attainment of human perfection by the observance of even one of the commandments, resurrection, and the coming of the Messiah. An examination of the nature of these principles and beliefs forms the bulk of Sefer ha-’Ikkarim.

Albo’s work is best understood against the background of the physical and spiritual crisis of fifteenth-century Spanish Jewry. There were many Jews at that time who felt that no religion was rationally superior to another, and that loyalty to Judaism was therefore a superfluous encumbrance. Addressing himself to this attitude, Albo sets out to show that Judaism is preferable to Christianity. While reason cannot prove the truth of Judaism, it can demonstrate the falseness of Christianity; by examining the criteria that reason demands of any religion claiming to be divine, Albo attempts to demonstrate that Christianity falls short of the mark (especially in regard to God’s unity and incorporeality) and hence cannot be considered a divine religion. In addition, Christians are required to hold beliefs that are logically impossible and, therefore, false. At most, Albo claims, Christianity is a conventional religion, one that promotes societal well-being but not individual immortality. Judaism, on the other hand, fits the requirements of a divine religion exactly, in that it adheres to the three principles as he has defined them. In addition, it includes no beliefs that are contrary to logic. Loyalty to Judaism is thus the reasonable course of action for thewavering Jew. Over and over, Albo subtly polemicizes against the majority religion and then, for good measure, devotes a lengthy chapter to a specific rebuttal of Christianity (which, despite its form, is not an account of an actual disputation).

In addition to its polemical value, Albo’s work provides a summa of medieval Jewish philosophy, discussing all the major philosophical and theological issues that had been raised in the previous five hundred years. Albo was not a doctrinaire member of any particular philosophical school; he took liberally from his predecessors without fully adopting the system of any of them. On most questions Albo tends toward eclecticism and compromise. For instance, he first agrees with Maimonides that only active and negative attributes can be assigned to God, but then he switches to Crescas’s view that there are some essential attributes also. Prophecy is totally dependent upon God’s will (the traditional view), but the prophet must have the requisite rational faculties in order to prophesy (the philosophical view). Human perfection consists of the realization of intellectual potential (the philosophical view), but immortality depends on doing God’s will as outlined in the Torah (the traditional view).

Albo’s Sefer ha-’Ikkarim has been published often and has maintained its popularity in traditional Jewish circles to this day.

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DANIEL J. LASKER (1987)

Revised Bibliography

ALCHEMY

This entry consists of the following articles:

AN OVERVIEW

CHINESE ALCHEMY

INDIAN ALCHEMY

HELENISTIC AND MEDIEVAL ALCHEMY

ISLAMIC ALCHEMY

RENAISSANCE ALCHEMY

ALCHEMY: AN OVERVIEW

The vocable alchemia (or some alternate form such as ars chymica) appears in the West from the twelfth century onward in reference to the medieval quest for a means of transmuting base metals into gold, for a universal cure, and for the “elixir of immortality.” The origin of the root chem is not yet satisfactorily explained. In Chinese, Indian, and Greek texts alchemy is referred to as “the Art,” or by terms indicating radical and beneficial change, for example, transmutation. Until quite recently, historians of science have studied alchemy as a protochemistry, that is, an embryonic science. Indeed, like the early chemist, the practitioner of “the Art” made use of a laboratory and of certain specific instruments; more important, alchemists were the authors of a number of discoveries that later played roles in the development of the science of chemistry. To quote only a few examples: the isolation of mercury around 300 BCE; the discovery of aqua vitae (alcohol) and of the mineral acids, both before the thirteenth century; the preparation of vitriol and the alums.

