367, 368, 371, 374
- Puṣya, 338
- Qābūs ibn Vushmgīr, 42
- Qāf Mountain, 286, *pl.*3
- Qānshūh al-Ghawrī, 232
- Qaydār Payghambar, 242, 242–43 n.52
- Qaytbāy, 233
- Qazwīn (Kazvin), city plan for, 152–53, 154
- al-Qazwīnī (Zakariyā' ibn Muḥammad al-Qazwīnī), 138, 143
Āthar al-bilād (Monuments of the lands), 102 n.60, 144 n.39, 147, 152–53, 154
 distribution of land and sea, 145
Kitāb 'ajā'ib al-makhlūqāt wa-gharā'ib al-mawjūdāt (Marvels of things created and miraculous aspects of things existing), 40, 53, 59, 59–60, 79, 127, 142, 144 n.39, 144–45, 145, 147, 193, 389–90
 as source for al-Idrīsī, 169 n.51
 plan of city of Kazvin, 152–53, 154
 and qibla charts, 192
 world maps, 144, *pl.*9
- Qibla. *See also* Ka'ba; Mecca
 in al-Birūnī's *Tahdīd*, 184 n.53
 charts, centered on Ka'ba, 189–96, 197, 198
 determination, 204–5
 analemma methods, 204, 205
 al-Birūnī's formula, 141
 direct mathematical method, 200–201, 202
 spheres and astrolabes, 200–203
- diagrams, 512
 by 'Alī ibn Aḥmad ibn Muḥammad al-Sharafī al-Şifāqsi, *pl.*13
- indicators, 197–98, 201, 202
- maps, 196–200, 512, 514, 517
 on back of astrolabe, 203
 eight-sector scheme, 191, 191 n.11, 191–92, 193
 elaborate schemes, 194–96
 eleven-sector scheme, 191–92, 194, 195
 four-qibla scheme, 191
 rect-azimuthal, 198, 202
 on seventeenth-century Indo-Persian astrolabe, 201
 twelve-sector scheme, 191–92, 194, 195
 in *Mecmū'a-i menāzil*, 237
 origin of term, 189 n.3
 in al-Sharafī al-Şifāqsi atlas, 285
- Quadrants, 44
 astrolabic, 31–32, 32, 202–3
 Maldivian, 501
 meteoroscopes, 32
 to measure height of mountain, 184
 sixteenth-century, with alidade, 185
 using *shakkāziyah* curves, 32
 vertical, 41
- Quality, in Jābirian cosmology, 82
- Quantity, in Jābirian cosmology, 82
- Qubbat al-Ard. *See* Sri Lanka
- Qudāmah ibn Ja'far al-Baghdādī, 93
Kitāb al-kharāj, 169 n.51
- Qulij Khān, 449, 450
- Qulzum, Sea of. *See* Red Sea
- al-Qummi (Ḥasan ibn 'Alī al-Qummi), 103
- Qunbāş, 256, 257, 286 n.66
- Qur'ān, 87, 189, 514
 and astronomy, 12
barzakh, 121
 and cosmology, 71–72, 73
 geography in, 90
- Qurrah ibn Qamiṭā, 96
- Quşayr 'Amrah, 12 n.1, 12–18
 planispheric maps as model for, 13–14
 vault of heavens, 13
 compared with Byzantine planispheric map, 13–14
 concentric circles in, 14–15
 constellations in, 16, 16 n.12
- Quşā ibn Lūqā, 41, 202
Kitāb fi 'amal bi-al-kurah al-falakīyah (Book on the use of the celestial globe), 44–45
- Raheja, Gloria Goodwin, 339
- Rāhu, 358, 359, 360, 374
- Rajasinha II, 426, 427
- Rajasthan
 geometric diagrams from, 348–49
 map of siege at Bhiwai fort in, *pl.*38
 maps of rural areas in, 442
 painting of Diwali celebrations in, *pl.*39
 route map of irrigation canal in, 438–40, 439
 secular city and town plans from, 446
 Shrinathji temple complex in, *pl.*35
 surviving maps, 505, 506
 topographic maps from, 414–17, 418
- Rajjus, 342, 373
- Raj Sagar Lake, 415
- Rakshasbhawan, 423
- Rāmāyaṇa, 310
- Rāma Yantra (cylindrical astrolabe), 362, 365
- Rameswaram, 382
 religious map of, 486–87, 488–89
 temple at, 457
- Ramgarh, route map for irrigation canal at, 438–50
- Ramjunter, 362
- Rampur, oblique secular representation of, 480–81
- Ram Singh, 450
- Ram Singh Malam, 445, 501
- Ramyaka, 341
- Ram Yantra. *See* Rāma Yantra
- Ranjit Singh, 413
 architectural drawing of tomb of, 470 n.199
- Rao, Ramachandra, 381 n.164
- Raqqā, 118
- Rasā'il al-ikhwān al-şafā' wa-khullān al-wafā', 75, 79
- Rashashī cubits, 160
- Rashid al-Dīn Faḡl Allāh
Jāmi' al-tawārikh (Collection of chronicles), 230, 252
- Rāsi, 359
- Rāsivalaya Yantra, 362
- Rasm (picture), 74
- Rasm/tarsīm (drawing, graph), 7
- Raṭls, 159
- Ravi River, 449, *pl.*32
- Rawḡah (Roda) Island, 177, 232, 233
- Rawson, Philip, *pl.*25
- Ray, Amita, 320
- Ray Chaturman Kāyat'h, 435
- Ray
 Balkhī school map of, 114
 latitude values for, 187
- Rectangular projections, 105
- Rect-azimuthal qibla map, 198, 202
- Red Fort, Agra, map of, 463, 490–91
- Red Fort, Delhi
 architectural drawings of, 468–69
 map of, 490–91
- Red Sea (Sea of Qulzum)
 on Balkhī school world maps, 122
 on Ibn al-Wardī's world map, 143
 on Indian copy of Middle Eastern world map, 390
 on nautical chart, 499–501, 502, *pl.*40
- Reference maps
 of Islamic world at time of Balkhī school, 109
 of Istanbul architectural monuments, 239
 of Mediterranean in age of Süleymān, 273
 of Middle East, 91
 of South Asia, 297
- Regional maps, Ottoman, 222–26
- Regunathan, N. S. R., 346
- Rehatsek, Edward, 300, 392, 396
- Reinaud, Joseph Toussaint, 8, 101
- Reincarnation, 382
- Relief (depicted in view of Istanbul), 250
- Religion
 and cartography, 303–4
 maps of sacred places, 452–62, 482–91
- Rennell, James, 317, 317 n.108, 324, 325, 422, 429
- Resm, 207
- Ressām Muştafā, 215, 217, 226
