

and the Sanjak of al-Karak. The southern sections, Ma'an and Aqaba, were part of the *vilayet* of Hijaz. However, Ottoman rule was nominal most of the time. Transjordan was regarded as the backyard of Syria and Palestine and concerned the Ottomans only during the annual pilgrimage, as the main Hajj caravan from Damascus had to cross it en route to *Medina. Only in the second half of the 19th century, after the short-lived Egyptian occupation (1831–40) and during the reform period (Tanzimat), under *Abdul-Ḥamid II, was resettlement begun. The Ottomans had extended their direct rule over Transjordan. Karak, the capital of its namesake sanjak, was the major city in the area and the jurisdiction of its governor stretched over most of sedentary Transjordan. Local population increased when Circassian refugees from Russian-occupied Caucasus were encouraged by the Ottomans (in 1861–64, and later after the Turkish-Russian war of 1877–78) to migrate to Palestine and Transjordan. In the latter they settled in and around Amman, Zarqa, and Jarash. The 19th century also witnessed growing European interest in Transjordan, mainly for archeological and historical reasons – in 1812 Burckhardt discovered Petra and in 1806 Seetzen discovered Jarash. In the second half of the 19th century the interest of the Palestine Exploration Fund as well as of Christian churches and missions in Transjordan yielded, inter alia, the discovery of the *Mesha stele and the *Madaba mosaic map. In 1900–08 the Ottomans built the Hijazi railroad from Damascus to Medina. About one third of the 1,200 km. line passed through Transjordan, bringing it closer to the administrative centers of Damascus and *Istanbul, yet also triggering several rebellions in Karak.

For modern period after 1914, see also *Israel; *Jordan.

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[Michael Avi-Yonah / Joseph Nevo (2nd ed.)]

TRANSLATION AND TRANSLATORS (Medieval). The earliest Jewish translations, apart from possible examples in the Bible, are the Greek version of the Pentateuch and, later, other books of the Bible, which were made to fill a need in the Greek-speaking Jewish community of Alexandria and other places that no longer understood the original Hebrew. Similarly, the Aramaic vernacular of Jewish settlements in Palestine and other parts of southwestern Asia explain the development of Aramaic versions of the Bible.

In the 10th century *Ḥisdai ibn Shaprut was one of the main translators of Dioscorides' work from Greek to Arabic in the court of Cordoba. During the 12th and 13th century Toledo was a very notable center of translations and the Jews

played an important role in this enterprise. In the middle of the 12th century the archbishop of Toledo, Don Raimundo de la Sauvetat (1124–52), promoted the translation of Arabic philosophical works from Arabic through the Romance versions into Latin. The Jew Avendauth worked together with the Christian Gundisalvus, translating, for instance, the *De Anima* of Avicenna and Ibn Gabirol's *Fons Vitae*. One century later, King Alfonso the Sage relied on Jewish translators to get Romance versions of many scientific works. Among them, Judah ben Moses ha-Kohen, Isaac ibn Sa'id, the Alfaquim Don Abraham (Ibn Shoshan?), Samuel ha-Levi Abulfiah, and Don Moses Alfaqui, translated important astronomic and astrologic treatises.

The many translations into Hebrew which began to appear in Western Europe early in the 12th century can be attributed to several factors, among which the spread of Judeo-Islamic culture was of central importance. Cultured and scholarly men from Islamic Spain began to travel to Christian lands. Abraham Ibn Ezra, for example, traveled to Italy, France, and England, and supported himself by writing Hebrew grammars, translations, and biblical commentaries commissioned by Jewish communities. These works undoubtedly stimulated interest in the new approaches to language and learning and reflected the cultural richness of Spain. In consequence of religious persecutions and other disturbances in the Iberian Peninsula during the 12th century, some Jewish families emigrated to southern France or northern Italy, and spread something of the learning and achievements of their native land in their new homes. Works written in Hebrew, moreover, stimulated a desire for additional works in that language. In addition, the general cultural awakening in Western Europe during the 12th century affected the Jews, encouraging them to the further acquisition of knowledge. Without question, at the end of the 12th century, Maimonides' Hebrew code of Jewish law *Mishneh Torah* excited scholars in France and Italy, so that they avidly sought everything the master produced, translating it from Arabic into Hebrew.

No discernible pattern governed the books that were translated into Hebrew. Apparently, books were often translated on the request of a patron, or a scholar would select a book to translate for his own reasons. However, besides the large number of such unclassifiable translations, activity was concentrated in the fields of philosophy, mathematics, medicine, and other sciences. Generally, translators explained their undertakings as being in response to a special request. Judah ibn *Tibbon relates in the introduction to his Hebrew version of Baḥya ibn Paquda's *Ḥovot ha-Levavot* (*Duties of the Heart*) that Meshullam b. Jacob, whom he praises as an adept in both religious and secular studies, urged him to prepare a translation of the Arabic work. Similarly, Judah *Al-Ḥarizi states that he translated Maimonides' *Moreh Nevukhim* (*Guide of the Perplexed*) at the invitation of some Provençal scholars. There are many other examples of requests urging the translation of a work, yet there is no information about remuneration, although the translators presumably received some payment

from those who requested the work. Perhaps a community assumed some obligation for payment, especially if the persons interested in the translation were influential members in it. While it is reasonable to assume this of professional translators, like the Tibbonids or al-Ḥarizi, it is probable that other translators were impelled by a personal interest in the work and a desire to bring it to the attention of their fellow Jews.

There was considerable complaint about the neglect of Hebrew and the employment of Arabic. Writers occasionally pointed out the difference between Jews who lived under Islamic domination and Jews who resided in Christian lands. It was not the use of the vernacular Arabic which vexed them, because it was taken for granted that for social intercourse the language of the land was the proper vehicle. But in view of the fact that Jews in Christian countries utilized Hebrew in their literary productions, Jewish writers in Islamic countries justified their use of Arabic by claiming that the subjects they dealt with – subjects not cultivated by Italian and French Jews – required a vocabulary which Hebrew did not possess and which Arabic possessed in abundance. Moses ha-Kohen *Gikatilla, who supplied a Hebrew translation of the grammatical studies of Ḥayyūj, explains that grammarians were compelled to write in Arabic “because it is the current speech of a victorious people, and it is explicit while Hebrew is vague; clear and plain whereas Hebrew is ambiguous; and it is proper to elucidate the unknown by the known and the vague by the explicit.” Judah ibn Tibbon presents a brief historical survey of the course of development: “Afterward most of the *geonim* lived in the Diaspora of the Muslim Empire, Iraq, Ereẓ Israel and Iran, and spoke Arabic, and all the Jewish communities in those areas spoke that tongue. Most of their interpretations of biblical and mishnaic and talmudic books were in Arabic, as also most of their compilations and responsa in answer to inquiries made of them. All the people understood it. Moreover it is a rich language, fully adequate for every theme and every need of orator or author; straight and clear rhetoric, to express the essence of every subject more than is possible in Hebrew.” Notwithstanding the conceded advantages of Arabic over Hebrew, Jews adhered to the tradition that Hebrew was the divine tongue, the first to serve mankind. But the exile and the tribulations which Jews suffered had caused the loss of a significant portion of Hebrew vocabulary, since the Bible was the only record preserved.

