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Coffee with the Cantor **Jewish Influence on Secular Society**

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Judaism and Medicine

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Influence of Judaism and Jewish physicians on Greek and Byzantine medicine and their contribution to nephrology.

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Abstract

Both the Old Testament and the Talmud contain a great deal of information on medicine, nephrology, health and disease. The basic premise of early Jewish medicine is based on the notion that disease is due to structural changes in internal organs. This is in contrast to the mythical dogma of humoralism as the basis of health and disease espoused by Hippocrates and Galen. The Old Testament and the Mosaic Codes provided the basis for modern public health and for the hygienic rules practised in our times. The Talmudists laid the foundations for the science of pathology as we know it today. These issues are discussed in detail and the contributions of three prominent medieval physicians (Asaph Judaeus, Isaac Judaeus and Maimonides) are presented.

MEDICINE

From the beginning of their history until modern times Jews have exercised a tremendous influence on the development of medical science. They have always been solicitous in their care for the sick and held the medical profession in great esteem. In ancient times medicine and religion were closely connected. The priests were the custodians of public health. The dispute as to the propriety of human interference in sickness – regarded as divine retribution – ceased to trouble the Jews, because they came to regard the physician as the instrument through whom God could effect the cure. Jewish physicians therefore considered their vocation as spiritually endowed and not merely an ordinary profession. By the same token, great demands were made of them, and the ethical standards have always been very high.

The importance of medicine and physicians among the Jews is best seen in the long line of rabbi-physicians, that started during the talmudic period and continued until comparatively recently. Various factors were responsible for this combination of professions. Medicine was sanctioned by biblical and talmudic law and had an important



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bearing upon religious matters. Since teaching or studying the word of God for reward was not considered ethical, the practice of medicine was most often chosen as a means of livelihood. This trend was further strengthened by the fact that during the greater part of the Middle Ages the Jews were excluded from almost all other occupations, including public office, and medicine was left as one of the few dignified occupations by which they could earn their living.

Jews have contributed to medicine both by the creation of new medical concepts and by the transmission of medical knowledge. It was through the medieval Jewish physician-translators that the medical knowledge of the East and much of ancient Greek medical lore was preserved and transmitted to the West. A general survey of Jews in medicine may be divided into three broad periods:

- (a) biblical and talmudic times, which covers the period from antiquity until roughly the fourth to fifth centuries C.E.;
- (b) a middle period from approximately the sixth century C.E. to the beginning of the 19th century; and
- (c) the 19th and 20th centuries, during which Jews throughout the world have excelled not only in the practice of medicine but in all fields of medical research and teaching. It is significant that over 20% of all winners of the Nobel Prize for medicine up to the end of the 1960s were Jewish.

The high standard of medical science in Israel must be mentioned. Not only have Israeli physicians successfully met the challenge of medical problems in a developing country with a mixed population, but they have continued the ancient Jewish medical tradition by teaching and giving practical aid to those developing countries striving to attain the scientific levels of the 20th and 21st century.

IN THE BIBLE

The main source of information on ancient Hebrew medicine is the Bible, which refers to medicine as it pertains to religious or civil laws or when important characters are involved. No general ancient Hebrew medical documents are extant, although the Talmud reports that King *Hezekiah canceled the "Medical Book" (Ber. 10b; Pes. 56a) and that a scroll on pharmacology was lost. From earliest times, the Jewish faith sought to suppress *magic customs and practices in every field of life, including those concerned with the health of its members. The Hebrews were doubtlessly influenced in their medical concepts and practices by the surrounding nations, particularly by Egypt, where medical knowledge was highly developed. Prevailing superstitions and beliefs in magic medicine were far less accepted and practiced by the Jews, however, than by their neighbors. But like their contemporaries, the ancient Hebrews attributed health and disease to a divine source.

Healing was in the hands of God and the role of doctors was that of helpers or instruments of God. There are numerous references to physicians and men of healing throughout the Bible. It is always implied, however, that although man may administer treatment, it is God who heals: "I am the Lord that healeth thee" (Ex. 15:26). The title rofe ("healer") was therefore never adopted by ancient Jewish physicians; where it occurs it invariably refers to foreign doctors, who were usually assumed to be helpless because they were not aided by God. Pharmacists and midwives are also mentioned. Hebrew priests had no authority as physicians but rather held the position of health wardens of the community, charged with enforcing the laws pertaining to social hygiene.

The uniqueness of biblical medicine lies in its regulations for social hygiene, which are remarkable not only for their period but even by present-day standards. Hygiene and prophylaxis became religious dogmas intended for the welfare and preservation of the nation. Of the 613 commandments, 213 are of a medical nature. Prevention of epidemics, suppression of prostitution and venereal diseases, frequent washing, care of the skin, strict dietary and



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sanitary regulations, rules for sexual life, isolation and quarantine, the observance of a day of rest – the Sabbath – these and other provisions inhibited the spread of many of the diseases prevalent in neighboring countries.

The Hebrews were aware of the fact that contagious diseases are spread by direct contact as well as by clothing, household utensils, etc. To prevent the spread of epidemics or infectious maladies they therefore compiled a series of sanitary regulations. These included precautionary or temporary isolation, quarantine, burning or scalding of infected garments and utensils, thorough scrubbing and smoking out of houses suspected of infection, and scrupulous inspection and purification of the diseased person after recovery (Lev. 13–14). Anyone coming into contact with a corpse or carrion, or suffering from purulent discharges from any part of his body, also required a thorough cleansing of himself and his belongings before being allowed back into the encampment (Num. 19:7–16; Lev. 15:2–13). The garments, weapons, and utensils of soldiers returning to the camp after a battle had to be thoroughly cleansed and disinfected to prevent the spread of diseases possibly picked up during contact with the enemy (Num. 31:20, 22–24). The danger of infectious bowel diseases spreading through excrement was also recognized and the Bible instructs how to keep the camp clean (Deut. 23:13–14).