- Retes, 18, 20, 21, 24, 28, 29, 32, 33, 41, 52, 68 n.194, 202. *See also* Astrolabes

- R̥g Veda*, 307–8, 333
- Rhumb lines
 on Arab navigational charts, 258, 258 n.17
 on compass cards, 495
 on Maghreb chart, 264
 Piri Re'is and, 271
 on al-Sharafi al-Şifāqsi's world map, 262
 on South Asian nautical charts, 496, 499, 500, 502
- Riccioli, Giovanni Baptista, 183 n.48
- Richman, Paula, 343 n.53
- Rind, James N., 325
- Rings
 astronomical instruments, 187 n.58
 horizontal, and qibla determination, 201
 meridian, and qibla determination, 201
- Rivers. *See also names of rivers*
 on Islamic maps
 from Balkhī school, 115
 by al-Idrisi, 163, 166–67
 in *Mecmū'a-i menāzil*, 237
 Ottoman, 210, 211, 222n, 222–25
 in South Asian cosmography, 341, 356
 on South Asian maps, 311 n.71, 311–12, 348, 354, 356, 358, 369, 377, 399, 402, 411, 414, 415, 427, 436
 in Gentil's atlas of Mughal Empire, 429
 Maratha topographic, 423, 425
 of north-central India, 422
 in *Shahid-i Şadiq*, 405
 in *Tarikh-i qal'ah-i Kashmir*, 413, 414
- Rizvi, Saiyid Samad Husain, 183
- Roads
 in Gentil's atlas of Mughal Empire, 429
 on map of north-central India, 422
 on maps in *Tarikh-i qal'ah-i Kashmir*, 413–14
 maps related to construction of, 441
 on Nepali scroll map, 433
 on South Asian topographic maps, 402, 413, 417, 424, 425
- Rodrigues, Francisco, 256, 262
- Roe, Thomas, 409, 507
- Roger II of Sicily, 95 n.22, 156, 156 n.5, 158–59, 160, 167, 515
- Rojas, Juan de, 35 n.72, 38 n.79
- Rojas universal astrolabe projection, 68 n.193
- Romaka (Yavanapura), 103, 352
- Romakapattana, 356
- Roman miles, 177
- Rome, 231 n.12
 Biblioteca Apostolica Vaticana, planispheric map in, 38 n.78
- Rose-Apple Island, 336
- Rosselli, Francesco, 282
- Rossi, Ertore, 265
- Rotation, of Maghreb chart, 264
- Route maps. *See also Pilgrimages of engineering works*, 438–42
 Mughal, *pl.*32
 South Asian, 388, 433, 435–42
- Roy, A. K., 307
- Royal Asiatic Society, London, painting of Jahāngir's mausoleum in, 469–70
- Roz *nāmas* (nautical manuals), 494
 compass cards from, 495, 498, 499
 folios of, 495, 496, 497
- Rudolf II, 234 n.27
- Rukmin Mountains, 341
- Rural maps, 442–48, 474–75
- Rus, 390, 393
- Ru'siyas*, 160
- Russia
 in *kishvar* system, 94
 plan of encounter between fleet of and Ottoman fleet, 213 n.20
 on South Asian world maps, 391
- Rüstam Paşa, 236
- Sabarmati River, 415, 416, 417
- Şadiq Işfahāni (Muḥammad Şadiq ibn Muḥammad Şāliḥ), 301, 393, 395, 397, 409, 424, 507, 508
 compared with Ḥamd Allāh Mustawfi, 391–92
Shahid-i Şadiq (Persian atlas), 146 n.46, 149, 390, 391, 403, 404
 topographic maps by, 400, 403–5
 use of graticule, 149–50
 world maps by, 146, 390–92
- Safavid dynasty, 228, 239, 241, 250
- Şafīḥah* (astrolabe plate), 21
- Şafīḥah shakkāziyah* (astrolabe plate), 29
- al-şafīḥah al-Zarqālliyah* (astrolabe plate), 29
- Sagarām Sonī temple, Mount Girnar, Saurashtra, Gujarat, 296
- Sāgarasamvṛta-dvīpa, 336 n.24
- al-Şaghāni (Abū Ḥāmid al-Şaghāni al-Aşṭurlābi), 34, 34 n.68
- Sagittarius. *See also Astrology; Astronomy; Zodiac*
 constellation
 on al-Birūni's cylindrical projection, 35
 and lunar node called tail of dragon, 65
 on qibla map, 199
 zodiac sign, 361
 on astrolabe rete, 22, 30
 combined with planets, 64
 in Islamic correspondences, 77, 78
 in Nāşir Khusraw's cosmography, 86
- Sahara Desert, 270
- Şahnāmes*, 228
- Sahyadri (Western Ghats), 399
- Sailāni Shāh tomb, Malkapur, pilgrimage map of, 461–62 n.173
- Saint Angelo, castle of, 212
- Saint Elmo, castle of, 212
- Saint John, monastery of, Istanbul, 237
- Saint Michael, castle of, 212
- Saint Thaddeus, monastery of, 239, 239 n.49
- Şākadvīpa, 340
- Sakız, 274
- Saliba, George, 299, 315 n.94
- Salihundam, potsherds excavated at, 466
- Salm, Niclas Graf, 246 n.64
- Saltykov-Shchedrin State Public Library, Leningrad, manuscript of al-Idrisi's *Nuzhat al-mushtāq* in, 173
- Samanids, 111, 111 n.23
- Samavasaraṇa*, 441, 442
- Samayas*, 342
- Samerasinghe, R. T., 426
- Samgrahaṇīs* (cosmographic texts), 367, 369
- Sanhita*, 338
- Sammetaśikhara (Parasnath Peak), 441, 442
- Samraṭ Yantra, 362, 364, 366
- Sāmūgarh, map of battle of, 466
- Sandesara, B. J., 323
- Sanganer, maps of, 448, 476–77
- Śānka* (conch), 452
- Śānkara, 330, 330 n.181, 452
- Śānkaranārāyaṇa, 360
- Sankhodar Bet, map of, 453
- Santarém, Manuel Francisco de Barros e Sousa, Viscount of, 317, 317 n.108
- Sanudo, Marino, 172, 517
- Sapta-dvīpa vasumatī*. *See* Earth, seven-continent
- Saptarṣis*. *See* Ursa Major
- al-Sarakhsī, 93 n.10
Kitāb al-masālik wa-al-mamālik (Book of routes and provinces), 92
- Sarasvati Mahal Library, Thanjavur, 346, 465–66 n.175
- Sarasvati River, 377
- Sarkārs*, 428
- Śarma, Sadāśiva Rath, 466, 468
- Şaştāmsā Yantra, 362
- Śatapatha Brahmana*, 308
- Sathgar, Shripada Narayan, 470
- Śatruñjaya, 441