In view of the difference in the richness of the two languages, the role of translator imposed certain duties, the main being the coinage of words and phrases in Hebrew according to need. For translating philosophical, scientific, or medical works new technical words had to be created in Hebrew. It was also necessary to decide what method to pursue in this process. Ordinarily translation is in large measure interpretation, and the function of the translator is to transmit in the new medium the sense of the original. Before Samuel ibn Tibbon translated the *Guide of the Perplexed* into Hebrew, he asked Maimonides for suggestions. The latter offered the following instructions: a translator must first understand the content,

and narrate and explain that content in the language in which he is working. He will not escape changing the order of words, or transmitting phrases in single words, or eliminating vocables, or adding them, so that the work is well ordered and expounded, and the language of the translator will follow the principles governing that language. Despite this very sensible advice, Samuel ibn Tibbon's translation of the *Guide*, and his father's version of other works, give the impression of excessive faithfulness to the original. Yet this did not prove contrary to Maimonides' demands, inasmuch as he expressed his gratitude for the accomplishment of his translator. In fact, the style developed by father and son, with strong Arabic influence in its morphology, syntax, and vocabulary, became the standard for subsequent efforts in this field (Goshen-Gottstein). Other ways of translating, searching for a pure, more literary biblical language and avoiding the numerous neologisms, was undertaken also by other Jewish scholars like Judah Al-Ḥarizi, who translated Maimonides' *Guide* in a completely different way not long after the Tibbonid translation. But the method of the ibn Tibbon family was taken as a model for the future, while Al-Ḥarizi's translation was quickly forgotten.

When the full mastery of Arabic was lacking, books were translated from Arabic to Latin by way of the Hebrew version, and occasionally Hebrew translations were made from the Latin rather than from the original Arabic. Although thorough knowledge of both tongues was theoretically necessary – to appreciate the nuances and fathom the true meaning of the original, and to render it authentically and idiomatically – in practice this was unfortunately rarely the case. Translators, even if they were qualified to produce the ideal version, were so concerned about remaining faithful to the original Arabic that they frequently violated Hebrew syntax or sentence structure, and disregarded simple rules of gender and number. Nevertheless, translators contributed greatly to the enrichment of Hebrew, adding a large scientific and philosophic vocabulary. The means utilized to expand the vocabulary were forming new words from existing roots, creating additional noun patterns, making derivations from verbal stems, or forming verbs from nouns. Occasionally a new meaning was attached to an existing term, parallel to the course followed in the coinage of the Arabic terminology. In addition, a number of words were borrowed from Arabic, and they were generally adjusted to the morphological requirements of Hebrew. It should also be kept in mind that the philosophic and scientific style introduced by the translators became the standard, so that men who composed in Hebrew followed the patterns adopted from Arabic.

Translators were not always familiar with the subject of the work they were rendering. Occasionally criticism would be voiced about translators who offered to work without adequate knowledge of the field involved. However, on the whole, translators were usually conscious of their obligations, and succeeded in transmitting authentic versions of the originals. Even in more popular literature, where greater freedom could be taken since in popular works eloquence was frequently a

major quality, the Hebrew version, although it may read like an original, will still be a correct rendering. Abraham ibn Ḥasdai's **Ben ha-Melekh ve-ha-Nazir*, a beautiful Jewish book in Hebrew, is unmistakably a rendering of *Barlaam and Josaphat*. Other popular works translated into Hebrew were **Kalila and Dimna* and *Sinbad the Sailor*. In this genre, and, for that matter, in some of the more serious compositions, like Ibn Gabirol's *Improvement of the Qualities of the Soul*, translators often substituted Jewish personalities and references for foreign ones, and even replaced Arabic verses with Jewish equivalents.

Translators generally approached their task with deep humility. Statements of inadequacy and confessions of ignorance, which should have kept them from the undertaking, are often found in translators' introductions to their works. Although some of these expressions were undoubtedly *pro forma*, many others represent expressions of genuine trepidation with which translators assumed the charge. Samuel b. Judah of Marseilles, who translated Aristotle's *Ethics*, admits openly and sincerely his insufficient acquaintance with the subject and expresses the hope of studying it in depth to improve his rendering. Judah b. Nathan, who prepared a Hebrew version of Ghazali's *The Intentions of the Philosopher*, frankly describes his inadequate command of the language and the subject. Yet the results are by and large highly commendable.

Our main source of information about Hebrew translations is still the monumental work of M. Steinschneider, *Die hebraeischen Uebersetzungen des Mittelalters und die Juden als Dolmetscher* (1893, repr. 1956). The following is a survey of medieval Hebrew translations of Arabic and Latin works. It begins with philosophy, and in this field *Aristotle was far and away the outstanding representative of Greek thought among Muslim and Jewish thinkers. The latter, who were mostly unfamiliar with Greek, knew him only through the Arabic. Two Muslim philosophers are extremely important for their influence on their Jewish counterparts: Abu al-Naṣr Muhammad al-Fārābī (c. 870–950), known as “the second teacher” (Aristotle was the first), and Abu al-Walid Muhammad ibn Rushd (*Averroes; 1126–1198). The Jewish philosophers knew the views of the Greek master through the commentaries of these two.

The Muslim thinkers, and Maimonides among the Jews, knew of a compendium of the entire Organon; but in Hebrew translation, only some parts are to be found: (1) Porphyry's *Isagoge* was called *Kizzur mi-Kol Melekheth ha-Higgayon* by its translator Moses b. Samuel ibn Tibbon. A fragment of another version of their Introduction to logic is also extant; (2) *Categoriae Sifrei Ma'amarot*, in two renderings; (3) *Hermeneutica*, in two Hebrew translations, both known to Abraham Avigdor in his commentary on Averroes; (4) *Syllogisms*, also in two translations, and an abridgment by Jacob Anatoli; (5) *Analytica Posteriora – Ma'amar bi-Tena'ei ha-Hekkeh ha-Mofet*, anonymous; (6) *Topica – Ommanut ha-Nisṣu'ah*, in two translations, both anonymous. All of these works in logic are in al-Fārābī's version.

Averroes studied Aristotle's works in three ways: (1) Summaries of the latter's teachings which he himself called *Al-Jawāmi 'al-Sighār* (the brief compendia; in Heb. *Kizzur*). (2) The *Middle Commentaries*, which Averroes named *Talkhiṣ – Be'ur* or *Perush*; the Hebrew renderings do not indicate in each work whether it is from this body, or from the next one. (3) The *Great Commentaries*. In these Aristotle's text is offered in sections, followed in every case by a detailed commentary. In the ensuing list 1 = *The Compendium*, 2 = *The Middle Commentary*, 3 = *The Great Commentary*. 1. Logic. (1a) *Kol Melekheth ha-Higgayon le-Aristoteles mi-Kizzurei ibn Rushd* by Jacob b. Inaktur, Nov. 10, 1189. (1b) *Kizzur Higgayon* by Samuel b. Judah of Marseilles, December 1329. He explains in his introduction that he undertook it only because the previous one was a poor performance. (2a) by Jacob b. Abba Mari Anatoli, March 1232. (2b) *Nissu'ah ve-Hata'ah* by Kalonymus b. Kalonymus, Arles, 1313. (2c) *Halazah ve-Shir* by Todros Todrosi, Arles, 1337. (3) *Ha-Mofet* by Kalonymus b. Kalonymus, December 1314.

11. A. Physics. (1) *Ha-Shema ha-Tivi* by Moses ibn Tibbon. (2a) *Ha-Shema* by Zerahiah Ḥen of Barcelona, in Rome, 1284. It is in eight sections (*ma'amarim*), divided into principles (*kelalim*), and these into chapters (*perakim*). (2b) *Ha-Shema* by Kalonymus b. Kalonymus, Arles, 1316. (3) *Ha-Shema* by Kalonymus b. Kalonymus. It seems that another version was prepared by Moses b. Solomon.

B. *Sefer ha-Shamayim* (1) Themistius' paraphrase, by Zerahiah Ḥen, Rome, 1284. Averroes' *Kelalei ha-Shamayim veba-Olam* was done by Moses ibn Tibbon. (2) by Solomon b. Joseph ibn Ayyūb of Granada, in Béziers, 1259.

C. (1) *Ha-Havayah ve-ha-Hefsed*, by Moses ibn Tibbon, 1250. (2) by Zerahiah Ḥen, Rome, 1284. Also by Kalonymus b. Kalonymus, October 1316.