Diseases and Remedies

Many diseases are mentioned in the Bible. Among them are shaḥefet – phthisis (Lev. 26:16); 'afolim – leishmaniasis (Deut. 28:27); yerakon (yeraqon) – ikterus (Deut. 28:22); sheḥin pore'aḥ a'v'abu'ot – pemphigus (Ex. 9:9); zav – gonorrhealeukorrhea (Lev. 15); dever – pest (Deut. 28:21); shivron motnayim – lumbago (Ezek. 21:11); nofel ve-galui 'enayim – epilepsy (Num. 24:4); rekav (reqav) 'aḏamot – osteomyelitis (Prov. 14:30). Although not specifically mentioned by name, eye diseases such as blepharitis ciliaris and gonorrheal ophthalmia undoubtedly existed, and senile cataract probably occurred frequently among the ancient Hebrews: "Now the eyes of Israel (Jacob) were dim for age so that he could not see" (Gen. 48:10). The dimness of sight rather than blindness is indicative of cataract. Various forms of skin disease are referred to in Deuteronomy: "The Lord will smite thee with the boil of Egypt, and with the emerods, and with the scab, and with the itch, whereof thou canst not be healed" (Deut. 28:27). The Hebrew word ṣara'at, which has been translated as leprosy, was probably a generic term for a number of skin ailments, many of which were considered curable (Lev. 13). However, leprosy in the modern sense was also known, and rigid quarantine, which did not exclude kings (II Chron. 26:21), was imposed on lepers. The term maggefah refers to plague, epidemics, and contagious diseases in general, very often of a venereal type. A bubonic plague described in I Samuel 5 mentions rodents, who are known to be carriers of the disease. Various types of wounds are mentioned: makkah is the generic term for wound; makkah t'eriyyah is a festering wound; makkah 'anushah, a wound which will not heal, often fatal; peza', a stab wound; ḥabburah, a boil or hematoma; and mazor, a septic boil.

With the one exception of the incurable serpent bite (Num. 21:9), biblical remedies and treatments are all of a rational character and do not involve incantations or magic rites, nor do they include the so-called "filth pharmacy." Biblical therapeutics consisted of washing; the use of oils, balsams, and bandages for wounds and bone fractures; bathing in therapeutic waters (II Kings 5:10), especially in the case of skin diseases; sun rays, medicated drinks, etc. Among medicaments mentioned by name are myrrh, sweet cinnamon, cassia, galbanum, niter, and the mandrake (duda'im) which was considered to possess aphrodisiac properties. The modern method of mouth-to-mouth artificial respiration was also known, as testified by the accounts of Elijah and Elisha (I Kings 17:22; II Kings 4:34–35). The only surgical operations mentioned are circumcision and castration, and these were not specifically Jewish practices. *Embalming, though unusual, was not forbidden.

Anatomical Knowledge

The Hebrew had more than a passing knowledge of anatomy. This is attested by the language used in instructions concerning methods of sacrifice and by passages of poetry where the names of organs and limbs are used metaphorically. The heart is mentioned frequently as the seat of emotion and intellect, and the functions now



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ascribed to the brain were then thought to emanate from the heart. No word for brain is mentioned; the word *mo'ah* in Job refers to marrowbone.

It is interesting to note that the Bible has a distinctive nomenclature for parts of the body and types of illnesses. Thus, for example, body defects or deformities are described solely by words constructed in the *pi'el* grammatical form: *'iṯter* – paralyzed, left-handed; *'illem* – dumb; *'ivver* – blind; *pisse'ah* – lame; *gibben* – hunchback. Descriptions of mental or nervous diseases appear in the *pi'alon*-form: *dikka'on* – depression; *shigga'on* – madness; *izzavon* – nervousness; *'ivvaron* – mental blindness; *shikkaron* – drunkenness. Somatic illnesses appear in the *pa'elet* (*pa'alat*) form: *dalleket* (*dalleqet*) – inflammation; *shaḥefet* – tuberculosis; *yabbelet* – acne; *'azzevet* – neuritis; *baḥeret* – leukoderma, vitiligo; *sappaḥat* – psoriasis; *zara'at* – lepra, skin diseases; *gabbahat* – loss of hair. Trauma of the body is formed according to the *pa'ul* model: *shavur* – fractured; *ḥaruḥ* – split; *ma'ukh* – crushed; *natuk* (*natuq*) – disjointed; *raḥuḥ* – smashed; *zaru'a* – infected; *pazu'a* – wounded. Many anatomical terms have the ancient two-letter root, while most Hebrew words derive from three letters. Thus *לב lev* – heart; *דם dam* – blood; *פה peh* – mouth; *חך ḥekh* – gums; *שן shen* – tooth; *יד yad* – hand.

THE TALMUDIC ERA

The period surveyed in this section extends roughly from the second century B.C.E. to the sixth century C.E. The historical events of that period had a profound influence on the thought and way of life of the Jews and consequently on the development of Jewish medical art as well. As a result of the Babylonian Exile, of Greek rule followed by the Hasmonean Wars, the rise of Christianity and the Exile after the destruction of the Second Temple, the Jewish community became wide open to influences from neighboring countries and to foreign philosophies, which had their effect on every walk of life, including medicine.

Sources and Influences

The sources for this period are the Apocryphal books, Greco-Roman writings of Jews and non-Jews, the Mishnah, the Jerusalem and Babylonian Talmuds, the Midrashim, and, in part, the recently discovered Dead Sea Scrolls. None of these sources is a medical book as such. Except for a few cases, such as the praise of medicine and the physician by *Ben Sira, medical matters are dealt with mainly to illustrate points of ritual, or civil and criminal law. In the Talmud, a few medical matters are dealt with extensively in the tractates *Hullin*, *Nega'im*, and *Bekhorot*. The influence of Persian and Babylonian magic medicine is clear from references to *amulets, the *evil eye, *demons, etc. The Greek influence on Jewish medical thought was considerable, but we find that the scholars were not blind adherents of the humoral pathology, but rather followers of anatomic pathology. This was doubtless based on their experiments and observations of sick animals before and after slaughter, as well as on their studies of human bodies and corpses. One of the interpretations given to the name of the sect known as *Essenes is *איסיים*, "healers." Their medicine mainly influenced Christian medicine and medical thought. They studied and collected herbs and roots for healing purposes, though their chief remedies were prayer, mystic formulas, and amulets. Abiding faith was all that was considered necessary for curing physical and mental diseases as well as chronic defects such as blindness, lameness, and deafness. The medicine mentioned in the New Testament is almost entirely of this type of miracle cure. By contrast, the attitude of Jewish scholars of the time, and later those of the Talmud, is generally a scientific one.

The talmudic attitude toward the sanctity of human life and the importance of health is expressed in numerous statements: "The saving of life (*pikku'ah nefesh*) takes precedence over Sabbath" (*Yoma* 85a). "Whoever is overzealous in fasting should be regarded as a sinner" (*Ta'an.* 11a). It was also decreed that when treating the sick or a woman in childbirth, even though no danger to life was involved, the sanctity of the Sabbath could be profaned.

Status of the Physician



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The Talmud does not regard calling upon a physician for medical aid as a failure to rely upon God to restore health: "Whoever is in pain, let him go to the physician" (BK 46b). The profession of physician – as an instrument of God – was held in high esteem: "Honor the physician before need of him. Him also hath God apportioned.... The skill of a physician shall lift up his head; and he shall stand before nobles ..." (Ecclus. 38). The Talmud enumerated ten things that must be in a city where a scholar lives, and these include a physician and a surgeon. From this statement it may also be concluded that the number of practicing physicians was relatively great.