But the methods, the ideology, and the goals of the early chemists did not prolong the alchemical heritage. The alchemists were not interested—or only subsidiarily—in the scientific study of nature. Where the early Greek mind applies itself to science it evinces an extraordinary sense of observa-
tion and argument. Yet the Greek alchemists show an inexplicable lack of interest in the physico-chemical phenomena of their work. To cite a single example, no one who has ever used sulfur could fail to observe “the curious phenomena which attend its fusion and the subsequent heating of the liquid. Now, while sulphur is mentioned hundreds of times [in Greek alchemical texts], there is no allusion to any of its characteristic properties except its action on metals” (Sherwood Taylor, quoted in Eliade, 1978, p. 147). As we shall see presently, the alchemist’s quest was not scientific but spiritual.

**ESOTERIC TRADITIONS AND THE IMPORTANCE OF SECRECY.**

In every culture where alchemy has flourished, it has always been intimately related to an esoteric or “mystical” tradition: in China to Taoism, in India to Yoga and Tantrism, in Hellenistic Egypt to gnosis, in Islamic countries to Hermetic and esoteric mystical schools, in the Western Middle Ages and Renaissance to Hermeticism, Christian and sectarian mysticism, and Qabbalah. In brief, all alchemists have proclaimed their art to be an esoteric technique pursuing a goal similar or comparable to that of the major esoteric and “mystical” traditions.

For this reason, great emphasis is placed by the alchemist on secrecy, that is, the esoteric transmission of alchemically and doctrinal techniques and sciences in their early stages—from pottery, mining, and metallurgy to medicine and mathematics. The secret transmission of methods, tools, and recipes is abundantly documented in China and in India, as well as in the ancient Near East and Greece. Even so late an author as Galen warns one of his disciples that the medical knowledge that he communicates must be received as an aspirant receives the teletê (initiation) in the Eleusinian mysteries. As a matter of fact, being introduced into the secrets of a craft, of a technique, or of a science was tantamount to undergoing an initiation.

It is significant that the injunction to secrecy and occultation is not abolished by the successful accomplishment of the alchemical work. According to Ko Hung, the adepts who obtain the elixir and become “immortals” (hsien) continue to wander on earth, but they conceal their condition, that is, their immortality, and are recognized as such only by a few fellow alchemists. Likewise, in India there is a vast literature, both in Sanskrit and in the vernaculars, in relation to certain famous siddhis, yogin-alchemists who live for centuries but who seldom disclose their identity. One encounters the same belief in central and western Europe: certain Hermetists and alchemists (such as Nicolas Flamel and his wife, Pernelle) were reputed to have lived indefinitely without being recognized by their contemporaries. In the seventeenth century a similar legend circulated about the Rosicrucians and, in the following century, on a more popular level, in relation to the mysterious Comte de Saint-Germain.

**ORIGINS OF ALCHEMY.**

The objects of the alchemical quest—namely, health and longevity, transmutation of base metals into gold, production of the elixir of immortality—have a long prehistory in the East as well as in the West. Significantly, this prehistory reveals a specific mythico-religious structure. Innumerable myths, for instance, tell of a spring, a tree, a plant, or some other substance capable of bestowing longevity, rejuvenation, or even immortality. Now, in all alchemical traditions, but particularly in Chinese alchemy, specific plants and fruits play an important role in the art of prolonging life and recovering perennial youth.

But the central aim of the alchemist was the transformation of ordinary metals into gold. This “noble” metal was imbued with sacrality. According to the Egyptians, the flesh of gods and of pharaohs was made of gold. In ancient India, a text from the eighth century BCE (Satapatha Brāhmaṇa 3.8.2.27) proclaims that “gold is immortality.” Interpreting alchemy as a mere technique for “turning base metals into precious ones,” that is, for initiating gold, H. H. Dubs has suggested that the technique originated during the fourth century BCE in China, where the test for gold (which had been practiced in Mesopotamia since the fourteenth century BCE) was unknown. This hypothesis has been rejected, however, by most scholars. According to Nathan Sivin, the belief in physical immortality is documented in China by the eighth century BCE, but not until the fourth century was immortality considered attainable through the use of drugs and other techniques, and “the transformation of cinnabar into gold is not spoken of as possible, according to extant sources, before 133 BC” (Sivin, 1968, p. 25).
MINING, METALLURGY, AND ALCHEMY. Even if the historical beginnings of alchemy are as yet obscure, parallels between certain alchemical beliefs and rituals and those of early miners and metallurgists are clear. Indeed, all these techniques reflect the idea that man can influence the temporal flux. Mineral substances, hidden in the womb of Mother Earth, shared in the sacredness attached to the goddess. Very early we are confronted with the idea that ores “grow” in the belly of the earth after the manner of embryos. Metallurgy thus takes on the character of obstetrics. The miner and metalworker intervene in the unfolding of subterranean embryology: they accelerate the rhythm of the growth of ores; they collaborate in the work of nature and assist it in giving birth more rapidly. In a word, man, with his various techniques, gradually takes the place of time: his labors replace the work of time.