D. *Al-Āthār al-'Alawiyya* on meteorology. (1) *Otot ha-Shamayim* by Samuel ibn Tibbon, 1210. A work by Averroes: *Otot Elyonot* was translated into Hebrew by Moses ibn Tibbon. (2) *Be'ur Sefer ha-Otot ha-Elyonot* by Kalonymus b. Kalonymus, Arles, 1316.

E. *Ha-Zemahim* 1–2 by Shem Tov ibn Falaquera, and Kalonymus b. Kalonymus, who did Averroes' commentary, April 1314.

F. *Sefer Ba'alei-Ḥayyim*, consisting of *de Natura Animalium*, *de Partibus* and *de Generatione*. The last two were translated by Jacob b. Machir ibn Tibbon, December 1302.

G. *On the Soul*, translated by Zerahiah Ḥen in Rome, 1284. Averroes' treatment (1) *Kelalei Sefer ha-Nefesh*, by Moses ibn Tibbon, 1244. (2a) by Shem Tov b. Isaac of Tortosa. (2b) *Be'ur Sefer ha-Nefesh* by Moses ibn Tibbon, April 1261. (3) Of the *Great Commentary* no Hebrew translation is known, but it was used by Shem Tov Falaquera and was commented on by Joseph b. Shem Tov. It is also pertinent to mention the treatise of Alexander of Aphrodisias, which in Hebrew is *Ma'amar Nefesh*, translated by Samuel b. Judah of Marseilles in Murcia, November 1323.

H. Of the *Parva Naturalia*, consisting of *de Sensu et Sensato*, *de Memoria*, *de Somno*, and *de Berevitate Vitae*, only the

first was translated as *Ha-Hush ve-ha Muhash* by Moses ibn Tibbon, July 1314, in Montpellier.

Metaphysics. Al-Fārābī's introduction *Kitāb fī Aghrād Aristo fī Kitāb mā ba'd al-Tabī'a* was rendered anonymously in Hebrew under the title: *Be-Khavvanot Aristo be-Sifro Mah she-Akhar ha-Teva*. Books alpha-lambda were done from the Latin by Baruch b. Yā'ish for Samuel Sarfati about 1485. Of Averroes' treatment, one was presented in Hebrew by Moses ibn Tibbon in May 1258, a second by Zerachiah Ḥen, 1284, in Rome and also by Kalonymus b. Kalonymus in May 1317. The third is by Moses b. Solomon of Salon in Beaucaire, 1310–20, of which only Hebrew fragments survive. Themistius' paraphrase of Book Lambda (12) was translated by Moses ibn Tibbon. *De Anima* plus Averroes' commentary was explained, and possibly translated by Moses Narboni under the title *Efsharut ha-Devekut ba-Sekhel ha-Po'el*. Three treatises on the same theme were translated into Hebrew by Samuel ibn Tibbon. Aristotle's *Nicomachean Ethics* were rendered in Hebrew from the Latin by Don Meir b. Solomon Alguadez, Averroes' middle commentary in Hebrew by Samuel b. Judah of Marseilles, February 1321.

His *Politics* were never translated into Arabic, although its existence was known as the practical application of the principle in the *Ethics* to the conduct of the state, but it is Plato's *Republic* which was available in Arabic under the title *Kitāb al-Siyāsa* and was translated into Hebrew by Samuel b. Judah of Marseilles in 1320–22.

Of Aristotle's *Economica*, a Hebrew version from the Arabic was prepared by David b. Solomon of Seville (1373?), and probably from the Latin by Leon Aretino. The latter carries an *Introduction* by an otherwise unknown Abraham ibn Tibbon. Several pseudo-Aristotelian works circulated in Hebrew, generally via Arabic. Of these, *Problemata* by Moses ibn Tibbon (1264); on stones – *Sefer ha-Avanim* or *De Lapidario*; *Theology* by Moses b. Joseph Arovav, from the Arabic, and also in Italian by him; *Secretum secretorum*, in Arabic *Sirr al-Asrār*, and in Hebrew, anonymously, *Sod ha-Sodot*, in the 13th century; *de Causis*, on the absolute good, by Zerachiah Ḥen called *Ha-Be'ur be-Tov ha-Gamur*, and also by Hillel b. Samuel of Verona, both from the Arabic, which is not known (*Proodus' de Causis* was rendered in Hebrew by Judah Romano, and called *Sefer ha-Sibbot*); *Kitāb-al-Tufāha* ("On the Apple"; on immorality, and seen as an imitation of Plato's *Phaedo*) in Hebrew by Abraham ibn Ḥisdai; these are also letters which he sent to Alexander the Great, and works on auguring.

Muslim thinkers who wrote in Arabic, and whose works were translated into Hebrew, include al-Fārābī: *Fi al-Tanbih' alā Sabīl al-Sā'ada* is rendered in Hebrew, *Ha-He'arah al-Derekh ha-Hazlahah*, by an anonymous translator; *Kitāb al-Mabādī'* or *al-Siyāsa* was translated by Moses ibn Tibbon, and named *Sefer ha-Hathalah*; *Iḥṣā' al-Ulūm* (an enumeration of the sciences), in Hebrew, by Kalonymus b. Kalonymus, *Be-Mispar ha-Hokhmot*; *Uyūn al-Masā'il* (answers to philosophical problems), in Hebrew *Ayin Mishpat ha-Derushim* by Todros Todrosi; Kalonymus b. Kalonymus did *Iggeret be-Siddur*

Kri'at ha-Hokhmot from the Arabic *fī mā Yanbaghī'an Yaqḍum qabla Ta'allum al-Falsafa*; *Ba-Sekhel u-va-Muskal* from *fī al-'Aql wa al-M'āqūl*; the last was also translated anonymously as *Ha Sekhel ve-ha-muskalot*. *Risāla fī Hayāt al-Nafs* was done in Hebrew by Zerachiah Ḥen, in 1284, Ibn Sinā (Avicenna, d. 1037), accepted by orthodox Islam, wrote *al-Samā' wa al-'Ālam*, translated into Hebrew as *Ha-Shamayim ve-ha-Olam*, by Solomon b. Moses of Melgueil (second half of 13th century), probably from Latin; *Sefer ha-Shenah ve-ha-Yekzah* by the same, again from Latin; *al-Najāt*, translated as *Hazzalat ha-Nefesh* by Todros Todrosi (1330–40); Ḥai ibn Yaqzān, in Hebrew *Iggeret Ḥai ben Mekiz* by Abraham ibn Ezra.

Al-'Ghazālī (d. 1111), the famous critic of philosophy, wrote *Maqāṣid al-Falāsifa* ("The Objectives of the Philosopher"); it was cribbed by Sa'ādiah b. Daud al-'Adeni under the title *Zakāt al-Nafs* which was adopted by Isaac al-Balagh (only the first two parts) and called *De'ot ha-Pilosofim*. A translation, *Kavvanot ha-Pilosofim*, was prepared (1352–58) by Judah b. Nathan, a Provençal physician. A third anonymous version also exists. His *Tahāfut al-Falāsifa* ("The Collapse of the Philosophers") was translated into Hebrew, by Zerachiah b. Isaac ha-Levi, called Saladin, and possibly the Rabbi Ferrer of the Tortosa disputation (1412–14). *Mi'yar al-'Ilm* is *Moznei ha-Iyyunim* by Jacob b. Machir ibn Tibbon; *Mizān al-'Amal*, an ethical work, done by Abraham b. Samuel ibn Ḥasdai and called *Moznei Zedek*. *Mishkatt al-Anwar* ("The Niche of the Lights") is *Maskit ha-Orot* by Isaac b. Joseph al-Fāsi, of the 13th century. Another, but anonymous, rendering is called *Ha-Orot ha-Elohiyyot*.