Specialists as known in Egypt did not exist. However, the Talmud names two types of physician, rofe and rofe umman ("skilled physician" and "surgeon"). Patients visited the physician in his home and not, as in Greece, in the marketplace. A special regulation was therefore enacted which required anyone renting premises to a physician to obtain the prior agreement of his neighbors, since the cries and noise of visiting patients might disturb them (BB 21a). *Hospitals were apparently nonexistent in this period, although certain temple halls, and later on, parts of the poorhouses and synagogues, were set aside for the sick. However, mention is made of operation rooms, which had to be walled with marble for cleanliness – "battei shayish." There were communal or district physicians, whose duties included assessing the character and extent of any physical disability sustained in cases of injury in order to determine damages (Sanh. 78a). They were also required to judge the degree of physical endurance of a person sentenced to corporal punishment (Mak. 22b). "The victim of an assault could refuse to be treated by a physician coming from a distance since he would not be sufficiently concerned with the welfare of his patient" (BK 85a).

A physician had to receive adequate fees, and free medical service was not approved because "a physician who takes nothing is worth nothing" (BK 85a). At the same time, Jewish physicians had special consideration for the poor and needy – a tradition which was maintained throughout the centuries. Abba Umana (fourth century C.E.) was reputed as a physician and a charitable man. In order not to discourage needy patients he would hang a box on the wall where anyone could put in, unnoticed, the fee he thought he could afford for medical treatment. Abba Umana refused to take fees from poor students and would return them their money so that they could use it for convalescence (Ta'an. 21b). If, in spite of every care, a licensed physician injured a patient or caused his death, he was not – as among many other peoples – held guilty (Sanh. 84b). Jewish physicians were apparently organized in some type of guild which had as its insignia the harut – the branch of a palm or a balsam bush (Jews at that time regarded balsam as the best remedy for wounds; cf. Pliny, Hist. Nat., 12:54).

Jewish doctors had an excellent reputation and practiced throughout the then-known civilized world. A physician Theudas is mentioned in Bekhorot (4:4) as a famous doctor from Alexandria. Aulus Cornelius *Celsus, writing in the first century C.E., refers to salves compounded by skilled Jewish physicians. *Galen reports on the Jewish physician Rufus Samaritanus in Rome in the first-second centuries C.E. Similar references are made by Marcellus Empiricus, Aetius of Amida, and Paulus of Aegina. Pliny (Hist. Nat., 37.60.10) mentions a "Babylonian physician – Zechariah," undoubtedly a Jew, who dedicated his medical book to King Mithridates. The emperor Antoninus Pius (86–161 C.E.) requested R. Judah ha-Nasi to supply him with a physician for his house slaves from among his circle of students. The personal physician of St. Basil (c. 300 C.E.) was the Jew, Ephraim. The bishop Gelasius refers to his Jewish physician Telesinus as his "trusted friend." At the same time, numerous restrictions against Jewish doctors were already being promulgated by Christian bishops and emperors. These only serve to show how large the number of practicing Jewish physicians was at the time.

The study of medicine was included in the curriculum of talmudic schools and many Talmud scholars were themselves physicians. Among them were R. Ishmael, R. Hanina b. Dosa, R. Hananiah b. Hama, Joseph ha-Rofe of Gamla, Tobiah ha-Rofe of Modi'in, and Minjomi (Benjamin). The most distinguished of them was *Samuel b. Abba ha-Kohen, also called Mar Samuel Yarhina'ah (165–257), to whom many remedies and much anatomical knowledge is attributed. He was also the personal physician of the Persian king, Sapur. In addition, the Talmud mentions askan bi-devarim, which might be described as a research scientist, who occupied himself more with the study of animal and human anatomy and physiology than with the actual practice of medicine.



Talmudic Anatomy

The preoccupation with regulations concerning ritually unclean meat, the physical qualifications for priesthood, rules concerning menstruous women, defilement, etc., accounts for the extraordinary anatomical knowledge of talmudic scholars. For full details see *Anatomy.

Talmudic Embryology

A great deal of material on this subject can be found in the Talmud and in the Midrashim, some of it of an imaginary or legendary character but most of it surprisingly accurate. Abba Saul describes the development of an embryo in its sixth week (Nid. 25b). Simlai describes the parts, posture, and nourishment of an embryo in the womb. Scholars accepted the opinion that the embryo is a living organism from the time of conception (Sanh. 91b). In contrast to Aristotle, who regarded the seed as a mosaic of individual creative factors corresponding to each of the parts of the human body and assumed that each limb is derived from the parallel limb of the father, the talmudic scholars regarded the seed as one single summary of all the creative forces of the organism and did not acknowledge the individual influence of one limb on the embryo. "The seed is mixed, otherwise blind would beget blind and one-limbed a one-limbed" (Hul. 69a). The Talmud also accepts the equal share of the male and female in forming the organism.

Pathology and Etiology

In examining the ritual fitness of animals and the cleanliness and purity of members of the community, talmudic scholars had numerous opportunities of observing and diagnosing diseases. They described various pathological conditions of the lungs and knew the existence of pulmonary infections (Hul. 47b). Disturbances of the circulatory system were recognized by the paleness or flush of the body (Yev. 64b). The diagnosis of certain skin diseases was determined according to the form, temperature, and secretion of the wound and the color of the hair round it. The observation of such a wound could last up to three weeks (Neg. 10). Scholars were able to recognize macula of the cornea, keratitis, and detached retina (Bekh. 38a). R. Ishmael describes diphtheria as an epidemic disease which causes painful death through strangulation. The pathology of hemophilia as a lack of viscosity in the blood preventing coagulation is described, and the circumcision of an infant in a hemophilic family was forbidden. It was also recognized that the female is the transmitter of this disease (Yev. 64a; Hul. 47b). A large number of lung, liver, kidney, and stomach diseases were described as being caused by worms (Hul. 48a; Shab. 109b; Git. 70a). Lack of fluids was thought to lead to digestive disturbances (Shab. 41a). It was recognized that fear accelerates the pulse and causes heartbeats (Sanh. 100b); that falling from a great height may cause fatal internal injury (Hul. 42a); that injury to the spinal cord causes paralysis (Hul. 51a); and that restraint of the gall causes jaundice. Fevers and colds were thought to be caused by negligence (BM 107b). According to R. Eleazar the gall (humor) and according to Mar Samuel the air (pneuma) could cause disease. It was generally accepted that blood is the chief cause of disease (BB 58b). Overeating, excessive drinking of intoxicants, and sexual excesses were also thought to cause disease. It was realized that animals and insects, in particular flies, are carriers and transmitters of infectious diseases (Ket. 77a), and that contaminated water may also cause illness (Av. Zar. 30a).