- Şaṭṭī* (flat), 18
- Saturn. *See also Planets*
 in Iskandar Sultan's horoscope, 64
 in Islamic celestial mapping, 358, 359
 in Islamic correspondences, 78
 in Nāşir Khusraw's cosmography, 86
 personification of, 63
 realm of, 84
 sphere of, 39, 75, 76
- Saudi Arabia, map of sacred places in, 461–62 n.173. *See also* Arabia
- Savage-Smith, Emilie, 299, 315 n.94
- Sava River, 211
- Sawai Madhopur, planimetric secular map of, 478–79
- Sawdā'* cubits, 177, 178, 178 n.23, 179
- Sayf al-Dawlah, 26, 78, 110, 115
- Sayf al-Dīn Ghāzi II, 52
- Scales
 on Islamic maps
 'Alī Mācār Re'is's world map, 282
 Balkhī school maps, 115
 al-Kāshghari's world map, 153
 al-Kātibī chart, 265
 Maghreb chart, 264
Mecmū'a-i menāzil, 237
 Piri Re'is's world map, 272
 al-Sharafi al-Şifāqsi world maps, 287
 sixteenth-century quadrant, 185
 on South Asian maps
 cosmographies, 507
 fidelity to, 468

- Scales, on South Asian maps (*cont.*)
 Gentil's atlas of Mughal Empire, 428, 429
 geographical maps, 388
 on Jain scroll maps, 460–61
 nautical charts, 500
 topographic maps, 407, 417, 425–26, 426–27, 433
 world maps, 399
- Scandinavia, 265
- Schedel, Hartmann
 Nuremberg Chronicle (*Liber cronicarum*), 233, 246
- Schimmel, Annemarie, 377
- Schissler, Christoph
Quadraticum geometricum, 185
- Schmidt, Rudolf, 397, 399
- Schoy, Carl, 198
- Science
 and Islam, 72–73, 189
 in South Asian astronomy, 360, 360 n.96
- Scorpio. *See also* Astrology; Astronomy; Zodiac
 constellation
 on al-Bīrūnī's cylindrical projection, 35
 on ceiling at Quṣayr 'Amrah, 16
 on qibla map, 199
 zodiac sign
 on astrolabe rete, 22, 30
 combined with planets, 64
 in Islamic correspondences, 77, 78
 in Nāṣir Khusraw's cosmography, 86
- Scotland. *See* Great Britain
- Scroll maps, South Asian, 436–38, *pl.*32
 detailed plan of private house, 470
 Jain (*vijñaptipatras*), 460–61, 461
 Nepali, 432–33, 433
 Pahari, 436, 437
 route maps, 388
- Sculptures, 311
- Sea charts. *See* Nautical maps; Portolan charts
- Sectional maps, by al-Idrīsī, 162, 162–63, 164, 165, 166, 171–72, 172
- Sédillot, Louis Amélie, 8
- Şehnāme* (official court historian), 229, 236
- Şehzāde Meḥmed, pilgrimage scroll of, 244
- Selim I, 233, 236, 241, 250, 267, 270
- Selim II, 246, 247, 251 n.77
- Selimiye, 251 n.77
- Semiotic analysis, 301
- Şerif ibn Seyyid Meḥmed, 221 n.34
- Seringapatam, 393, 492–93
- Serpentarius, 16
- Settlements. *See also* Cities and towns
 on al-Idrīsī's maps, 166–67
 sectional maps, 163, 165
 on South Asian maps
 Gentil's atlas of Mughal Empire, 429
 Maratha topographic maps, 423, 424, 425
 Mughal topographic maps, 405
 Nepali scroll map, 433
 pilgrimage maps, 441
 scroll maps, 436, 437
 in *Tārīkh-i qal'ah-i Kashmir*, 413
 topographic maps, 402, 411, 417, 427
- Severus Sebokht, 12
- Sextants, Maldivian, 501
- Seydī 'Alī Re'īs (Sīdī 'Alī Çelebi), 257, 260
- Seyyid Nūh, 276
Deñiz kitabı (Book of the sea), 234 n.25
- Sezgin, Fuat, 94 n.20, 150
- Shadow squares, 24
- Şaf'ī* cubits, 177
- Şāhjahānābād. *See also* Delhi
 in *Chahār Gulshan*, 436
 city plan of, 448
 in Gentil's atlas of Mughal Empire, 429
 on map of north-central India, 422
 on Mughal topographic maps, 405
 on South Asian scroll map, 436
 on South Asian world maps, 393
- Şah Jahān Standing on a Globe* (painting), 409 n.36
- Şāhrukh, 149 n.63
- al-Şakkāz, 28
- Şakkāziyah* curves, 31, 32
- Şakl* (shape), 74
- Şalimar gardens, 409, 411, 413
- Şanb-i Ghāzānī, 239
- Şantidas, Seth, 470
- Shapes, in cosmographies, 335
- Şaraf* (exaltation), 64–65
- al-Şarafī al-Şifāqsi family, 138, 145, 170–71, 263, 511. *See also* Aḥmad al-Şarafī al-Şifāqsi; 'Alī ibn Aḥmad ibn Muḥammad al-Şarafī al-Şifāqsi; Muḥammad ibn 'Alī ibn Aḥmad al-Şarafī al-Şifāqsi; Muḥammad ibn Muḥammad al-Şarafī al-Şifāqsi
 portolan charts and atlases by, 284–87, 288, 289, 289–90
- Şarma, Acharya Ram Charan, 303 n.46, 349, 350, 351
- Şatrūnjaya, 442
- Şatrūnjaya Hill temple complex, Palitana, 460
- Ships
 on Maratha topographic maps, 424, 425
 on South Asian world maps, 390, 395
- Şiraz, 187
- Şiva, 346
- Şivāji, 324, 426
- Şhrinathji temple complex, map of, 458, *pl.*35
- Shrine of the Footsteps of the Prophet (Masjid Āthār al-Nabī), 232, 233
- Sicily
 on Balkhī school maps, 119
 in *Kitāb-i bahriye*, 278
 on South Asian world maps, 390
- Siddhantas*, 93, 93 n.13, 315
- Siddhapura, 352, 356
- Siddhas, 373, 455
- Siddhi*, 372
- Sīdī 'Alī Çelebi (Seydī 'Alī Re'īs), 257, 260
- Sidra, Gulf of, 287
- Siege plans
 Belgrade, 210, 211–12, *pl.*14
 Bhiwai fort, *pl.*38
 fortress on Adakale, 213, 214
 fortress at Esztergom, 245, *pl.*19
 Kiev, 210–11, 211, 211 n.11
 Szigetvár, 212, 213, 246–49
 Vienna, 213
- Şifat al-dunya*, 96
- Sighting instrument, 307
- Signs, cartographic, 335. *See also* Conventions; Symbolism
 in *Chahār Gulshan*, 435–36