Abdallah ibn Muhammad of Badajoz (d. 1127) wrote *al-Dā'ira al-Wahmiyya* ("The Imaginary Circle") a work which was quite influential among Jewish thinkers. Moses ibn Tibbon rendered it into Hebrew, calling it *Ha-Agullot ha-Ra'yoniyyot*. It was also done by Samuel Motot, as part of his commentary on *Sefer Yezi'rah*. Ibn Baja (d. 1138 in Fez) wrote *Kitāb al-Wadā'* ("The Farewell" [to the world]) which was converted into Hebrew by Ḥayyim ibn Vivas, and *fī Tadbīr al-Mutawahḥhid* (on the conduct of the recluse) which is *Be-Hanhagat ha-Mitboded*, by Moses of Narbonne who wrote a commentary on it. Ibn Ṭufayl (d. 1185 in Murcia) composed a celebrated *Risālat Ḥayy ben Yaqzān*, in Hebrew *Iggeret Ḥayawan ben Yakson*, it was also incorporated by Moses of Narbonne in his commentary. Ibn Rushd (Averroes, d. 1198) wrote an exposition of the harmony of religion and philosophy called *Faṣl al-Maqāl* etc., which was translated into Hebrew, anonymously, under the name *Ha-Hevdel ha-Ne'emar she-Bein ha-Torah ve-ha-Hokhmah min ha-Devekut*. He refuted Ghazālī's critique of philosophy in his *Tahāfut al-Tahāfut* ("The Collapse of the Collapse"); its Hebrew version, *Happalat ha-Happalah*, was prepared by Kalonymus b. David b. Todros. A second rendering, anonymous, is also extant.

Since a number of Jewish thinkers wrote their works in Arabic, they also required conversion into Hebrew. The earliest is Isaac Israeli. Among his philosophic writings are *Kitāb al-Ḥudūd wa al-Rusūm* ("Book of Definitions"), in Hebrew, *Sefer*

ha-Gevulim ve-ha-Reshamim by Nissim b. Solomon; *Kitāb al-Ustuqṣāt* as *Sefer ha-Yesodot* by Abraham ibn Ḥisdai; *Maqāla fi-Yishersku ha-Mayim*, in an anonymous Hebrew version; *Sefer ha-Ru'ah ve-ha-Nefesh*, only a small fragment of the Arabic original is extant. Saadiah b. Joseph al-Fayyumi (d. 942) composed *Kitāb al-Amānāt wa al-Itiqādāt*, called in Hebrew *Sefer ha-Emunot ve-ha De'ot* by Judah ibn Tibbon. An anonymous version titled *Pitron Sefer ha-Emunot* is also extant. His commentary on *Sefer Yeẓirah* is likewise found in Hebrew, but the translator is not known with certainty.

Bahya ibn Paquda composed the ethical-philosophical, *Farā'id al-Qulūb*; in Hebrew it is *Ḥovot ha-Levavot* translated by Judah ibn Tibbon, who also appended an interesting introduction to his translation.

Solomon ibn Gabirol wrote a philosophic rather than a theological study, whose Arabic original has not been discovered. No medieval Hebrew translation exists (one is extant in Latin), but an epitome, *Likkutim*, prepared by Shem Tov ibn Falaquera, is extant. A modern Hebrew version is now available. Other works Ibn Gabirol rendered into Hebrew included *Iṣlāḥ al-Akhlāq* ("The Improvement of the Character") translated by Judah ibn Tibbon as *Tikkun Middot ha-Nefesh*, and a collection of aphorisms, probably by the same translator, under the title *Mivḥar ha-Peninnim*. Another version, in the rhyme, *Shekel ha-Kodesh*, was the work of Joseph Kimḥi. Joseph ibn Zaddik, a judge in Cordoba (d. 1149), wrote *al-ʿĀlam al-Ṣaḡḥīr* ("Microcosm"), which is *Ha-Olam ha-Katan* in Hebrew, but the translator is unknown.

Judah Halevi (d. 1141) is the author of *Kitāb al-Hujja wa al-Dalil* ("The Argument and Proof"), known as *Ha-Kuzari* in Judah ibn Tibbon's Hebrew rendering. A fragment is also extant of a translation by Judah b. Kardena. Abraham ibn Daud, the earliest Aristotelian among Jewish thinkers, wrote *al-ʿAqida al-Raff'a*, on free will and other matters. It was translated as *Ha-Emunah ha-Nissa'ah* by Samuel ibn Motot in 1312, and as *Ha-Emunah ha-Ramah* by Solomon b. Levi. Moses Ibn Ezra wrote a work of literary criticism, *Kitāb al-Muḥaḍara wa al-Mudhākara* (which is called *Shirat Yisrael* in a modern Hebrew version by B. Halper, or *Sefer ha-Iyyunim ve-ha-Diyyunim* by A.S. Halkin), and *Fi Ma'na al-Majāz wa al-Haqīqa* ("On Literalisms and Figurative Expressions"), part of which was rendered into Hebrew as *Arugat ha-Bosem*.

Many of the works of Maimonides were rendered in Hebrew translation. Of his commentary on the Mishnah, Judah al-Ḥarizi translated the general introduction and most of *Zera'im*; Joseph ibn al-Fawwāl and a certain Simḥah did *Mo'ed* and *Nashim* in Huesca; the remaining three were done in Saragossa by Solomon ibn Ya'qūb (*Nezikin*) and Nethanel ibn Almali (*Kodashim* and *Tohorot*). There are also fragments of other translations. *Avot* was done by Samuel ibn Tibbon. Maimonides' *Sefer ha-Mitzvot*, listing the 613 biblical precepts, was rendered into Hebrew by Abraham ibn Ḥisdai, of which only fragments exist, and by Moses ibn Tibbon. A third version exists by Solomon ibn Ayyūb. His epistle on forced conversion was titled *Iggeret ha-Shemad* in Hebrew;

the translator is unknown; his *Iggeret Teiman* exists in three Hebrew versions: (a) by Samuel ibn Tibbon; (b) by Abraham ibn Ḥisdai; (c) by Nahum ha-Ma'aravi; his treatise on resurrection, *Ma'amar Teḥiyyat ha-Metim*, by Samuel ibn Tibbon. His major philosophic composition, *Dalālat al-Hā'irīn*, was translated by Samuel ibn Tibbon and also by Judah al-Ḥarizi. His treatise on logic, *Maqāla fi Sinā'at al-Mantiq*, is available in Hebrew, probably from Moses ibn Tibbon's hand, as *Milot ha-Higgayon*.

Joseph b. Judah ibn Aknin wrote a philosophic commentary on the Songs of Songs, which he called *Inkishāf al-Asrār wa Tuhūr al-Anwār*. It was recently translated into Hebrew. Of Karaite thinkers, Joseph al-Basir's two works were provided with a Hebrew translation: *Al-Muḥtawī* was translated under the title *Sefer ha-Ne'imot*, and *Kitāb al-Tamyiz*, received by the Hebrew name *Maḥkimot Peti*.

Books by Christians which are available in Hebrew translation include *Quaestiones naturale* by Adelard of Bath (c. 1120), which is *Dodi ve-Nekhdi*, by Berechiah ha-Nakdan; *Philosophia* of Albertus Magnus (1193–1286) is in a Hebrew version titled *Kizzur ha-Pilosofyah ha-Tivit* by Abraham Shalom, and Aegidius de Columnas' (d. 1306) *De Regimine Principum*, in Hebrew *Hanhagat ha-Melakhim*. The *De Consolationes Philosophiae* of Boethius (d. 524) was translated into Hebrew by Samuel b. Benveniste and called *Menahem Meshiv Nafshi*, and again by Azariah b. Abba Mari under the name *Neḥamat ha-Pilosofyah*. Other scholastics whose works were translated are Occam (d. 1343/7) whose *Summa totius*, in Hebrew *Perakim ba-Kolel*, was translated by Eli Habbillo, who called himself Don Manuel. Petrus Hispanus (d. 1276) wrote *Parva Logicalia*, a work quite popular among Jews, as can be judged from the several renderings: (a) *Higgayon Kazar* by Abraham Avigdor; (b) *Higgayon* by Judah b. Samuel Shalom; (c) *Tratat*, anonymous; *Be'ur ha-Mavo* by Jehezekiah b. Ḥalaftha. Raimund Lull (d. 1215) created an *Ars Parva* from his *Ars Magna*, the former was rendered into Hebrew by several translators as *Melakhah Keẓarah*. Many of Thomas Aquinas' works, particularly the philosophic treatises and commentaries, were made available in Hebrew.

