The story of civilization

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New York, Simon and Schuster, 1935-1967
10 volumes

Vols. 7-10 by Will & Ariel Durant

Excerpt from vol. 4, p. 909-913

“The Age of Faith”

III. THE TRANSLATORS

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Medieval Europe, partly united by a common language, was still divided into Latin and Greek halves, mutually hostile and ignorant. The Latin heritage, except of law, was forgotten in the Greek East; the Greek heritage, except in the Sicilies, was forgotten in the West. Part of the Greek heritage was hidden beyond the walls of Christendom—in Moslem Jerusalem, Alexandria, Cairo, Tunis, Sicily, and Spain. As for the vast and distant world

of India, China, and Japan, long rich in literature, philosophy, and art, Christians, before the thirteenth century, knew almost nothing.

Some of the work of linking the diverse cultures was performed by the Jews, who moved among them like fertilizing subterranean streams. As more and more Jews migrated from Moslem realms into Christendom, and lost knowledge of Arabic, their scholars found it desirable to translate Arabic works (many written by Jews) into the only language generally understood by the savants of the scattered race—Hebrew. So Joseph Kimchi (*c.* 1105–*c.* 1170), at Narbonne, translated the Jewish philosopher Bahya's *Guide to the Duties of the Heart.* Joseph was the father of brilliant sons; but even more important, as translators, were the progeny of Judah ben Saul ibn Tibbon (*c.* 1120–*c.* 1190). He too, like Kimchi, had moved from Moslem Spain to southern France; and though he was one of the most successful physicians of his time, he found energy to translate into Hebrew the Judeo-Arabic works of Saadia Gaon, Ibn Gabirol, and Jehuda Halevi. His son Samuel (*c.* 1150–*c.* 1232) stirred the Jewish world by translating into Hebrew Maimonides' *Guide to the Perplexed.* Samuel's son Moses ibn Tibbon translated from the Arabic Euclid's *Elements*, Avicenna's smaller *Canon*, al-Razi's *Antidotary*, three works of Maimonides, and Averroës' shorter commentaries on Aristotle. Samuel's grandson Jacob ibn Tibbon, besides leading the fight for Maimonides in Montpellier, and earning fame as an astronomer, translated several Arabic treatises into Hebrew, and some into Latin. Samuel's daughter married a still more famous scholar, Jacob Anatoli. Born in Marseille about 1194, Jacob was invited by Frederick II to teach Hebrew at the University of Naples; there he translated into Hebrew the larger commentaries of Averroës, profoundly affecting Jewish philosophy. A like stimulus was given to Hebrew medicine through the translation of al-Razi's *Kitab al-Mansuri* by the physician and philosopher Shem Tob at Marseille (1264).

Many Hebrew translations from the Arabic were rendered into Latin; so a Hebrew version of Avenzoar's *Taysir*, or *Aid to Health*, was turned into Latin at Padua (1280). Early in the thirteenth century a Jew translated the entire Old Testament directly and literally into Latin. The devious routes of cultural migration are exemplified by the *Fables of Bidpai*, which were translated into English from a Spanish translation of a Latin translation of a Hebrew translation of an Arabic translation of a Pahlavi translation of the supposedly original Sanskrit.[21]

The main stream whereby the riches of Islamic thought were poured into the Christian West was by translation from Arabic into Latin. About 1060 Constantine the African translated into Latin al-Razi's *Liber Experimentorum*, the Arabic medical works of Isaac Judaeus, and Hunain's Arabic version of Hippocrates' *Aphorisms* and Galen's *Commentary*. At Toledo, soon after its conquest from the Moors, the enlightened and tolerant Archbishop Raymond (*c.* 1130) organized a corps of translators under Dominico Gundisalvi, and commissioned them to translate Arabic works of science and philosophy. Most of the translators were Jews who knew Arabic, Hebrew, and Spanish, sometimes also Latin. The busiest member of the group was a converted Jew, John of Spain (or "of Seville"), whose Arabic patronymic, ibn Daud (son of David), was remodeled by the Schoolmen into Avendeath. John translated a veritable library of Arabic