With the help of fire, metalworkers transform the ores (the “embryos”) into metals (the “adults”). The underlying belief is that, given enough time, the ores would have become “pure” metals in the womb of Mother Earth. Further, the “pure” metals would have become gold if they had been allowed to “grow” undisturbed for a few more thousand years. Such beliefs are well known in many traditional societies. As early as the second century BCE, Chinese alchemists declared that the “baser” minerals develop after many years into “noble” minerals, and finally become silver or gold. Similar beliefs are shared by a number of Southeast Asian populations. For instance, the Annamites were convinced that the gold found in mines is formed slowly in situ over the course of centuries, and that if one had probed the earth long ago, one would have discovered bronze in the place where gold is found today.

These beliefs survived in Western Europe until the industrial revolution. In the seventeenth century one Western alchemist wrote:

If there were no exterior obstacles to the execution of her designs, Nature would always complete what she wishes to produce. . . . That is why we have to look upon the birth of imperfect metals as we would on abortions and freaks which come about only because Nature has been, as it were, misdirected or because she has encountered some fettering resistance or certain obstacles which prevent her from behaving in her accustomed way. . . . Hence although she wishes to produce only one metal, she finds herself constrained to create several. Gold and only gold is the child of her desires. Gold is her legitimate son because only gold is a genuine production of her efforts. (quoted in Eliade, 1978, p. 50)

The Alchemist Completes the Work of Nature. The transmutation of base metals into gold is tantamount to a miraculously rapid maturation. As Simone da Colonia put it: “This Art teaches us to make a remedy called the Elixir, which, being poured on imperfect metals, perfects them completely, and it is for this reason that it was invented” (quoted in Eliade, 1978, p. 166). The same idea is clearly expounded by Ben Jonson in his play The Alchemist (1610). One character says that “lead and other metals . . . would be gold if they had time,” and another adds, “And that our Art doth further.”

Moreover, the elixir is said to be capable of accelerating the temporal rhythm of all organisms and thus of quickening their growth. In a text erroneously attributed to Ramón Lull, one can read that “in Spring, by its great and marvelous heat, the Stone brings life to the plants: if thou dissolve the equivalent of a grain of salt in water, taking from this water enough to fill a nutshell, and then if thou water with it a vinestock, thy vinestock will bring forth ripe grapes in May” (quoted in Ganzenmüller, 1940, p. 159). Furthermore, Chinese as well as Islamic and Western alchemists exalted the elixir for its universal therapeutic virtues: it was said to cure all maladies, to restore youth to the old, and to prolong life by several centuries.

Alchemy and Mastery of Time. Thus it seems that the central secret of “the Art” is related to the alchemist’s mastery of cosmic and human time. The early miners and metallurgists thought that, with the help of fire, they could speed up the growth of ores. The alchemists were more ambitious: they thought they could “heal” base metals and accelerate their “maturation,” thereby transmuting them into nobler metals and finally into gold. But the alchemists went even further: their elixir was reputed to heal and to rejuvenate men as well, indefinitely prolonging their lives. In the alchemist’s eyes, man is creative: he redeems nature, masters time; in sum, he perfects God’s creation. The myth of alchemy is an optimistic myth; it constitutes, as it were, a “natural eschatology.”