The Jews in the Islamic world were deeply interested in mathematics, first, because of its intrinsic challenge, and secondly, because of its use in astronomy and astrology, which had important practical and religious implications. As in philosophy, so in science, the pursuits of the Greek scientists were eagerly studied. Archimedes' work on cylinders was translated by Kalonymus b. Kalonymus under the title *Ba-Kaddur u-va Iztevanah* from Costa ibn Lucca's Arabic version. Kalonymus also provided a Hebrew version of the measurement of circles, *Bi-Meshiḥat ha-Agullah*; from Thābit b. Karras' Arabic. Euclid was the representative of the Greeks. His *Kitāb al-Uṣūl* or *al-Ustuqṣāt*, in 12 books, augmented by two more of Hypsicles, was rendered by Moses ibn Tibbon in 1270. Another version called *Yesodot ve-Shorashim* was made by Jacob b. Machir about 1270. Other Hebrew texts also exist, possibly from the Latin, for example, his *Data* in *Sefer ha-Mattanot*

by Jacob b. Machir. The *Optics*, *bi-Khtilāf al-Manāthir*, and *Hilluf ha-Mabbatim* in Hebrew, was also the work of Jacob b. Machir. In the Hebrew manuscript *Sefer ha-Marim* of Euclid follows the preceding work. But the Arabs know only a *Kitāb al-Mir'a* by Aristotle. A book of Menelaus of Alexandria (first century; Ar. *Kitāb al-Ashkāl al-Kurriyya*) was translated into Hebrew by Jacob b. Machir and called *Sefer Mileus ba-Temunot ha-Kadduriyyot*.

Ptolemy of Alexandria (d. 150), known to Jews and Arabs as Betolomaus, is the author of *Elmegiste*, which was translated into Hebrew as *Hibbur ha-Gadol* by Jacob Anatoli. The introduction to *Elmegiste* was turned into Hebrew as *Hokhmat ha-Kokhavim*, or *Hokhmat Tekhunah ha-Kezarah* by Moses ibn Tibbon. His *Hypotheses* was rendered by Kalonymus b. Kalonymus in 1317 under the title *Be-Sippur Inyenei ha-Kokhavim ha-Nevukhim*. Several works ascribed to Ptolemy also circulated, among them the *Astrolabe*, called *Ma'aseh ha-Azterolav* by Solomon Sharvit ha-Zahav (14th century), and *Planispherium*, called *Mofetei Kelei ha-Habbatah*, probably from the Latin.

Muslim mathematician and astronomer Jābir ibn Aflah's *Kitāb al-Hay'a*, which was translated into Hebrew by Moses ibn Tibbon, is identical with the alleged *Elmegiste* in nine books, completed in 1274. His *Sector of Menelaus is Ha-Hibbur ba-Temunah ha-Hittukhit le-Mileus*; the translator is not known with certainty. Abu Batir's *De Nativitatibus* was rendered into Hebrew as *Sefer ha-Moladot* by Ishāq abu al-Khayr from the Latin in 1498. Averroes' *Compendium* is *Kizzur Elmegiste* by Jacob Anatoli in 1231. Abu Ishāq al-Bitrinji of Seville composed *Kitāb fi al-Hay'a*, *Ma'amar ba-Tekhunuh* in Hebrew by Moses ibn Tibbon. Costa ibn Lucca's *Al-'Amal bial-kurra al-Nujūmiyya* was translated by Jacob b. Machir as *Sefer ha-Ma'aseh be-Khaddur ha-Galgol*. Aḥmed al-Ferghani (d. 833/844) wrote *Jawāmi' al-Nujūm* which is *Yesodot ha-Tekhunuh* by Jacob Anatoli (the title is not his). Muhammad al-Ḥaṣṣār composed an arithmetic which he named *Al-Bayān wa al-Tidhkār*, and it is available in the Hebrew translation of Moses ibn Tibbon as *Heshbon*. Ibn Haitham's *Qawl fi Hay'at-'Alam* was translated as *Sefer ha-Tekhunuh* by Jacob b. Machir in 1271, and by Solomon ibn Fatir ha-Kohen in 1322. Abu Yūsf al-Kindī's astrological work on the new moon was prepared in Hebrew by Kalonymus b. Kalonymus as *Iggeret be-Kizzur ha-Ma'amar ba-Moladot*. His *Iggeret ha-Maspeket ba-la-Hiyyut u-va-Matar* exists in an anonymous translation. Ja'far Abu Ma'shar (d. 885/6 at the age of 100) wrote *Al-Madkhal al-Kabīr*, which was translated into Hebrew from the Latin under the name *Mavo ha-Gadol me-Hokhmat ha-Tekhunuh* by Jacob b. Elijah. Another work of his is *Sefer Kazar be-Mivḥar Liabi Ma'shar* by an anonymous translator from the Arabic *al-Ikhtiyārāt*. The astronomical *Tables*, by an unknown Muslim, were translated into Hebrew by Abraham ibn Ezra and called *Ta'amei Luḥot al-Khwarizmi*. Ibn Mu'adh's discussion of the solar eclipse of 1079, was converted into Hebrew by Samuel b. Judah of Marseilles (1320–40), who also translated Ibn Mu'adh's treatise on the Dawn, as *Iggeret be-Ammud ha-*

Shaḥar. Kitāb al-'Amal bi al-Asturlab by Aḥmad ibn al-Saffār was rendered into Hebrew as *Perush ha-Azterolav* by Jacob b. Machir. Kalonymus b. Kalonymus translated Abu l-Qāsim ibn Samḥ's work under the title *Ma'amar ba-Izṭevanot u-va-Meḥudadim*. Abu al-Kāmil Shujā' of Egypt (900–950) composed *Ṭharā'if al-Ḥisāb*, and it was translated from the Latin into Hebrew by Mordecai Finzi of Manta (1344–1375). Thābit b. Qurra (d.901) composed *Kitāb al-Shakl al-Qaṭā'*. Its Hebrew version, *Sefer ha-Temunah ha-Hittukhit*, is by Kalonymus b. Kalonymus. Ibrāhīm al-Nakkūsh ibn al-Zarkala (1061–80) composed *al-Ṣafīha al-Zarkaliya*, which was done in Hebrew by an unknown translator under the title *Iggeret ha-Ma'aseh ba-Lu'ah ha-Nikra Ṣafīha*. Another work by this author, on the fixed stars, was translated by Samuel b. Judah of Marseilles and called *Ma'amar bi-Tenu'at ha-Kokhavim ha-Kayyamim*.

A few Jewish astronomers wrote in Arabic, and their works required translation. Mashalla (d. 820) wrote an astrological study, which Abraham ibn Ezra translated under the title *She'elot*. He also translated Mashalla's work on eclipses which in Hebrew is called *Be-Kadrut ha-Levanah ve-ha-Shemesh ve-Hibbur ha-Kokhavim u-Tekufat ha-Shanim*. Sahl ibn Bishr (d. c. 820) compiled a book of principles of astrology, *Kitāb al-Aḥkām*. Rendered into Hebrew by an unknown translator, it is called *Kelalim*. Maimonides' treatise on the calendar is translated by an unknown scholar as *Hibbur be-Hokhmat ha-Ibbur*. Joseph ibn Naḥmias' astronomical study, *Nūr al-'Alam*, was rendered into Hebrew by an unknown translator as *Ha-Shamayim ha-Ḥadashim*. The astronomical tables of Joseph ibn Wakkār were also done in Hebrew.