Remedies, Treatments, and Surgery

The medicines mentioned in the Talmud include powders, medicated drinks, juices, balsams, bandages, compresses, and incense. Meat and eggs were considered to be the most nourishing foods (Ber. 44b); fried food or food containing fat was regarded as difficult to digest (57b). The eating of vegetables throughout the year and the drinking of fresh water at every meal were recommended (ibid. 57b; 40a). Baths and mineral waters were regarded as general strengthening tonics and as therapeutics for certain skin diseases (Shab. 40a; 109a; Ket. 77b). Herbs were used for constipation and purges were recommended in serious cases, except for pregnant women



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(Pes. 42b). The use of opium as an analgetic and hypnotic drug was known, and warning was given against overdosing (TJ, Av. Zar. 2:2, 40d). Anything useful for healing purposes was permitted at any time, even on the Sabbath (Hul. 77b). Surgeons operated in special halls – "battei shayish" (see above). "Sleeping drugs" – sammei de-shinta – were used as anesthetics. From descriptions of operations we learn of trepannings, amputations, and removal of the spleen (cf. Sanh. 21b; Hul. 57a; Git. 56a). A cesarean was also performed, but it is not clear whether the operation was done on a living or on an already dead body. In general, the life of the mother had priority and therefore the killing of a fetus during a difficult birth was allowed (Tosef., Yev. 9:4). Wound edges were cut in order to ensure complete and clean healing (Hul. 54a). Surgeons wore special operation aprons (Kelim 26:5).

Hygiene and Prophylaxis

The main contribution of talmudic medicine lies not so much in the treatment of illness but rather, as in the Bible, in the prevention of disease and the care of community health. The hygienic measures advocated were of a practical as well as of a religious, ethical nature. A principle which recurs a number of times is that "bodily cleanliness leads to spiritual cleanliness" (Av. Zar. 20b; TJ, Shab. 1:3, 3b). Hygienic regulations applied among other things to town planning, climatic conditions, social community life, family life, and care of the body. Mention is made of a disinfectant composed of seven ingredients used for cleansing infected clothing (Zev. 95a). A town was required to have a physician and a bathhouse. Clothing had to be changed before eating. Mar Samuel declared that diseases may be carried by caravans from land to land (Ta'an. 21b). Members of a family with a sick person among them were to be avoided. The digging of wells in the neighborhood of cemeteries or refuse dumps was forbidden (Tosef., BB 1:10). It was forbidden to drink uncovered water for fear of snake venom (Av. Zar. 30a). Food had to be fresh and served in clean dishes. Kissing on the mouth was discouraged, and kissing only on the back of the hand was recommended in order to prevent contagion. During epidemics, the population was advised to avoid crowding in narrow alleyways because of the danger of contagion in the air. For body care, the Talmud recommends physical exercises, massage, sunlight, employment, and above all cleanliness. Mar Samuel states: "The washing of hands and feet in the morning is more effective than any remedy in the world" (Shab. 108b). Excesses of any kind were regarded as harmful. The Talmud also concerned itself with the health of future generations and forbade marriage to epileptics or the mentally retarded (Yev. 64b; 112b). Surprisingly enough, talmudic pathology had very little influence on medieval medicine, not even on such outstanding physicians as *Maimonides and Isaac *Israeli, who were certainly well versed in the Talmud. The medical authority of Galen was so preeminent that all other medical theories and practice were regarded as banalities or even heresy. Scholars warned against the unselective use of talmudic remedies because they are not equally effective in all countries and at all times. Nonetheless, the hygienic laws and regulations of the Talmud, as well as many of its anatomical and pathological findings, appear in the light of modern knowledge to have enduring validity.

THE MIDDLE PERIOD

The medieval period of Jewish history does not coincide exactly with the common historical definition of the Middle Ages in Western civilization, but may be said to extend from the second-third centuries C.E. until the 19th century when, in most Western countries, Jews were granted full emancipation.

The large variety of climates, environments, and customs to which the Jewish people were exposed during their migrations in exile naturally had a profound influence on the development of their medical thought and knowledge. Thus, for example, there is a description of diabetes mellitus in the writings of Maimonides. According to him, this was a disease quite common in the warm Mediterranean countries with which he was acquainted but practically unknown in Northern Europe. Talmudic scholars give a precise description of ratan ("filariasis") and its treatment – a malady unknown in Europe. Similarly, the prevalence of eye diseases in the Orient greatly encouraged the development of ophthalmology and, when Jewish eye doctors migrated to Europe, they quickly acquired an excellent reputation among their Christian colleagues.



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However, the merit of Jewish doctors of that period lay not only in their individual achievements as physicians, but in their work as translators and transmitters of Greek medicine to the Arabs and later on of Arab medicine to Europe. Jewish scholars, and among them physicians, had command of the three most important scholastic languages of the time – Latin, Arabic, and Hebrew – and, in some cases, Greek. This enabled them to translate most of the Arab and Greek medical works into Hebrew and Latin or vice versa. Knowledge of Hebrew was considered extremely important in the study of medicine. The English scholar Roger *Bacon (c. 1220–c. 1292) declared that Christian physicians were ignorant in comparison with their Jewish colleagues because they lacked knowledge of the Hebrew and Arabic in which most of the medical works were written. Vesalius, the great 16th-century anatomist, made a point of learning Hebrew to facilitate his studies, and gives Hebrew terms together with their Greek equivalents in his work *Fabrica* (see also *Frigeis, Lazaro De). Mosellanus, in his rectorial address at the University of Leipzig in 1518, urged Christian medical students to learn Hebrew so that they might study the medical lore "hidden in the libraries of the Jews." The close religious and family ties linking the various Jewish communities also helped to spread medical knowledge and facilitate rapid communication. As merchants and travelers the Jews met the best minds of their period and became acquainted with drugs, plants, and remedies from many parts of the world.

Nevertheless, although Jewish physicians were frequently held in great esteem by their non-Jewish colleagues as well as by kings and bishops, they suffered from persecution and restrictions, especially in the Christian world. From the fourth century C.E. onward there were innumerable regulations, papal bulls, and royal ordinances forbidding Jewish physicians to practice among non-Jews, to hold official positions and, later on, to study at universities. The fact that, despite these threats and restrictions, Jewish physicians continued in their profession and even held high positions at the courts of the very authorities who preached against them, attests to the esteem with which they were regarded for their medical skill. In this respect the Muslims were much more tolerant: although persecutions of Jews erupted from time to time in Muslim territories, physicians were not singled out, and consulting them was not forbidden.