It is certainly this conception of man, as an imaginative and inexhaustibly creative being, that explains the survival of the alchemist’s ideals in nineteenth-century ideology. Of course, these ideals were radically secularized in that period. Moreover, the fact that they had survived was not immediately evident at the moment when alchemy itself disappeared. Yet the triumph of experimental science did not abolish the dreams and ideals of the alchemist; on the contrary, the new ideology of the nineteenth century crystallized around the myth of infinite progress. Boosted by the development of the experimental sciences and the progress of industrialization, this ideology took up and carried forward—radical secularization notwithstanding—the millenarian dream of the alchemist. The myth of the perfection and redemption of nature has survived in camouflaged form in the Prometheus program of industrialized societies, whose aim is the transformation of nature, and especially the transmutation of matter into energy. It was also in the nineteenth century that man succeeded in supplanting time. His desire to accelerate the natural tempo of organic and inorganic beings now began to be realized, as organic chemists demonstrated the possibility of accelerating and even eliminating time by preparing in laboratories and factories substances that would have taken nature thousands of years to produce. With what
he recognizes as most essential in himself—his applied intelligence and his capacity for work—modern man takes upon himself the function of temporal duration; in other words, he takes on the role of time.

SEE ALSO Elixir; Gold and Silver; Metals and Metallurgy; Nature, article on Religious and Philosophical Speculations.

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Mircea Eliade (1987)
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ALCHEMY: CHINESE ALCHEMY
Definitions of alchemy have generally been based on the experience of a single civilization—usually but not always Europe—and tend to imply that traditions that do not follow the chosen pattern are not the real thing. The sole exception is the definition of H. J. Sheppard: “Alchemy is the art of liberating parts of the Cosmos from temporal existence and achieving perfection which for metals is gold, and, for man, longevity, then immortality, and finally, redemption.” This definition might be slightly qualified. Longevity and material immortality may or may not accompany salvation in a given time and place. The evolution of other substances from base materials may be more important than that of gold. In China, for instance, cinnabar was the prototype of elixir substances. Adding the specification that the alchemical art uses chemical change to symbolize the processes by which perfection is attained, one can recognize a pattern common to Hellenistic Alexandria, China, Islam, India, and early modern Europe.

The alchemy of each of the great civilizations was distinct in the knowledge on which it drew, in the symbols it created, and in the purposes for which it was used. These peculiarities depended on public structures of meaning as well as on the private discourse of the groups that took up alchemy.

Alchemy began in close alignment with popular religion, especially among educated groups in the Yangze region. It was considered one of several disciplines that could lead to individual spiritual perfection and immortality. Some Daoist movements took up its practice after about 500 CE; it influenced both Buddhist and Daoist symbolism and liturgy. The aims and means of alchemy, some important issues in its history, and its far from clear-cut relations with Daoism and with science are discussed below.

AIMS AND MEANS. Chinese ideals of individual perfection combined three ideas that would have been incompatible in Egypt or Persia. The desire for immortality, which long preceded formal philosophy or religion, was the first of these ideas. In popular culture, ideals of long life evolved into the notion that life need not end. This was not immortality of the soul in isolation, but immortality of the personality—of all that selfhood implied—within an imperishable physical body. In the most elaborate doctrines of immortality, this new physical self was nurtured within by a variety of disciplines including alchemy until, at the moment the “naked child” was fully formed, it would burst forth like a butterfly leaving behind an empty chrysalis, an almost weightless corpse.

The potent personal force that may linger on after someone dies was undifferentiated in the thought of the uneducated, but in the conceptions of specialists it was separated into ten “souls” (three yanghun and seven yinpo). Their normal postmortem dissipation could be prevented only if the body, their common site, could be made to survive with them. That, as Lu Gwei-djen and Joseph Needham have sug-