The *Alphonsine Tables*, prepared by the Jew Yishak ibn Cid in 1265, for the Christian astronomer Alphonse, have been rendered into Hebrew, as have other tables, with adjusted dates. Gerard of Sabionetta wrote a *Thearica Planetarum* which, in the Hebrew of Judah b. Samuel Shalom, is *Iyyun Shivah Kokhevei Lekhet*. Hermanus Contractus (d. 1054) produced *de Mensura Astrolabu*, which in Hebrew is called *Sefer ha-Azteroblin*, and, in another version, *Sefer Astrolog*. Both translators are unknown. John of Gmund (d. 1417) is the author of a treatise on the stars which David b. Meir Kalonymus translated into Hebrew and called *Marot ha-Kokhavim*. Alessandro Piccolomini (d. 1578) composed *La Spera del Mondo* and *Speculazione dei Pianete*. In Hebrew they are respectively *Sefer ha-Kidor* and *Iyyunei Kokhevei ha-Nevokhah* in the translations of an unknown author. Dioscorides (first cent. c.e.) compiled a work on *Simplicia* in which Ḥisdai ibn Shaprut participated in translating into Arabic; no Hebrew version is known, except for passages in the medical work of the so-called Asaf. His *Succeda Nea* was translated from the Latin by Azariah Bonafoux under the title *Temurat ha-Sammim*. Numerous writings of Galen were available in Hebrew. *Ars Parva (Techne)* was rendered from the Arabic as *Ha-Me'assef le-khol ha-Maḥanot* by an unknown scholar. Four of his smaller works on illnesses, their cause and symptoms, were combined in the Hebrew of Zerachiah Ḥen (1277) under the heading *Sefer ha-Ḥola'im ve-ha-Mikrim*. Zerachiah Ḥen also translated the *Kata-*

genos, which deals with compound medicines. Galen's work on crises, *al-Buḥrān* in Arabic, was made available in Hebrew under the Arabic name by Bonirac (perhaps Boniac) Solomon (c. 1300–1350). *On Blood Letting* was rendered by Kalonymus b. Kalonymus (1308) as *Sefer ha-Hakazah*. Kalonymus also translated *Ba-Huknah u-va Kulang* (“on enema and colic”). The author's treatise on epilepsy was rendered in Hebrew by an unknown translator under the title *Be-Hanhagat ha-Na'ar Nikhpeh*, and his *De Malitia Complexionis Diversae* was rendered in Hebrew from the Latin by David b. Abraham Caslari (1280–1337) and called *Sefer Ro'a Mezeg Mithallef*. *The Compendia* (Ar. *al-Jawāmi'*) was converted into Hebrew by Samson b. Solomon (1332). Many smaller tracts of his were also made available in Hebrew, all, of course, from the Arabic or the Latin. Some writings ascribed to Galen are *Sefer ha-Em* (“Gynaecaeas”) and *Sefer Issur ha-Kevurah* (on prohibition of burial before 72 hours after death) *fi Tahrim al-dafn*.

Hippocrates, the father of Greek medicine, was known to the medieval Jews, through the Arabs, by his aphorisms, *Kitāb al-Fusūl*, translated by Moses ibn Tibbon as *Perakim*. This work was also translated by an unknown scholar and by Nathan ha-Me'ati, in 1283. Hillel b. Samuel of Verona prepared a Hebrew version of it from the Latin with the title *Ma'amar ha-Rofe'im*, and another version under the name *Agur*, again from the Latin, was made by an unknown translator. Hippocrates' *Prognostica* with Galen's comments and titled *Hakdamat ha-Yedi'ah*, was probably translated by Nathan ha-Me'ati. It also exists as *Hidot ve-Hashgahot*, evidently rendered from Greek and Latin by an unknown translator. His work on acute illnesses, *Hanhagat ha-Hola'im ha-Haddim*, was translated by Nathan ha-Me'ati, and by his grandson Samuel b. Solomon. Hippocrates' study of air, water, and places, *Sefer ha-Avirim u-va-Zemannim ve-ha-Memot ve-ha-Arazot* – was rendered by Nathan ha-Me'ati, and Galen's commentary on it, in Hebrew, is the work of Solomon b. Nathan in 1299. A book, *Marot ha-Sheten* (“on the color of urine”), ascribed to the Greek physician, is extant in Hebrew in the translation of Joseph b. Isaac Yisre'eli.

In Arabic a good deal was produced on medicine, and much of it was rendered into Hebrew. The celebrated translator of Galen, Ḥunayn ibn Ishāq, himself a physician, compiled an introduction, *Madkhal fi-al-Ṭibb*, which exists in Hebrew as *Mavo* or *She'elot* translated from the Latin by Moses ibn Tibbon and two anonymous scholars called *Mavo*. Māsawayh (d. 857) wrote medical curiosities, *al-Nawādir al-Ṭibbiyya*, translated into Hebrew as *He'arot min ha-Refu'ah* by an unknown scholar, and *Iṣlāh al-Adwiya al-Mushila* (“on laxatives”) rendered into Hebrew as *Me-ha-Ezah ve-ha-Teva'im ve-ha-Tena'im* by Samuel b. Jacob (end of 13th century), and also by an unknown scholar. There is an antidotary by Māsawayh, *Aqrābadhīn*, of which three or four anonymous versions are in existence. Muhammad al-Rāzī (d. 932/3), one of the famous Muslim writers on medicine, wrote *al-Manṣūri*, a general work in ten tracts, which was translated by Shem Tov b. Isaac Tartasi (d. 1264), and was later abridged. His *Aegritudine*

junctuarum (*Me-Ḥolyei ha-Ḥibburim*), *de Aegritudinibus puerorum* (*Me-Hanhagat ha-Ne'arim ha-Ketannim*) are both by unknown translators from the Latin, the latter being a more literal translation than *Me-Ḥoli ha-Ne'arim ke-fi Rāzi*. *Pirkei Razi*, 119 short aphorisms, is an anonymous translation from Arabic, as is also *Sefer ha-Pesakot*. A compendium, *Liber Divisionum*, was translated by Moses ibn Tibbon as *Ha-Hilluk ve-ha-Hilluf*; he also translated Al-Rāzī's antidotary in 1257; of the latter an anonymous version also exists. Al-Rāzī's explanation of why people go to charlatans, *Ba-Meh she-Yikreh bi-Melekhet ha-Refu'ah*, is perhaps the work of Nathan ha-Me'ati. There is an anonymous *Ma'amar be-Hakkazah*, and, from the Latin, *Mi-Segullat Evrei Ba'alei Ḥayyim ve-T'aliyyotam ve-Hezekam* (“on limbs and organs of living beings”). Ibn Sinā (Avicenna) is the author of the standard medical textbook of the late Middle Ages. His *Canon*, *al-Qānūn*, was translated by Nathan ha-Me'ati, although the manuscripts do not include the rendering of the whole. Zerahiah Ḥen also worked on a translation of the *Canon*, but only the first two books are known. Of Joseph ha-Lorki's rendering (before 1402) only book one and part of book two are extant. Avicenna's *al-Qānūn al-Ṣaghīr* was translated by Moses ibn Tibbon in Montpellier in 1272. *Canticum*, a medical book in verse (*arjūza* in Arabic), was rendered into prose by Moses ibn Tibbon, and, in verse, by Solomon b. Joseph ibn Ayyūb (*Sefer ha-Ḥaruzim ha-Nikra arjūza*), and by Ḥayyim Israel, and by an unknown scholar of whose work only a fragment exists. His *al-Adwiya al-Qalbiyya* on cures for heart disorders, is found in two anonymous Hebrew versions: *Ha-Sammim ha-Libbiyyim*, and *Ha-Refu'ot ha-Levaviyyot*, the latter from Latin.