The large number of Jewish physicians during these centuries may also be explained by the fact that Jews still regarded the medical profession as a spiritual vocation compatible with the career of a rabbi. Many scholars took up the medical profession as an honorable way of earning a living. This was made comparatively easy because the curriculum of talmudic schools often included the philosophies and sciences of ancient and contemporary times. Very often, therefore, medieval Jewish physicians were simultaneously rabbis, scholars, scientists, translators, grammarians, or poets, and as men of wide general knowledge they frequently attained high official positions in the countries in which they lived.

The Byzantine Era

While Greek science and culture declined in the Byzantine Empire and the Jews living there suffered under oppression, Jewish, as well as Nestorian and Jacobite, physicians and scholars sought to save what they could of Hellenistic science. The Babylonian talmudic centers of Sura and Pumbedita flourished at this period. Although the teaching languages of the period were Hebrew, Syrio-Aramaic, and Persian, it was Greek medicine which was taught, strongly influenced by Hebrew, Babylonian, Persian, and Indian traditions. This becomes apparent from the medical work left by Asaph b. Berechiah, called *Asaph ha-Rofe or Asaph Judaeus, who lived about the sixth century C.E. somewhere in the Middle East. Together with Johanan b. Zavda, Judah ha-Yarhoni, and other Jewish scholars, he founded a medical school. His work, the oldest known medical book written in Hebrew, encompasses all the then-known wisdom of Greek, Babylonian, Egyptian, and Persian medicine, as well as something of Indian medicine. His medical technique is based on old Hebrew traditions. No Arab influence is apparent, which points to the fact that the book was composed before the seventh century. Most of the remedies mentioned were known in the Middle East generally. The book includes chapters on anatomy, embryology, physiology, hygiene, fever and pulse lore, urology, and a rich antidotarium. The oldest known Hebrew translation of the *Aphorisms* of Hippocrates, as well as chapters of Dioscorides and Galen, are also to be found in it. The book contains a



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"physician's oath," modeled on Hippocrates but far surpassing it in ethical content. The book of Asaph is not only significant to modern historians: it had considerable influence on medical history, particularly as far as Hebrew medical terms are concerned.

The Arab Period in the East

Following the Arab conquest of the Middle East and Spain, Jewish communities and centers of learning started to flourish at Faiyum in Egypt, Kairouan in Tunisia, and Cordova in Spain. Studies often included ethics, philosophy, sciences, and medicine. Students acquired experience in medicine by assisting practicing physicians. About a hundred years after the Arab conquest of the Middle East, the name of the Jewish physician Māsarjuwayh of Basra is mentioned as the first of a long list of men who translated a great number of Greek and Syrian works into Arabic. Unfortunately all his works have been lost, and he only appears as a frequent reference. Rabbān al-Ṭabarī (Sahl), a Jew converted to Islam who lived in Persia at the beginning of the ninth century, was a noted physician, mathematician, and astronomer. He was the first to translate *Ptolemy's *Almagest* into Arabic. His son Ali al-Ṭabarī Abu al-Ḥasan, also a convert, served as court physician to caliphs from 833 to 861, and was renowned as an ophthalmologist. His *Paradise of Wisdom* dealt with medicine, embryology, astronomy, and zoology and was one of the first original Arabic medical textbooks. He is best known as the teacher of the Arab physician Rhazes. One of the most outstanding medical personalities of the period was Isaac Judaeus (Isaac Israeli). He is believed to have been the first medical author in Arabic whose works were brought to Europe, and his books on fever, diet, uroscopy, and the ethical conduct of physicians were regarded as classics for several hundred years. His outstanding pupils were Abu al-Jazzār (a non-Jew) and *Dunash b. Tamim. It was said of him that he "lived a hundred years, was unmarried, shunned riches, and wrote important books more precious than silver or gold" (Sa'id b. Ahmad, tenth-century Arab scholar). Israeli's books were first translated into Latin by the monk Constantinus Africanus (1020–1087) and were all printed in Lyons in 1515.

Jewish physicians also flourished in Europe during this period. Among them was Zedekias (d. 880), the first registered Jewish doctor in Franco-Germany. He was personal physician to Louis the Pious and to his son Charles the Bald, and was known as the "wonderful physician" (Muenz).

The School of Salerno

From the ninth to the 12th century a medical study center existed in Salerno in southern Italy uninfluenced, either deliberately or by accident, by the Arab culture which penetrated into Southern Europe. The beginnings of the School of Salerno are associated with the name of the distinguished Jewish physician Shabbetai *Donnolo, of Oria, Calabria. His most famous medical work, *Sefer ha-Yakar*, lists 120 different remedies and their composition. Greek medicine is often referred to and Hebrew terms such as those used by Asaph ha-Rofe are frequently found in it. There is, however, no evidence that the author knew or accepted Arab medical wisdom, even though by that time many Arabic medical works had reached southern Italy by way of the Saracens of Sicily. It is interesting to note that *Sefer ha-Yakar* was also the first Hebrew prose written on European soil. References to other Jewish physicians practicing in Salerno and to Hebrew as a language of instruction are to be found in various records of the time. Benjamin of Tudela (12th century) refers to the physician Elijah whom he met when visiting Salerno. On the whole, however, the Jews who transmitted Arab philosophy and medical science had little influence on the School of Salerno, which endeavored to uphold the Greek medical tradition.

The Arab-Spanish Period

The Jews played an influential part in the cultural history of the period, starting with the Arab conquest of Spain in the eighth century and ending with their final expulsion from Granada in the 15th century. As statesmen, physicians, mathematicians, philosophers, and poets they attained high positions at the courts of both Moorish and Christian princes. At the Caliphate of Cordova (tenth century) was *Ḥasdai ibn Shaprut who, together with a