 on Maratha topographic maps, 424, 425
 on South Asian topographic maps, 402
 on South Asian world maps, 392
- Sijilmasa, 119
- Sijistan, 114, 122
- al-Sijistānī (Abū Ya'qūb Işhāq ibn Aḥmad al-Sijistānī), 83
Kitāb ithbāt al-nubū'at (Book of the proof of prophecy), 82
- al-Sijzi (Abū Sa'īd al-Sijzi), 29
- Şikharin Mountains, 341
- Sikhs, 332
- Silā Island (Korea), 163
- Şilpa Prakāśa*, architectural drawings in, 466
- Şilpaśāstra* texts, 468, 505
- Silvester, Bernard, of Tours (translator)
Experimentarius, 62
- Sim'an
Zij Baṭlamīyūs, 96
- Sinān Paşa, 281
- Sind
 Balkhī school maps of, 112, 114
 qibla of, 193
 on South Asian cosmographic globe, 396
 on South Asian world maps, 390, 391
 surviving maps from, 505
- Sindhinds*, 93
- Sindhu River, 341
- Sind ibn 'Alī, 178, 179, 180–81
- Singh. *See also given names*
- Singh, Chandramani, 408, 410
 "Early 18th-Century Painted City Maps on Cloth," 302
 on oblique paintings at Amber, 450
 on South Asian scroll maps, 437, 438
 on topographic maps of Rajasthan and Gujarat, 415
- Singh, M. K. Brijraj, 450
- Sinjār, 178–81
- Sipāhizāde (Meḥmed ibn 'Alī Sipāhizāde)
Awḍāḥ al-masālik ilā ma'rīfat al-buldān wa-al-mamālik (The clearest path to the knowledge of countries and empires), 221 n.36
- Sirāj al-Dunyā wa-al-Din, 196, 199
- Sircar, D. C., 299, 313, 321–22, 333, 340
- Sirjan, 115, 116, 123
- Şitā River, 369
- Şitodā, 369
- Siwalik Mountains, 405
- Skelton, R. A., 296
- Slavs, in *kishvar* system, 80, 94

- Society, and cartography, 512–16
- Sofala, 390
- Sofalah, 162
- Sofia, Cyril and Methodius National Library, manuscript of al-Idrisi's *Nuzhat al-mushtāq* in, 174
- Sojat
divination chart centered on, 349, 350
map centered on, 415, 416
- Solstices, plane of, 35 n.72, 38 n.79
- Solstitial colour, 13, 14, 16, 21, 28, 29, 30, 36, 37, 41, 43, 65–66
- Solstitial directions, 193
- Somakhaṇḍa, 355
- Somnath, religious map of, 486–87
- Sopher, David E., 446
- South America, 271
- South Asia. *See also* Asia; India
cartography
European influence on, 507
inclusiveness of, 508
influence of other parts of Asia on, 506–7
lack of Western interest in, 504
political boundaries on, 508–9
route maps, 434
terrestrial maps compared with European maps, 507–8
cosmographies, compared with European cosmographies, 507
mapmaking, 509
Mughal map of, 406, 407
paucity of surviving maps from, 327–31
reference map for study of indigenous cartography, 297
in *Shahid-i Šādiq*, 403
- Southern Hemisphere
constellations of on astrolabe plate, 66
constellations of on planispheric star map, 67
on South Asian cosmographic globe, 357
- Southern triangle, 63, 67
- South Pole, 258
- Space
in Jābirian cosmology, 82
on South Asian world maps, 400
- Spain. *See also* Iberian Peninsula
astrolabes in, 26
on Balkhī school maps, 114, 119, 120, 121
Islamic celestial globe from, 45
on al-Iṣṭakhri map, *pl.6*
maps of, 114
on Piri Re'is's world map, 270
refugees from, 267
treatises on equatoria, 38–39
variants of astrolabes in, 28–29
- Spheres
armillary, 49–50, 51
celestial, 75, 76
determining qibla with, 200–202
in Islamic cosmography, 74
in Jābirian cosmology, 81
in *Kitāb 'ajā'ib al-makhlūqāt wa-ghara'ib al-mawjūdāt*, 40
in *Kitāb al-durar wa-al-yawāqit fi 'ilm al-rašd wa-al-mawāqit*, 39
in al-Sijistāni's cosmography, 82
- Spherical astrolabes. *See* Astrolabes, spherical
- Spink, Walter, 313, 343 n.52
- Sri Lanka (Taprobane), 106
as Cupola of the Earth, 103
on Islamic maps
on Ibn Ḥawqal's maps, 122
al-Idrisi's sectional map, 164
qibla indicator, 198
Šadiq Iṣfahāni's topographic maps, 400
on South Asian maps
incorporating Ptolemy's geographic coordinates, 340
nautical chart, 498
navigational chart of, 500
topographic maps, 425, 426–27
world maps, 391, 395–96, *pl.29*
stupas in, 380
surviving maps from, 505
- Srinagar
Hari Parbat fort, 409, 492–93
maps of, 478–79, *pl.33*
on maps of Kashmir, 409, 411, 412, 413, 416
Sri Pratap Singh Museum, 414, 457
- Sringeri, 452
- Sri Pratap Singh Museum, Srinagar, maps in, 414, 457
- Sri Ram Charan Museum of Indology, Jaipur, 303 n.46
- Srirangam
on Maratha topographic maps, 425
plan of temple in, 457, 459
religious map of, 486–87, 488–89
- Srisailam, 425
- Śrītrimbakeśvara (Trimbak), 423
- Staal, Frits, 309
- Staatsbibliothek Preussischer Kulturbesitz, Berlin
al-Iṣṭakhri's manuscripts in, 130–31
al-Muqaddasi's manuscripts in, 123, 124, 134–35
- Staats- und Universitätsbibliothek, Hamburg, al-Iṣṭakhri's manuscripts in, 124, 130–31
- Stades, 176, 178–79
- “Staff of al-Ṭūsi,” 31
- Star compasses, 495
- Stars. *See also* Asterisms; Astrology; Astronomy; Constellations
on armillary spheres, 49
on astrolabe variant, 29
on al-Birūni's flattened astrolabe, 36
on celestial globes, 42, 43
fixed realm of, 84
on Islamic astrolabes
planispheric, 18–21, 22, 23