‘Ammār ibn Ali (d. 1020), an ophthalmologist, wrote *al-Muntakhab fi 'Ilāj al-ayn*, translated by Nathan ha-Me'ati under the title (not by him) *Shetalim ha-Nifradim ha-Mo'ilim la-Ayin*. Ali ibn Riḍwān (d. 1068) wrote *al-Uṣūl fi-al-Ṭibb* which Kalonymus b. Kalonymus translated into Hebrew in Arles in 1307 under the title *Ha-'Ammud be-Shorshai ha-Refu'ah*. His *Sharḥ Kitāb al-Ṣinā'a al-Saghira*, on a work by Galen, is translated as *Perush Melakhah Ketannah* by Samuel ibn Tibbon, done in Béziers in 1199. Another rendering from the Latin, by Hillel b. Samuel, is called *Sefer ha-Tenge*. ‘Ammār's *al-Ustuqṣāt*, was translated into Hebrew as *Perush ba-yesodot* by an unknown scholar. Aḥmed al-Jazzār (11th century) is the author of *al-ʿIṭimād*, on simple cures, which in Hebrew is the anonymous *Sefer ha-Ma'alot*. His *Zād al-Musāfir* (viaticum) is *Zeidat ha-Derakhim* by Moses ibn Tibbon in 1259, *Zeidah la-Oreḥim* by Abraham b. Isaac, and *Ya'ir Nativ* by an unknown translator. He also wrote on forgetfulness, in Hebrew *Iggeret ha-Shikhḥah* by Nathan ha-Me'ati.

Abu al-Qāsim Zahrawī of Spain (11th century) compiled *al-Taṣrif*, on medical practice, which was rendered into Hebrew by Shem Tov b. Isaac Tartasi (1261–64) and called *Sefer ha-Shimmush*. *He-Ḥafez ha-Shalem*, a medical compendium, is the version by Meshullam b. Jonah (1287) of a no longer extant Arabic original, a compendious work in two tractates and 14 sections. Ibn Ṣoār (d. 1162) wrote *al-Taysir fi-al-Mudāwāt*

wa al-Tadbir (which in the Hebrew of an unknown translator is *Ha-Helek ha-Kolel*) and *Kitāb al-Aghdhiya*, on foods, which was converted into Hebrew by Nathan ha-Me'ati in about 1275 under the title *Sefer ha-Mezonot*. His work on the difference between sugar and honey became in the Hebrew version of Bon Senior ibn Ḥisdai *Ma'amar ba-Hevdel bein ha-Devash ve-ha-Sukkar*. Ibn Rushd (Averroes) was both philosopher and physician. In the latter capacity his work *Kitāb Kulliyāt fī-al-Ṭibb*, a compendium, was titled *Klal* by Solomon b. Abraham in his translation, as well as in that of an anonymous translator. It is also unknown who translated *Maqāla fī-al-Terīak*, *Simplicia*, which is called *Peshatim be-Rippui Holā'ei ha-Guf*, and the work on purgatives, titled *Shorashim Kolelim*. His tract on diarrhea was translated into Hebrew by Jacob ha-Katan under the title *Ma'amar ha-Shilshul*. Among Jewish writers on medical subjects, Isaac Yisre'eli composed *Kitāb al-Adwiya al-Mufrada wa-al-Aghdhiya*, on cures and foods, and it was rendered into Hebrew by an unknown translator under the name *Sefer ha-Misadim*. Likewise anonymous are the three Hebrew versions of *Kitāb al-Bawl* ("on urine"); *Bi-Ydi'at ha-Sheten*, *Marot ha-Sheten*, and *Sefer ha-Shetanim*. So are also the book on fevers, *Kitāb al-Ḥummayāt*, in Hebrew *Sefer ha-Kaddahot*, and 50 aphorisms, not known in Arabic, called *Musar ha-Rof'e'im*. *Maimonides' writings include *fī-al-Bawāsīr* ("on hemorrhoids") called, in an anonymous Hebrew version, *Bi-Refu'at ha-Teḥorim*, a work on intercourse *fī-al-Jim'a*, translated by Zerahiah Ḥen and called *Ma'amar ha-Mishgal*, and *Fuṣūl Mūsā*, aphorisms, also rendered by Zerahiah and by Nathan ha-Me'ati under the title *Pirkei Moshe*. Moses ibn Tibbon is the translator of *fī al-Sumūm* ("on poisons") which, in Hebrew, is called *Ha-Ma'amar ha-Nikhbad*. Solomon b. Yaish (d. 1343) wrote a commentary on ibn Sinā's *Qānūn*, of which an extract in Hebrew was made by Jacob Kaphanton. As the Christian West learned the medical knowledge transmitted and composed in Arabic, its physicians also began to write, generally in Latin. Nicolaus of the Salerno school of medicine (1150–1200) prepared an *Antidotarium* which is known by the same name in the Hebrew rendering of Jacob. Petrus Hispanus (d. 1276) produced a medical compendium, *Thesaurus pauperum*, translated as *Ozar ha-Aniyyim* in an anonymous version, and *Ozar ha-Dallim* in the rendering of Todros Moses Bondoa, 1394. Lamprandi's (d. 1296) *Chirurgia Parva* is abridged in an anonymous Hebrew version titled *Alanfranchina*, and *ha-Yad* in Hebrew. Bernard de Gardon is the author of *Lilium Practica*, which is called *Hokhmah Nishlemet bi-Melekhet Medicinae* (c. 1305). In the version of Moses b. Samuel it is titled *Peraḥ ha-Refu'ot ha-Sali*, and in that of Jekuthiel b. Solomon of Narbonne, *Shoshan ha-Refu'ah* (1387). He also wrote *Regimen Acutarum Aegritudinum de Phlebotomia*, and *de Medicinarum gradibus*, all three of which were translated anonymously and titled respectively *Ḥibbur be-Hanhagot ha-Ḥaddot*, *Ha-Ma'amar be-Hakkazah*, and *Sefer ha-Madregot*. Arnaldus of Villanova (d. 1317/18) is the author of *Regimen sanitatis*, which in Hebrew is called *Ma'amar be-Hanhagot ha-Beri'ut* by the translator Israel Kaslari (1327), and

Hanhagot ha-Beri'ut in the anonymous version. His *Arnavdina* is called *Practica* in Israel Kaslari's version.

Gentile da Foligna (d. 1348) composed a book on practice, *Prattiche*, *Nisyonot* in its anonymous Hebrew version, and *Consilium*, which is called *Ezah* by its Hebrew translator, probably Joshua of Bologna. Guy de Gauliac, a surgeon in Avignon (d. 1363), prepared a *Chirurgia magna*, translated by an unknown scholar; the beginning and end are unfortunately missing. He also produced a *Chirurgia Parva*, translated into Hebrew by Asher b. Moses (1468), and titled *Giddu'a Kazar*. John Jacobi (1366), wrote *Secretarius practicus*. It is available in two anonymous Hebrew renderings: *Sod ha-Melakhah* and *Sod ha-Pratikah*. Gerard de Salo composed a commentary on the ninth book of Al-Rāzi's *al-Manṣūri* titled in *Nomum mansoris*; Abraham Avigdor made an abridged translation, and Leon Joseph a full one in 1394. His *introductionum juvenum*, on the care of the body, was likewise done in Hebrew by Leon Joseph and called *Meishir ha-Mathilim*, and his treatise on fever, *de Febribus*, was translated by Abraham Avigdor. Bernard Alberti (1339–58) compiled an *Introductionum in practica*, a collection of prescriptions, done in Hebrew by Abraham Avigdor under the title *Mavo ba-Melakhah*. Albertus Magnus is the author of discussions on six needs of the body, which Moses Ḥabib called *She'elot u-Teshuvot* in his Hebrew version of it.