and Jewish works by Avicenna, al-Ghazali, al-Farabi . . . and al-Khwarizmi; through this last work he introduced the Hindu-Arabic numerals to the West.[22] Almost as influential was his rendering of a pseudo-Aristotelian book of philosophy and occultism, the *Secretum Secretorum*, whose wide circulation is indicated by the survival of 200 manuscripts. Some of these translations were made directly from Arabic into Latin; some were made into Castilian and then translated into Latin by Gundisalvi. In this way the two scholars transformed Ibn Gabirol's *Mekor Hayim* into that *Fons Vitae*, or *Fountain of Life*, which made "Avicebron" into one of the most famous philosophers in the Scholastic ken.

Minor tributaries fed the Arabic-Latin current. Adelard of Bath, having learned Arabic in Antioch, Tarsus, and Toledo, made from an Arabic version the first Latin rendering of Euclid (1120), and introduced Moslem trigonometry to the West by translating the astronomical tables of al-Khwarizmi (1126).[23] In 1141 Peter the Venerable, Abbot of Cluny, with the aid of three Christian scholars and an Arab, turned the Koran into Latin. Moslem alchemy and chemistry entered the Latin world through a translation of an Arabic text by Robert of Chester in 1144. A year later an Italian, Plato of Tivoli, translated the epochal treatise *Hibbur ha-meshihah* of the Jewish mathematician Abraham bar Hiyya.

The greatest of the translators was Gerard of Cremona. Arriving in Toledo about 1165, he was impressed by the wealth of Arabic literature in science and philosophy. He resolved to translate the best of it into Latin, and spent the remaining nine years of his life in the task. He learned Arabic, and apparently had the help of a native Christian and a Jew;[24] it seems incredible that he should have made his seventy-one translations unaided. To him the West owed Latin versions of Arabic versions of Aristotle's *Posterior Analytics*, *On the Heavens and the Earth*, *On Generation and Corruption*, and *Meteorology*; several commentaries by Alexander of Aphrodisias; Euclid's *Elements* and *Data*; Archimedes' *On the Measurement of the Circle*; Apollonius of Perga's *Conics*; eleven works ascribed to Galen; several works of Greek astronomy; four volumes of Greco-Arabic physics; eleven books of Arabic medicine, including the largest works of al-Razi and Avicenna; al-Farabi *On the Syllogism*; three works by al-Kindi, and two by Isaac Israeli; fourteen works of Arabic mathematics and astronomy; three sets of astronomical tables; and seven Arabic works on geomancy and astrology. No other man in history has ever done so much to enrich one culture with another. We can only compare Gerard's industry with that of Hunain ibn Ishaq and al-Mamun's "House of Wisdom," which in the ninth century had poured Greek science and philosophy into an Arabic mold.

Next to Spain as donor in this transfusion of culture was the Norman kingdom of the Sicilies. Soon after their conquest of the island (1091) the Norman rulers employed translators to turn into Latin the Arabic or Greek works on mathematics and astronomy then current in Palermo. Frederick II, at Foggia, carried on the work, and partly for that purpose brought to his court one of the strangest and most active minds of the early thirteenth century. Michael Scot derived his cognomen from his native Scotland. We find him at Toledo in 1217, in Bologna in 1220, in Rome in 1224–7, thereafter at Foggia or Naples. His first important translation was al-Bitruji's *Spherics*, a critique of Ptolemy. Fascinated by dis-

covering the scope and freedom of Aristotle's thought, Scot translated into Latin, from Arabic versions, the *History of Animals*, including *On the Parts of Animals* and *On the Generation of Animals*; and an unverified tradition ascribed to him translations of the *Metaphysics*, the *Physics*, *On the Soul*, *On the Heavens*, perhaps also the *Ethics*. Michael's versions of Aristotle reached Albertus Magnus and Roger Bacon, and stirred the development of science in the thirteenth century. Charles of Anjou continued the royal patronage of translators in southern Italy; the Jewish savant Moses of Salerno worked for him, and it was probably Charles who financed the Latin translation (1274) of al-Razi's medical leviathan, the *Liber Continens*, by the Jewish scholar Faraj ben Salim of Girgenti.