spherical, 41
on Islamic celestial globes, 44, 46 n.110, 47, 48
in Jain cosmologies, 373
and navigation, 258
in orthographic projection, 35
in Qur'ān, 72
sphere of, 75, 76
used on instruments, 62
zoomorphic renditions of, 52–53, 61
- State Archives of Maharashtra, Bombay, Maratha topographic map in, 423–24
- Steatite seals, 306
- Stein, Marc Aurel, 182 n.39, 328
- Stereographic projection, 30, 31, 38, 41, 70
- Strozzi, Alessandro, 238
- Šūbas (provinces), 428
- Şubhi Çelebi
Şahnāme-i Sulṭān Mehmed (Sultan Mehmed's book of kings), 255, *pl.17*
- Subrahmanyam, R., 317
- Sudan, 94
- Sudānand, hybrid map by, 427
- al-Şūfi (Abū al-Ḥusayn 'Abd al-Raḥmān ibn 'Umar al-Şūfi), 34 n.66, 45, 53, 54, 61, 62, 202
influence on al-Birūni, 58–59
Kitāb şuwar al-kawakib al-thabitah (Book of the constellations of the fixed stars), 51–52, 52, 54–58, 55, 56, 57, 58, 60
Latin manuscripts of, 60
- Sugiura Keohei, 298
- Suhrāb (Ibn Sarābiyūn)
'Aja'ib al-aqālim al-sab'ah (Book of the wonders of the seven climates), 104, 168
and climates, 106
map construction, 95, 101, 104–5, 137, 138
number of entries in coordinate tables, 101 n.49
- Sükri Bidlisi
Selimmāne (History of Sultan Selim I), 228 n.3
- Sulaymān al-Mahrī, 257, 260–61
Minhaj al-fakhr (The splendid path), 261
- Süleymaniye, model of, 250, 250–51 n.77
- Süleymaniye Kütüphanesi, Istanbul
Arabic translations of Ptolemy's *Geography* in, 210, 210 n.9
Ibn Ḥawqal's manuscripts in, 134–35
al-Iṣṭakhri's manuscripts in, 130–31
manuscript of *Nuzhat al-mushtāq* in, 173
manuscripts of *Rawḍ al-faraj* in, 174
al-Muqaddasi's manuscripts in, 134–35
al-Ṭūsi's manuscripts in, 134–35
- Süleymaniye waterway map, 226
- Süleymān the Magnificent, 220, 250, 264, 265, 267
and Aḥmed Feridūn's *Nuzhetü'l-aḥbār der sefer-i Sigetvār*, 248
campaign chroniclers and diarists for, 230, 245
and illustrated manuscript production, 229, 230, 236
and Maṭrakçı Naşūh's *Mecmū'a-i menāzil*, 229, 230, 235, 236, 237, 239, 240, 241, 242, 245
and Maṭrakçı Naşūh's *Tarih-i fetḥ-i Şaklavūn*, 245, *pl.19*

- Süleymān the Magnificent (*cont.*)
 and Pīri Re'īs's *Kitāb-i bahriye*, 233, 269, *pl.*22
 siege plan of Belgrad prepared for, 211
 siege plan of Malta prepared for, 211
 and siege of Szigetvár, 246–47, 248
 surrender of Buda to, 237, 246
- Sulṭāniye, 237, 241–42, *pl.*18
- Sulvasūtras*, 308
- Sumatra, 259, 262
- Sumeru, 356. *See also* Meru, Mount
- Sumeruvaḍāvanāla, 356
- Sun
 on astrolabe and mechanical calendar, 33
 computing position of, 38–39
 finding qibla using, 203
 heliocentrism, 366
 in Islamic correspondences, 78
 in Jain cosmologies, 374, 375
 in Jai Singh's *Zij*, 365
 in *Khagolam*, 359, 360
 in Nāṣir Khusraw's cosmography, 86
 personification of, 63–65
 in Qur'ān, 71
 realm of, 84
 in South Asian celestial mapping, 358, 361
 sphere of, 39, 40, 75, 76
- Sunda Islands, 256, 262
- Sundials, 25, 197–98
- Ṣun'ī, 221
- Ṣūrah*, 7, 74, 95, 257 n.10
- Suraj Mal, 415
- Surat, 74, 417, 478–79
- Ṣūrat-al-'ālam* (representation of the world), 74
- Ṣūrat al-dā'irah* (drawing of the circle), 74
- Ṣūrat al-shakl* (drawing of the form), 74
- Sūret*, 207
- Sūri, Mahendra, 315
- Surveying
 depiction of, 320
 to determine length of degree, 178–81
 of Indo-Aryan towns, 319–20
 Indus civilization instruments for, 307
 Mauryan Empire, 316–17
 in Nepal, 430
- Sūryas* (suns), 358, 373
- Sūryasiddhānta*, 366
- Sus al Aqsa, 391
- Sutlej River, 437
- Suyolu Nāzırı*, 215
- Swastikas, 317–18
- Symbolism. *See also* Conventions; Signs, cartographic
 celestial, 63–65, 515
 in city map of Bijapur, 448
 cosmographic, 378, 379–82
 in South Asian maps, 358–59, 508
 in South Asian topographic maps, 402
- Syria
 Balkhi school map of, 114, 117
 in al-Battānī's *Zij al-Ṣābir*, 98
 celestial symbolism in, 65
 early astrolabe production in, 26
 influence on *Mecmū'a-i menāzil*, 241
 and Ka'ba, 190, 191
 and origins of Islamic celestial mapping, 12–18
 qibla of, 192, 193
 on seven-*kishvar* earth, 80
 on South Asian world maps, 391
- Székeshérvár, 245
- Szigetvár, siege of, 212, 213, 246–49
- al-Ṭabarī (Abū Ja'far Muḥammad ibn Jarir al-Ṭabarī), 235 n.32, 236
Ta'rikh al-rusul wa-al-mulūk (History of prophets and kings), 235
- al-Ṭabarī (Muḥammad ibn Maḥmūd ibn 'Alī al-Ṭabarī), 56
- Tabaristan, 114
- Ṭablabs*, 285–86
- Tables
 astronomical, 365, 367, 392
 calendrical, 44
 of coordinates
 adjusting latitude in, 176
 adjusting longitude in, 176
 by al-Battānī, 97–100, 101 n.49
 al-Bīrūnī and, 141–42
 converting to map form, 137 n.1
 by al-Farghānī, 96
 by Ibn Yūnus, 101 n.49
 Islamic, 8–9, 95, 96–97, 97–100
 by al-Khwārazmī, 95, 97–100, 101 n.49, 104
 production of in Maghreb, 141
 by Ptolemy, 94 n.20, 97–100, 101 n.49, 259
 by Suhrāb, 101 n.49
 geographical, 96–97
- Tabriz, 239, 243
- Tagias, Démétrios, 279, 279 n.51