Jews were interested not only in philosophy and the sciences, but also in what can be called the humanities. They translated and wrote a good deal of popular literature, and they also cultivated eloquence, linguistics, and poetry. Mention should be made of the great popularity among them of all sorts of divinations, called *Goralot*, including astrology, mantic, and facial features. Among the foreign creations which made their way into Hebrew are the fables of Aesop, known as *Ḥidot Esopito*, and *Kalila and Dimna* by the Indian Bidpai. Its anonymous Hebrew translation is the source of all European versions made from its Latin rendering by the convert John of Capua (1262–78). Another Hebrew text prepared by Jacob b. Eleazar (d. 1223) is less literal than the other. The story of a demon who entered a woman and was expelled by a man, which is found in an Indian source and in the *1001 Nights*, is told in *Ma'amar Midyenei Ishaḥ*. *Mishlei *Sindabar*, the Hebrew counterpart of the very popular *Seven Sages*, although originally of Indian origin, is important as the link which connects the eastern type of individual and the western type.

The history of Alexander the Great, originating in Callisthenes' Greek story, was popular in Jewish literature from talmudic times. The medieval Hebrew book, *Sefer Alexander Mokedon ve-Korotov*, said to be the work of Samuel ibn Tibbon or Judah al-Ḥarizi, is a translation of an Arabic original. Immanuel b. Jacob did another *Toledot Alexander* from the Latin. It should also be noted that sayings gleaned by various authors were also attractive to Jews, so that books like *Sefer ha-Musar*, *Mishlei Arav*, or *Mishlei Anashim ha-Ḥakhamim*, not to speak of works in which they are introduced *en passant*, are all translations from the Arabic, whether from one work

or from many. A good example is presented by Ibn Gabirol's *Mivḥar ha-Peninnim*, discussed above. A work of consolation, allegedly sent to a friend who sustained a loss, is the *Ḥibbur Yafeh me-ha-Yeshu'ah* by Nissim b. Jacob ibn Shaḥin of Kairouan, a Hebrew translation of his Arabic original. The *Maqāmāt* of al-Ḥarīrī (1054–1121), a literary genre characterized by rhymed prose and metrical verse, in which beauty of language was the major objective, were translated by Judah al-Ḥarizi under the title *Maḥbarot Itiel*. Abraham ibn Ḥisdai produced a Hebrew version, called *Ben ha-Melekh ve-ha-Nazir*, of an Arabic translation of the original Indian tale of *Barlaam and Josaphat*, and Kalonymus b. Kalonymus composed *Iggeret Ba'alei Ḥayyim*, which is a discussion between men and beasts and is a free rendering of Epistle No. 21 of the *Epistles of the Ikwān al-Ṣafā'*.

Hebrew grammar and lexicography attracted the attention of a number of Jewish writers who were stimulated by the parallel studies of Arabic, and many of their works were originally written in Arabic, and only later translated into Hebrew. The comparative lexicographic study of Judah ibn Quraish (tenth century) was not translated until modern times. Judah Ḥayyuj (early 11th century) wrote on verbs with quiescent letters, and geminative verbs. These tracts were first translated by Moses ha-Kohen Gikatilla as *Otiyyot ha-Sefer ve-ha-Mesekh*, and later, by Abraham ibn Ezra as *Otiyyot ha-Naḥ*, *Ba'alei ha-Kefel*, and *ha-Nikkud*. The master work of Hebrew grammar by Jonah ibn Janāḥ, *Kitāb al-Lumā'*, was translated into Hebrew by Judah ibn Tibbon, and the lexicon, *Kitāb al-Uṣūl*, was translated by Isaac b. Judah, and by Isaac ha-Levi, both translations going only to the letter *lamed*. A complete translation was made by Judah ibn Tibbon in 1171. Ibn Jarah's shorter work, *al-mustalḥiq*, is called *Sefer ha-Hassaḡah* by its Hebrew translator Obadiah (c. 1300). Judah ibn Ba'lam compiled a work on Hebrew particles *Ḥurūf al-Mā'āni*, rendered as *Otiyyot ha-Inyamim* in an anonymous Hebrew version; and *al-Af'āl Mushtaḡa min al-Asmā'*, a work on verbs derived from nouns, which in its anonymous Hebrew rendering is *Ha-Pe'alim she-Hem mi-Gizrat ha-Shemot*. He also is the author of a short tract on the proper reading of the Bible, *Hadāyat al-Qārī'*, which was rendered into Hebrew either by Nethanel b. Meshullam or by Menahem b. Nethanel under the title *Horayat ha-Kore*.

Some miscellaneous compositions include halakhic writings of Hai Gaon (d. 1038) such as *al-Buyū'āt*, which was translated into Hebrew by Isaac b. Reuben and was called *Sefer ha-Mikkaḥ ve-ha-Mimkar*, and, in an anonymous Hebrew version *Mishpetei ha-Tena'im ve-Halva'ot*, and the book on oaths which in its anonymous Hebrew translation is titled *Mishpetei Shevu'ot* or *Sefer ha-Shevu'ot*. A metrical version also exists, *Sha'arei Dinei Mamonot ve-Sha'arei Shevu'ot*. Joseph ibn 'Aknin, who wrote an introduction to the Talmud and a book on biblical and talmudic weights and measures, is represented in Hebrew translation by *Mevo ha-Talmud*, perhaps by an Abraham Yerushalmi, and by an anonymous version *Ma'amar al ha-Middot*. Of Abraham Maimonides'

moralistic and pietistic work *Kifāyat al-'Abidin*, only a short section was rendered into Hebrew. A work on liturgy, *Mitzvot Zemanniyyot*, by Israel Yisre'eli, was translated into Hebrew by Don Shem Tov b. Arduziel. Of Joseph ibn 'Aknin's *Tibb al-Nufūs*, only the first chapter was translated under the name *Marpeh ha-Nefashot*.

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TRANSNISTRIA, geographical designation, referring to the area in the Ukraine situated between the Bug and Dniester rivers. The term is derived from the Romanian name for the Dniester (Nistru) and was coined after the occupation of the area by German and Romanian troops, in World War II. Before the war the area had a population of 3,400,000, but in the course of the occupation it was reduced to 2,250,000, as a result of the mobilization of men and of mass flights.

Jewish Population

Before 1939 the Jewish population was 300,000 according to the statistical data of 1926. According to reports of the Nazi Einsatzkommandos ("action groups") which entered the area in July 1941 in the wake of the occupying troops, two-thirds of the local Jewish population had fled the area. However, there remained local Jews and Jewish refugees, primarily from neighboring *Bessarabia; these refugees had fled previously from the advancing German troops. It must also be assumed that many local Jews were apprehended while escaping and were murdered by German troops or by Einsatzkommandos. In general, Einsatzgruppe "D" under the command of Otto Ohlendorf, was most active in Transnistria. In the north Einsatzkommando "10B," and in the south "11B" were also active. Their reports contain some information on the murder actions committed by the units (e.g., in Yampol, Kokina, Mogilev), but the figures given on the local population are far too low and unrealistic. To illustrate the magnitude of the murder actions perpetrated by the Nazis: in one town alone, *Dubossary, on the east bank of the Dniester, two common graves contained the bodies of 3,500 Jews from Dubossary itself and 7,000 from the vicinity, killed in the town after being rounded up by the Nazis.

Deportations to Transnistria

After its occupation Transnistria became the destination for deported Romanian Jews. At the end of July 1941, 25,000 Jewish survivors from towns in northern Bessarabia were expelled