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monk, translated Dioscorides from Greek into Arabic. About a century later, Ephraim b. al-Zafran served as physician to the caliph of Egypt. Zafran was a renowned author and bibliophile and left a library of over 20,000 books. Another famous Jewish physician of the 11th century was Salāma ibn Ramḥamūn who lived in Cairo and whose works include a treatise on the causes of scant rainfall in Egypt and another discussing why Egyptian women grow stout early in life. *Judah Halevi (end of 11th century), the famous Spanish poet-physician, exerted great influence on his contemporaries and on later generations. Jonah ibn Bikhlarish (11th century) of Andalusia, court physician to the sultan of Saragossa, was one of the first Jewish scholars to learn Latin. In about 1080 he compiled a dictionary of drugs in Syriac, Persian, Greek, Latin, and Spanish which is believed to be the earliest work of its kind. Sheshet b. Isaac *Benveniste, who served as court physician to the king of Barcelona, was the author of a famous gynecological treatise in Arabic. The most important Jewish physician-philosopher of the period was Maimonides. Born in Cordova, he fled with his family to North Africa and soon attained a worldwide reputation as a religious legislator, philosopher, and physician. In 1170 he became personal physician to the family of Sultan Saladin of Egypt and continued to serve them until his death. Maimonides wrote ten medical works, of which the most important ones were Pirkei Moshe ("Aphorisms of Moshe") and Regimen Sanitatis. Maimonides' whole concept of medicine is based on the conviction that a healthy body is the prerequisite for a healthy soul. This enables a man to develop his intellectual and moral capabilities and leads him toward the knowledge of God and thus to a more ethical life. He regards healing as the art of repairing both the defects of the body and the turmoil of the mind. A physician must therefore have not only the technical knowledge of his profession, but also the intuition and skill to understand the patient's personality and environment. Maimonides divides medicine into three main fields: preventive medicine – the care of the healthy; the curing of the sick; and the care and treatment of the convalescent, including the aged. Though leaning heavily on the medical teachings of the ancient Greeks, Maimonides warns against blind belief in so-called authorities and upholds the value of clear thought and experiments. His medical observations, diagnoses, and methods of healing mentioned in his works on asthma, poisons, his medical responsa, and commentaries on the Aphorisms of Hippocrates contain innovations in their day and many of them are still valid. Maimonides wrote his medical books in Arabic: most of them were soon translated into Hebrew and Latin.

Southern France

At the end of the 12th and the beginning of the 13th century, Jewish centers of learning were established in southern France – in Avignon, Lunel, Montpellier, Béziers, and Carcassonne. Conditions for Jews in these regions were generally somewhat better than those in Spain, although they did not escape restrictions, expulsion, and persecution. For a period of two to three hundred years, papal bulls and Synod decrees alternated in forbidding and then allowing Jewish physicians to practice their profession. The principal service rendered by Jewish scholars of southern France, many of whom had emigrated from Spain and Portugal, was the translation of Arabic works into Hebrew and Latin. Since some of the original Arabic works had been lost, it was only through their Hebrew translations that they were preserved. The important early 11th-century medical work, the Canon of *Avicenna, was translated into Latin and Hebrew a number of times. The work of translation was accompanied by great scholarly activity. The medical school of Montpellier owed its foundation largely to Jewish scholars, and various records mention "private" schools in which Hebrew law, science, and medicine were taught for a stipulated fee. During the 15th and 16th centuries, when certain universities were closed to Jews, Hebrew translations of Arabic and Greek medical works were made specifically for Jewish medical students.

The most notable of the long list of distinguished translators was the *Tibbon family (Judah b. Saul, Samuel, Moses), who during the 12th and 13th centuries translated most of the well-known scientific and philosophic works, including those of Maimonides, from Arabic into Hebrew. Other eminent translators of the period were Jacob b. Makhir (Prophatius Judaeus), a member of the Tibbon family; Zerachiah ibn Shealtiel Hen; and Jacob ha-Katan, translator into Hebrew of Nicolai's antidotarium and of Averroes' treatise on diarrhea. Of special interest is Abraham Shem Tov of Tortosa, who practiced in Marseilles toward the end of the 13th century. His works, especially his translation of Abu al-Qāsim al-Zahrāwī's al-Tatṭirif, are of particular importance because he



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introduced a new Hebrew terminology based mainly on terms used in the Talmud. In other works he deals with the necessity of studying basic sciences with apprenticeships in hospitals, and with the behavior required of the physician when visiting patients, especially poor ones. Another distinguished translator-physician was Moses Farrachi b. Salem (Ferragut) of the 13th century. He studied medicine at Salerno, and at the request of the king of Naples translated Rhazes' *Continens* and other Arabic medical works into Latin.

Jewish influence was so strong that in Montpellier, portraits of Jews were included in the marble plaques commemorating the early masters of the university. Apparently there was also a Jewish school of medicine in Lunel, which did not, however, attain the eminence of the University of Montpellier. A large part of the information on the early history of the latter and its relations with Jewish scholars is to be found in the history written by one of its graduates, Jean *Astruc (1684–1766), a man of Spanish-Jewish descent, later professor of medicine there and subsequently physician to Louis XV. The Saporta family, also of Marrano descent, has a prominent place in the history of Montpellier during the 16th century. Louis (I) Saporta came from Lerida, was appointed city physician in Marseilles in 1490, and from 1506 to 1529 served as professor at Montpellier University. His son Louis (II) studied medicine there, and his grandson Antoine became successively royal professor, dean, and chancellor of the university (1560). His great-grandson Jean became professor in 1577 and vice chancellor in 1603. The family then immigrated to the French colonies of America and the name does not appear in the later history of Montpellier. The Sanchez family, already well-known in Portugal and Spain, also became prominent in medicine in southern France. The most distinguished member was Francisco *Sanchez (1562–1632), who was appointed professor of medicine and philosophy at Montpellier and later at Toulouse, and published many medical treatises. Jean Baptiste Silva (1682–1742), a native of Bordeaux who graduated in medicine from Montpellier, became physician to the grand duke of Bavaria, Prince Luis Henry of Conde, and Voltaire.

Benvenutus Grapheus, from Jerusalem, one of the most famous eye doctors of the Middle Ages, lived in the 12th century. He taught and practiced in Southern Europe and probably also in Salerno. His observations of and recommended cures for eye diseases prevailing in Southern Europe and other Mediterranean countries are of extraordinary accuracy and his works, which were translated into many European languages, were the most popular textbooks on ophthalmology of the period. There were also Jewish women physicians practicing at this time. Among them was Sarah La Migresse, who lived and practiced in Paris toward the end of the 13th century. In Marseilles a record has been found of an agreement signed in 1326 between Sara de Saint Gilles, widow of Abraham, and Salvat de Bourgneuf, whereby the former undertook to teach the latter "Artem medicine et physice," and to clothe and care for him for a period of seven months. In return, Salvat agreed to turn over to his teacher all his fees as physician during that period. Sarah of Wuerzburg received a license from Archbishop Johann II in 1419 and developed a lucrative medical practice. Rebekah Zerlin of Frankfurt (c. 1430) became famous as an oculist.

Christian Spain and Portugal

During the major part of the 13th and 14th centuries Jewish physicians in Catholic Spain enjoyed the protection and support of the reigning monarchs though toward the end of that period the Inquisition became more active. The list of prominent physicians of that period is a long one and only a few can be mentioned here. One of the most important was al-Fakhār (d. 1235), who received the title of nasi ("prince") at the court of Ferdinand III in Toledo. Another, Nathan b. Joel *Falaquera (second half of 13th century), wrote a medical book in Hebrew on the theory and practice of medicine, therapeutics, herbs and drugs, and hygiene. He used medical and botanical terms found in the Talmud. Abraham b. David Caslari of Narbonne and Béziers was the author of *Aleh Refu'ah* ("The Leaf of Healing," 1326), a treatise on fevers, divided into five books, to be used as a vademecum on these matters, and of a treatise on pestilential and other fevers, written in 1349 when the Black Death decimated the population of Provence, Catalonia, and Aragon. In 1360, Meir b. Isaac *Aldabi, a native of Toledo who went to Jerusalem in the



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middle of the 14th century, completed his comprehensive Shevilei Emunah, a collection of philosophic, mystic, and talmudic teachings including chapters on human embryology, anatomy, physiology, pathology, and rules of health.