- Ṭahmāsp, 243
- Ṭa'ī, Mountains of, 118
- Taif, qibla of, 191
- Taima, 118
- Tāj Mahal, 377–78
- Takvim* (Almanac), 221 n.34
- Talaja, 417
- Ta'liqizāde. *See* Ṣubḥī Çelebi
- Tamil Nadu Archives, 302
- Tamrakhaṇḍa, 355
- Tangier, longitude of, 101–2
- Tantrism, 381
- Tapi River, 399, 423
- Taprobane. *See* Sri Lanka
- Taqi al-Din Muḥammad al-Rashid ibn Ma'rūf, 27
- Taqwirs*, 160
- Taraf* (direction), 424
- Tārās* (stars), 373
- Tārikh-i Guzīda*, 391
- Tārikh-i Nik Gulshan*. *See* *Chahar Gulshan*
- Tarn Taran, religious map of, 488–89
- Tasvīr* (ground plan), 207
- Taṣwīr* (depiction), 74
- Tata, 245
- Taurus. *See also* Astrology; Astronomy; Zodiac
 constellation
 on al-Bīrūnī's flattened astrolabe, 36
 on al-Bīrūnī's globular projection, 37
 on ceiling at Quṣayr 'Amrah, 16 n.12
 on Islamic celestial globes, 44
 on qibla map, 199, 203
- zodiac sign
 on astrolabe rete, 22, 30
 combined with planets, 64
 in Islamic correspondences, 77, 78
 Islamic emblematic motif for, 63
 in Nāṣir Khusraw's cosmography, 86
- Tavernier, Jean Baptiste, 67, 361 n.99
- Tavernier, Melchior (the Younger), 66 n.190, 66–67, 67, 67 n.191
- Tavşanlı, obelisk on way to, 240
- Taxation, maps for, 444, 444 n.134
- Tehran. *See names of libraries*
- Teixeira da Mota, Avelino, 259, 262
- Telescopes, 365–66
- Temesvár, 247
- Temples, South Asian
 architectural plans for, 466–68
 as astronomical artifacts, 360
 construction of, 466
 Hindu
 cosmography in architecture, 379–80
 plan of, 319
 Jain, atrium used as cosmography, 371–72
 on Maratha topographic maps, 424
 on pilgrimage maps, 441
- Tennent, James Emerson, 501
- Terrestrial globes, 28, 408
 at Jaipur astronomical observatory, 397, 399
 by Jamāl al-Dīn, 221–22, 221–22 n.38
- Terrestrial maps. *See also* Maps
 Ottoman, 217–18
 South Asian, compared with European maps, 507–8
- Tersim*, 207
- Text, Islamic maps and, 4–5
- Thābit ibn Qurrah (Abū al-Ḥasan Thābit ibn Qurrah al-Ḥarrānī), 26, 96, 98, 100, 100 n.41, 168, 168 n.47
- Thales of Miletus, 42
- Thanjavur, Sarasvati Mahal Library, 346, 465–66 n.175
- Thatta (Tatta), 405
- Theology, in cosmographical diagrams, 71
- Theon of Alexandria, 24
- Theosophy, Islamic, 73
- Thirunaranan, B. M., 301, 302 n.43
- al-Thurayyā*, 52
- Tibbetts, Gerald R., 494, 495, 497, 503, 507
- Tibet
 and Ka'ba, 190, 191
 in *kishvar* system, 94
- Tieffenthaler, Joseph, 429
- Tigris River, 118, 122, 222, 223, 241
- Tillotson, G. H. R., 468
- Time
 in Jābirian cosmology, 82
 keeping with astrolabes, 21

- Timūr (Tamerlane), 64, 242, 245
 Tinkhandī, map of, 444
 Tinnis, 119
Tirthaṅkaras, 373, 441, 442
Tirthas (pilgrimage places), 311, 382, 414, 441, 454, 457, 460, 505, *pl.37*. See also Pilgrimages
 Tirupati, religious map of, 488–89
Tithi, 359
 Tomaschek, Wilhelm, 260
 Tonk, planimetric secular map of, 478–79
 Toomer, G. J., 101–2
 Topkapı Sarayı, Istanbul (Arşivi, Müzesi, and Müzesi Kütüphanesi), 237, 250–51, 252
 İbn Ḥawqal's manuscripts in, 108, 113, 134–35
 al-İṣṭakhri's manuscripts in, 130–33
 manuscript copies of Ptolemy's *Geography* in, 210 n.8
 Ottoman map of Kiev in, 210–11
 Timurid scientific manuscript in, 126–27, 128
 uncataloged holdings, 207
 world map in, 390 n.8
 Topographical illustration, Ottoman
 European influence on, 245, 250, 251
 Hungary's importance in, 246–49
 in later histories, 245–52
 in *Mecmū'a-i menāzil*, 235–45
 in texts, 230–35
 Topographic maps, South Asian
 areas of coverage, 401
 attributes of, 402
 from Braj, 417–20
 of central India, 420–22
 Maratha, 422–26
 Mughal, 400–409
 of Nepal, 429–35
 of northeastern India, 427
 South Asian, 400–435
 of Sri Lanka, 426–27
 types of, 388
 Topra pillar, 376, 377
 Toulon, 245
 Tower of Alexander, 393
 Towns. See Cities and towns; Settlements
 Transoxiana, 94, 114, 124
 Travel literature, European, 304
 Trees, Indian, 335
 Triangulation, 176, 186, 258, 258 n.19
 Triangulum Astrinum (southern triangle), 63, 67
 Trigonometry
 and conversion of travelers' distances to true coordinates, 176–77
 to determine difference of longitude, 187
 and qibla, 189
 Trikkeri, Strait of, 276
Trilokas, 344
 Tripathi, Maya Prasad, 298–99, 313, 505 n.7
 Tripoli, 232, 263
 Triptych, Jain, 460
 Tropics
 on armillary spheres, 49
 on astrolabe, 65
 on celestial globes, 43
 on European planispheric star maps, 69
 on Islamic celestial globes, 44, 47
 Tropic of Cancer
 on astrolabe rete, 21
 on Byzantine planispheric map, 13
 on Cantino map, 262
 on Islamic celestial globes, 43
 on Piri Re'is's world map, 270
 Tropic of Capricorn
 on astrolabe rete, 18, 21
 on Byzantine planispheric map, 13
 on Islamic celestial globes, 43
 on vault of heavens, Quşayr 'Amrah, 15
 Tsio Ying-k'i, 430
 Tübā, *pl.3*
 Tucci, Giuseppe, 381, 455
 Tuğhrul ibn Arslān, 125
 Tunis, 232, 263, 264
 Tunisia, 279
 Turkestan, 150, 391