All the Latin translations, so far mentioned, of Greek science and philosophy were made from Arabic versions—sometimes from Arabic versions of Syriac versions—of the already obscure originals. They were not as inaccurate as Roger Bacon charged, but there was clearly need of more direct renderings. Among the earliest such versions were those made of Aristotle's *Topics*, *Elenchi*, and *Posterior Analytics* by James, known to us only as "a clerk of Venice," at some time before 1128. In 1154 Eugene "the Emir" of Palermo translated the *Optics* of Ptolemy; and in 1160 he shared in a Latin translation of the *Almagest* directly from the Greek. Meanwhile Aristippus of Catania had translated (*c.* 1156) *The Lives of the Philosophers* by Diogenes Laërtius, and the *Meno* and *Phaedo* of Plato. The capture of Constantinople by the Crusaders had less result in translations than might have been expected; we hear only of a partial version of Aristotle's *Metaphysics* (1209). A fallow interval ensued; then, about 1260, William of Moerbeke, Flemish Archbishop of Corinth, began, probably with aides, a series of direct translations from the Greek whose number and importance rank him only next to Gerard of Cremona among the heroes of cultural transmission. It was partly at the request of his friend and fellow Dominican Thomas Aquinas that he translated so many of Aristotle's works: the *History of Animals*, *On the Generation of Animals*, *Politics*, and *Rhetoric*, and completed or revised earlier direct versions of the *Metaphysics*, the *Meteorology*, and *On the Soul*. For St. Thomas he translated several Greek commentaries on Aristotle or Plato. For good measure he added versions of Hippocrates' *Prognostics*, Galen *On Foods*, and divers works in physics by Hero of Alexandria and Archimedes. Perhaps we owe to him also a translation—formerly ascribed to Robert Grosseteste—of Aristotle's *Ethics*. These translations provided part of the material from which St. Thomas built his magistral *Summa Theologica*. By 1280 Aristotle had been almost completely transmitted to the Western mind.

The effects of all these translations upon Latin Europe were revolutionary. The influx of texts from Islam and Greece profoundly stirred the reawakening world of scholarship, compelled new developments in grammar and philology, enlarged the curriculum of the schools, and shared in the astonishing growth of universities in the twelfth and thirteenth centuries. It was merely an incident that, through the inability of the translators to find Latin equivalents, many Arabic words were now introduced into the languages of Europe. It was more important that algebra, the zero, and the decimal sys-

tem entered the Christian West through these versions; that the theory and practice of medicine were powerfully advanced by the translation of the Greek, Latin, Arabic, and Jewish masters; and that the importation of Greek and Arabic astronomy compelled an expansion of theology, and a reconception of deity, prefacing the greater change that would follow Copernicus. The frequent references of Roger Bacon to Averroës, Avicenna, and "Alfarabius" give one measure of the new influence and stimulation; "philosophy," said Bacon, "has come down to us from the Arabs";[25] and we shall see that Thomas Aquinas was led to write his *Summas* to halt the threatened liquidation of Christian theology by Arabic interpretations of Aristotle. Islam had now repaid to Europe the learning that it had borrowed through Syria from Greece. And as that learning had aroused the great age of Arabic science and philosophy, so now it would excite the European mind to inquiry and speculation, would force it to build the intellectual cathedral of Scholastic philosophy, and would crack stone after stone of that majestic edifice to bring the collapse of the medieval system in the fourteenth century, and the beginnings of modern philosophy in the ardor of the Renaissance.