AFTER THE EXPULSION

At the end of the 15th century the Jews were expelled from Spain and Portugal. Even before that many eminent physicians had immigrated to North Africa, Turkey, Greece, Italy, and Holland. Many were forced converts and some continued to practice in Spain and Portugal until the 18th century, despite their precarious position in those countries, where they were under constant threat of persecution. It is a historical fact that the Marranos and their descendants were leaders and pioneers in medicine in Europe and Asia for several centuries, from the Renaissance until modern times. Many of them distinguished themselves particularly in medical literature. The 16th century was a time of immense exploration, discovery, and progress. During this period – the beginning of the medical renaissance – many distinguished Jewish physicians, fleeing the Iberian Peninsula, won a worldwide reputation in other lands. Among them was *Amatus Lusitanus, who studied and practiced in Salamanca, Lisbon, Antwerp, Italy, and Greece and whose life was a saga of adventurous flights from one country to another. His principal works were Centuria, the description of 700 cases of disease, and a translation of and commentary on Dioscorides. He is also famous for his unrelenting battle against superstition and medical quackery.

SOME DISTINGUISHED FAMILIES

Abraham b. Samuel *Zacuto, called Diego Roderigo, was born in the Spanish city of Salamanca in 1452 and immigrated to Portugal and Tunis, where he became famous as a physician and astronomer. His great grandson, *Zacutus Lusitanus, born in Lisbon in 1575, became a physician in Salamanca and later fled to Amsterdam, where he became one of the foremost critics of his time. He wrote a history of medicine in 12 volumes, De medicorum Principum, and was also known for his code of ethics for physicians, Introitus medici ad praxim.

Dionysus Brudus (1470–1540), a physician at the Portuguese court who later lived in Antwerp, wrote important works on Galenism and on phlebotomy. His son Manuel Brudus practiced in Venice, England, and Flanders and published works on diet for febrile diseases which were widely read. Luiz Mercado (16th–17th century) of Valladolid wrote a medicophilosophical work De Veritate (1604), as well as numerous works on fevers, gynecology, pediatrics, hereditary diseases, and infectious maladies. Isaac *Cardozo, born in Portugal in 1610, became court physician to King Philip IV in Madrid. The 15th-century physician and poet Francesco Lopez de Villalobos was one of the first to describe lues (syphilis). In 1498 he also published a description of bubonic plague. Roderigo *Lopez was an internist and anatomist who fled the Inquisition in 1559 and became physician to Queen Elizabeth I of England. In 1594 he was accused of plotting to poison Elizabeth and sentenced to death.

The family of de *Castro produced many distinguished physicians. The most famous was Roderigo de Castro (c. 1550–1627), author of a gynecological work, Universa Muliebrum Medicina, and physician to the king of Denmark and various German dukes and princes. His son Benedict de Castro (b. 1597) started practicing in Hamburg and later became physician to the queen of Sweden. He was the author of Apologia, a medico-historical work which described the achievements of Jewish doctors and defended them against antisemitic charges. Orobio de Castro fled the Inquisition and settled in Amsterdam, where he became a famous physician and leader of the Jewish community. Jacob de Castro Sarmiento (1692–1762), born in Portugal, settled in England and was admitted as a fellow of the Royal Society in 1730. His work Agua de Inglaterra reveals a profound knowledge of the therapeutic properties of quinine. The 18th-century Jacob Rodrigues *Pereira was a pioneer in the education of deaf-mutes. Born in Spain, of Marrano parents, he escaped the Inquisition, settled in Bordeaux, and embraced Judaism. At the age of 19 he started his campaign for improving the status of the deaf-mute, and continued in his chosen task for 46 years, showing great ability in teaching speech to the congenital deaf-mute. He invented a sign language for the deaf and dumb. The fate of Antonio Ribeira Sanchez illustrates how far-reaching was the influence of Jewish physicians at that period. A Portuguese Marrano, he fled from the Inquisition to Holland at the beginning of the



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18th century and became the pupil of the famous Dutch physician, Boerhaven. In 1740 he went to Russia as personal physician to the czarinas Elizabeth and Catherine II. However, when his Jewish origin became known he was threatened with death and with great difficulty escaped to Paris, where he became an eminent physician and introduced soblimat into the therapy of syphilis.

A large number of Jewish physicians also settled in Turkey, where private citizens as well as sultans, viziers, and pashas valued their skill and medical knowledge and their high standard of ethics. In the 15th century Joseph *Hamon, a Granada physician, went at an advanced age to Constantinople, where he became court physician. For almost a century some member of the Hamon family held the position of court physician and exercised great public influence. Marrano physicians were also among the East India pioneers. Foremost among them was Garcia de *Orta, born in Portugal. In 1534 he went to India and there studied and collected Oriental plants and drugs. His *Colloquios dos simples Drogas e cosas medicinas de India*, which appeared in 1563 in the form of dialogues, is not only the first but also the most important contribution on this subject to European medicine of that time. Twelve years after his death his body was exhumed and burnt by the Inquisition as a suspected Jew. To this same group belongs Cristoval d'*Acosta (1515–1580), a Marrano physician and botanist born in Mozambique, who lived and traveled in India and in the Middle East. He completed and enlarged the work of de Orta.

Italy

Numerous Italian Jewish physicians were also rabbis and leaders of their communities, especially in Rome, Ferrara, Mantua, and Genoa. The Italian universities, notably those of Padua and Perugia, were among the few that allowed Jews to enter the medical faculties at a time when most other European universities were closed to them. The Jewish communities of Italy were also enriched by the influx of Jewish and Marrano scholars and physicians fleeing the persecution of the Inquisition in other countries. At various periods Jews acted as personal physicians to popes, cardinals, bishops, and dukes. Thus Pope Nicholas IV (1287–92) had at his court the physician Isaac b. Mordecai, better known as Maestro Gajota. In 1392 Boniface IX made Angelo, son of Manuele the Jew, his physician and familiar. Immanuel b. Solomon, known as *Immanuel of Rome, was a practicing physician of note, who wrote on various physical and psychic ailments. *Hillel b. Samuel of Verona, who practiced in Ferrara, was a physician and translator of distinction. Another famous physician and translator was *Kalonymus b. Kalonymus, a native of Arles in southern France who later moved to Rome. He translated some of Galen's writings from Arabic into Hebrew and became famous for his accuracy and literary style. Special privileges and tax exemptions usually accompanied the appointment of court physicians. However, the periods of leniency to Jews were usually followed by periods of restriction and persecution. It has been suggested that the popularity of Jewish physicians in Italy in spite of the innumerable restrictions, the bitter attacks, and the calumnies was due to the superstitious belief of Christians in the "magic" arts of the Jews. They also admired Jewish doctors for their unselfish devotion to their calling, and it is not irrelevant that there was a scarcity of Christian physicians, especially during times of epidemic.