 Turkey (Rūm, on Marathi world map), 400
 Turkhān, 396
 Turks, 80, 94
 al-Ṭūsī (Aḥmad [Muḥammad] al-Ṭūsī)
 'Aja'ib *al-makhlūqat*, 125
 map by, 113
 selected manuscripts by, 134–35
 al-Ṭūsī (Sharaf al-Dīn al-Muẓaffar al-Ṭūsī), 31
 Twining, Thomas, 326, 326 n.155
Tympanum (astrolabe plate), 21
 Tyre, 231 n.14
 Udaipur
 oblique secular representation of, 480–81
 religious map of, 488–89
 sketch map of, 448–49
 on topographic maps of Rajasthan and Gujarat, 414, 417
 Udgir, planimetric secular map of, 478–79
 al-'Udhri (Aḥmad ibn 'Umar al-'Udhri)
Niẓām al-marjān fī al-masālik wa-al-mamālik, 169 n.51
 as source for al-Idrīsī, 169 n.51
Tarṣī' al-Akhbār wa-tanwī' al-āthār wa-al-bustān fī gharā'ib al-buldān wa-al-masālik ilā jami' al-mamālik, 169 n.51
Ufq ma'il (oblique horizon), 29
 Ujjain
 astronomical observatory, 103, 361
 divination charts centered on, 349, 349–51, 350
 on map of north-central India, 422
 in mental mapping, 382
 as prime meridian, 93, 175, 175 n.6, 356
 religious map of, 488–89
 on South Asian cosmographic globe, 356, 396
 Ulugh Beg, 8, 56–57, 57, 64, 198, 316, 361, 365, 379
Umm (part of astrolabe), 21
 Universes
 Indian conceptions of, 341–42
 Jain
 ordering of, 372, *pl.28*
 statistical summary of cosmographies depicting, 386–87
 as lotus, 257–58, 335, 352, 357
 Unnatārīṣa Yantra, 362–63
 Ūr, 382–83
 Ursa Major, 51, 52, 69–70, 359
 Ursa Minor, 51, 52, 62, 179, 192
 Ursiyūs al-Anṭāki (Paulus Orosius), 169 n.51
 Ūskūdar
 in *Kitāb-i bahriye*, 235 n.27
 on reference map of Istanbul architectural monuments, 239
 on view of Istanbul in *Mecmū'a-i menāzil*, 238
 waterway map, 226
 'Uḫrīd ibn Muḥammad al-Ḥāsib, 57
 Utkal, 396
 Uttarakuru, 336, 337, 353–54, 369
 Uttarakurukhaṇḍa, 356
 Vadhane, map of, 444, 445
 Vaikuṇṭha, 344, 345
 Vaitādhya, 341
 Vākṣāra Mountains, 369
Vallabha Puṣṭi-Prakāśa, 468
 Valois, 228
 Valturio, Roberto
De re militari, 210, 235 n.30
 Van (fortress), Ottoman plan of, 213, 214
 Van, Lake, 239, 240
 Vāra, 359
 Varadarajan, Lotika, 494
 Varāhamihira
Bṛhatsamhitā, 338
 Varanasi
 Bharat Kala Bhavan
 cosmographic globe in, 352, 354, 355–57, 389, 396–97, 397, *pl.40*
 scroll maps in, 436–38
 frontal painting of, 450, 452
 on map of north-central India, 422
 mental mapping in, 382, 382 n.169
Pāñcha koshi yātra, 462
 plans to repair temple in, 468, 469
 religious map of, 462, 488–89, 490–91
 sketch map of, 448–49
 on South Asian cosmographic globe, 396
 as square within circle, 453–55, 454
 surveyed maps of, 461
 Varṣas, 336, 359
 Varthema, Ludovic, 257
Itinerario, 256
 Vāruṅkhaṇḍa, 354–55
Vāstupuruṣamaṇḍalas, 380, 381 n.159
Vāstuvīdyā, 380
 Vavassore, Giovanni Andrea, 249
 Vedas, 307–8
 Vedic altars, 308 n.65, 310, 376, 379, 381, 512
 Vega (star), 52, 61

- Vegetation, on South Asian maps, 508
 Gentil's atlas of Mughal Empire, 429
 of north-central India, 422
 property maps, 470
 scroll maps, 433, 436, 437
 secular plans of cities and towns, 447
 topographic maps, 402, 411, 415, 423, 424, 425
- Velicān, 250, 276
- Venice
 bird's-eye view of, 238
 in *Kitāb-i bahriye*, 231, 275, 277, 278
 map of ordered by Mehmed II, 210
- Venus. *See also* Planets
 in Iskandar Sultan's horoscope, 64
 in Islamic celestial mapping, 358, 359
 in Islamic correspondences, 78
 in *Kitāb 'ajā'ib al-makhlūqat wa-ghara'ib al-mawjūdāt*, 40
 in Nāṣir Khusraw's cosmography, 86
 personification of, 63
 realm of, 84
 sphere of, 39, 75, 76
- Vermeyen, Jan Cornelisz., 245 n.60
- Vernet Ginés, Juan, 263–65
- Vertical altitude circles, 41
- Vertical quadrant, 41
- Vesconte, Pietro, 172
- Victoria and Albert Museum, London
 architectural drawings in, 468–69
 cosmographic globe in, 352, 353, 396
- Videha, 340, 372, 373
- Vienna
 Kunsthistorisches Museum, sundial in, 25
 Österreichische Nationalbibliothek, al-Iṣṭakhri's manuscripts in, 132–33
 Ottoman plan of second siege of, 213
- Vietnam, 409 n.37
- Vijayadurg, maps of, 464, 492–93
- Vijayārḍha, 369
- Vijayas, 369
- Vijñāptipatras (Jain scroll maps), 460–61, 461
- Vilagna, 361
- Vimānas, 373–74
- Vimans, 372
- Vindhya escarpment, 304
- Vindhya Mountains, 340, 382, 392
- Virgo. *See also* Astrology; Astronomy;
 Zodiac
 constellation
 on al-Birūnī's flattened astrolabe, 36
 on al-Birūnī's globular projection, 37
 on qibla map, 199, 203
 zodiac sign
 on astrolabe rete, 22, 30
 combined with planets, 64
 in Islamic correspondences, 77, 78
 in Nāṣir Khusraw's cosmography, 86
- Vishnu, 345, 346
- Vishvarupa, *pl.25*
- Vitruvius, 25, 175 n.5
- Vliegende Vis (flying fish), 63
- Volos, Gulf of, 276
- Vrata Alpāna, 381
- Vṛttaṣaṣṭāmsā, 365
- Wade, Captain, 411
- Wakankar, V. S., 304
- Waldseemüller, Martin, 260
- al-Walid I, 12, 16
- al-Walid II, 12 n.1
- Walters *Deniz atlası*, 235, 282–83, *pl.23*
- Wāmia (Wāsa), 179, 179 n.28
- Wams (fathoms), 498
- Waḳwaḳ Islands (al-Waḳwaḳ), 162, 391
- Wāsa (Wāmia), 179, 179 n.28
- Water. *See also* Elements
 in Ibn al-'Arabi's cosmography, 86
 on al-Idrisi's maps, 163, 166–67
 in Nāṣir Khusraw's cosmography, 86
 sphere of, 75
- Waterways, Ottoman maps of, 215–16, 217, 218, 219, 226–27
- Waywisers, 175 n.5
- Weather, and map deterioration, 327, 506
- Welch, Stuart Cary, 449, 469
- West Indies, 272
- Wieber, Reinhard, 259 n.20
- Wilford, Francis, 296, 298, 299–300, 300, 300 n.28, 317 n.108, 326, 429, 430
- William I (the Bad), 156, 157
- William the Englishman, 29
- Wilson, H. H., 302, 501–2, 506
- Wind roses
 in *isolarii*, 277
 on al-Kātibī chart, 264
 in *Kitāb-i bahriye*, 277
 on Piri Re'is's world map, 270
 on al-Sharafi al-Ṣifāqsi atlas, 194–95
 on al-Sharafi al-Ṣifāqsi qibla diagram, *pl.13*
 on al-Sharafi al-Ṣifāqsi world maps, 287
- Wish-granting tree (*kalpavṛkṣa*), 369
- Wolgemut, Michael, 233, 239
- Women, and symbolic rituals, 381
- World maps
 Islamic
 from 'Alī Mācār Re'is's portolan atlas, 282
 from Balkhi school, 114, 120–22, 127, 140
 by al-Birūnī, 142
 by al-Dimashqī, 152, 154
 by Ḥāfiẓ-i Abrū, 151, 170, 390
 by al-Ḥarrānī, 144
 by Ibn Faḍl Allāh al-'Umari, 153
 by Ibn Ḥawqal, 123, 137–39, 144–45
 by Ibn Khaldūn, 170, 171
 by Ibn al-Wardi, 220, *pl.8*
 by al-Idrisi, 144, 161, 162, 515, *pl.11*
 al-Idrisi's instructions for, 158–59
 by al-Iṣṭakhri, 121, *pl.7*
 by al-Kāshghari, 153, 155
 by al-Khwārazmī, 163
 from *Kitāb al-bad' wa-al-ta'rikh*, *pl.10*
 from Loḳmān's *Zūbdetü'ṭ-tevāriḥ*, 220, 221
 by al-Muhallabī, 141, 141 n.21
 Ottoman, 220, 221–22
 by Piri Re'is, 268, 269–72, *pl.21*
 by al-Qazwīnī, 144, 389, *pl.9*
 referenced in *Hudūd al-'ālam*, 139–40
 by Ṣadiq Iṣfahānī, 146, 390–92
 semicircular, 149
 in al-Sharafi al-Ṣifāqsi atlas, 285, 286
 by al-Sharafi al-Ṣifāqsi family, 170–71, 262, *pl.24*
 from thirteenth century onward, 143–46
 in Walters *Deniz atlası*, 282–83
 by al-Zayyānī, 171–72, 172
 South Asian, 389–400, *pl.29*
 Arab influence on, 389–90, 392–93
- Wubei zhi, 259–60, 503
- Wular Lake, 414
- Wunderlich, Herbert, 185
- Wüstenfeld, Ferdinand, 8
- Xinjiang, writings found in, 328
- Xin Tang shu*, 321
- Xuan Zang, 328, 389 n.3
- Yaḥyā al-Ma'mūn, 28, 29
- Yājūj and Mājūj, 94. *See also* Gog and Magog
- Yajur Veda, 333
- Yamakoṭi, 103, 103 n.66, 352, 356
- Yamuna River (Jumna), on South Asian maps, 311 n.71
 Braj as lotus, 419
 cosmographic globes, 354, 356, 358, 396
 fifth-century bas-relief, 312
 geographic globe in Mughal painting, 409
 Indo-Islamic cosmography, 377
 Jain conception of Jambūdvīpa, 369, 372
 Mughal maps, 405, 438
Padma Purāṇa, 313
 painting of Vishvarupa, *pl.25*
 in *Shahid-i Ṣadiq*, 403, 405
- Yantra Rāja, 362
- Yantras, 315
- al-Ya'qūbī (Aḥmad ibn Abi Ya'qūb al-Ya'qūbī), 93, 169 n.51
- Yāqūt (Shihāb al-Dīn Abū 'Abdallāh Yāqūt ibn 'Abdallāh al-Ḥamawī al-Rūmī al-Baghdādi), 110, 111, 143
 and climatic (zone) maps, 138, 147
Kitāb al-malḥamah (Book of the battle), coordinates in compared with those of Ptolemy, 98–100
Kitāb mu'jam al-buldān (Dictionary of countries), 77, 98, 146, 147, 193, 195
 and length of degree, 178
 and prime meridians, 103
- Yāqūt (Sapphire) Island, 105, 105–6, 140, 144
- Yavanapura, 103
- Yavanavastī, 400
- Yemen
 on al-Iṣṭakhri map, 118
 and Ka'ba, 190, 191
 in *kishvar* system, 94

- qibla of, 193
 on South Asian world maps, 391
 Yoga, 381
Yojanas, 335, 342, 353, 370, 373
 Yucatán Peninsula, 272, *pl.*21
Yugalikau, 379
Yupa, 376
 Yurdaydın, Hüseyin G., 235 n.32
- “Zādvārya” in Makarska, plan of fortress of,
 213 n.20
 Zafar fort, *pl.*32
Zāʿrajah, 82 n.24
Zams (watches), 8, 496, 497, 500
 al-Zanj, 162
 Zaqqūm, *pl.*3
 al-Zarqāllō, 28–29, 30, 31, 141 n.22
Zāviyes, 232, 233
- al-Zayyānī (Abū al-Qāsim ibn Aḥmad ibn
 ʿAlī al-Zayyānī)
al-Tarjumānat al-kubrā fi akhbār
al-māʾmūr barran wa-baḥran (The
 great translator of news from the
 [inhabited] world, by land and sea),
 171
 world map, 171–72, 172
 Zemun fortress, 211
 Zenith rings, 44
 Zheng He, 259–60
Zijāts. See Tables, astronomical
Zij-i Shahriyār (Zij al-Shāh), 93 n.16
Zijs. See Tables, astronomical
Zillas (districts), 432
 Zodiac. See also Astrology; Constellations
 anthropomorphic representation of signs,
 63–65
 on astrolabes, 18, 54
 Bedouin system for, 53
 on Byzantine planispheric map, 13
 calendar, 33
 on celestial globes, 43
 clockfaces as models for, 40, 40–41
 and correspondences in Islamic
 cosmology, 76, 77, 78
 and Gnostic correlations, 81–82 n.24
 on Islamic celestial globes, 47
 in Nāṣir Khusraw’s cosmography, 86
 orientation of in planispheric maps in
Aratea, 16
 Rajasthani portrayals of, 359
 sphere of, 39, 75
 Zone maps, 146–48
 Zorawar Singh, 437
 Zoroastrians, 332
 Zrínyi, Miklós, 247
 al-Zuhri, 105, 143, 168
Jaʿāfiyah, 95, 140, 157