THE 15TH AND 16TH CENTURIES

A number of distinguished Italian Jews appeared in the field of medicine during the 15th and 16th centuries. Saladino Ferro d'Ascoli (15th–16th century) was acknowledged as the leading pharmacist of his time, and his work on pharmacology was the basic textbook for all pharmacists until the 18th century. Bonet de *Lattes (d. 1515), a native of Provence, became physician to Popes Alexander VI and Leo X. He also served as judge of the highest Italian court of appeal and rabbi to the Jewish community of Rome. Philotheus Eliajus Montalto (d. 1616) fled to Italy from the Portuguese Inquisition. In 1606 he became physician to the Grand Duke Ferdinand of Florence and in 1611 personal physician to Queen Marie de Medici of France. By order of the queen he was buried in a Jewish cemetery in Amsterdam. His work *Archipathologia*, dealing with diseases of the nervous system and mental disturbances, was widely used in his time and often referred to by later medical writers. Roderigo de Fonseca in the 16th century earned his reputation by his clear diagnoses and descriptions of internal diseases, fevers, surgery, and pharmacology. Benjamin *Mussafia distinguished himself as physician, philologist, scholar, and rabbi. He



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served as personal physician to the Danish king Christian IV. One of the most outstanding personalities of the time was Rabbi Jacob *Zahalon, born in Rome and later physician in Ferrara. In his book *Ozar ha-Hayyim* he described contemporary hygienic measures as well as the bubonic plague in Rome in 1656. He used numerous new Hebrew medical terms and redefined the moral obligations of the Jewish physician to his profession. Joseph Solomon *Delmedigo studied medicine in Padua and was a pupil of Galileo. After many years of study and travel he settled in Poland and became personal physician to Prince Radziwill. He is famous as a rabbi, physician, philosopher, and mathematician. During the 17th and 18th centuries the family of Conegliano became prominent as physicians and medical teachers in Venice. David de Pomis (1525–1593) of Spoleto became physician to Pope Pius IV. Apart from various medical treatises, he wrote the famous *De Medico Hebreo Enarratio Apologica*, a scholarly defense of the Jewish physician. The Jewish community in Italy, however, declined during the second half of the 17th and the 18th centuries. Only with the French Revolution and the conquest of Italy by Napoleon did the Jews of Italy come into their own again.

The Northern Countries

In the northern countries – Germany, Poland, Russia – there were Jewish physicians of note only from the middle of the 17th century onward, many of them refugees from the countries of the Inquisition. However, as early as the 11th century a medical book had been written in Hebrew by R. Saadiah of Worms. Gradually, the universities of the German states opened their doors to Jews. Around the middle of the 17th century the grand duke of Brandenburg permitted Jews to enter the University of Frankfurt on the Oder. One of the first to study there was Tobias b. Moses *Cohn of Metz. However, he was unable to obtain his degree and therefore went to Padua to receive his M.D. He practiced in Poland and later became physician to five successive sultans in Constantinople. His *Ma'aseh Tuviyyah* is almost an encyclopedia and includes medicine, sciences, philosophy, and part of a dictionary. From the beginning of the 18th century the number of practicing Jewish physicians in Germany, Czechoslovakia, England, and Poland increased. Jewish physicians of that period include Marcus Eliezer *Bloch, a famous general practitioner in Berlin during the mid-18th century; Gumperz (Georg) Levison, who distinguished himself as a practitioner, medical author, and organizer in England and in Sweden during the second half of the 18th century; Elias Henschel, a pioneer in modern obstetrics; and Marcus *Herz, an outstanding philosopher, teacher, and physician.

[Suesmann Muntner]

THE MODERN ERA

19th Century

When Joseph II of Austria proclaimed the Act of Tolerance in 1782 and when, shortly thereafter, the French Revolution brought in its wake emancipation to Jews throughout Western Europe, the gates of European medical schools were thrown open to Jewish students. The importance of the contribution made by Jewish doctors to subsequent medical progress is enormous. The quality and quantity of this contribution is reflected in rosters of Nobel laureates and winners of other awards, dictionaries of eponymic syndromes and diseases, and lists of medical authors and investigators. Spanning nearly two centuries and extending over many lands, Jewish participation in modern medicine defies rigid categorization within frameworks of countries and centuries. Frequent demographic changes have occurred as a result of global events which did not always coincide with the "turn" of a century. In fact, a future historian might choose the 1930s as the watershed decade, during which the mainstream of Jewish medical activity became diverted from Europe to America, coinciding with the rise of American medicine vis-à-vis that of Europe.

The geographic distribution of Jews practicing medicine in the 19th century reflected the incongruity between the size of Jewish communities and their number of medical practitioners and scientists. Because of restrictions



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practiced by Russian medical schools, the youth of the world's largest Jewish community went abroad to pursue their medical studies. Those who returned had to pass special examinations in order to obtain a license. Not until 1861 were they admitted to the army and civil service, and only in 1879 were they granted permission to live beyond the *Pale of Settlement. Even when Jewish physicians successfully overcame the main restrictions and hardships, they were rarely permitted to participate fully in university-centered medical activities.

On the other hand, Jewish doctors were extensively involved in the academic-scientific life of Central and Western Europe. In Austria and Germany, this involvement did not, however, come about suddenly. Although the gates of the universities were open for admission, the inner doors to academic recognition remained partially closed during the first half of the century. At best, a Jew could hope to become a privatdocent or a "titular" professor. And even after the struggle for academic recognition had been won, Jews were not welcome in "establishment"-controlled specialties, such as surgery. As a result they tended to cultivate fields that did not attract their non-Jewish colleagues.

An outstanding example of this trend is dermatology-ve-nereology. When Ferdinand von Hebra took over the Kraetze Klinik in Vienna, he was able to recruit only Jewish assistants, some of whom – Moritz *Kaposi, Isador Neumann (1832–1906), and Heinrich Auspitz (1835–1886) – became world famous. In Germany, where dermatology was often referred to disdainfully as "Judenhaut," Paul *Unna, Oskar *Lassar, and Josef *Jadassohn established reputations as pathfinders in their specialty. In Switzerland Bruno Bloch (1878–1933) made Zurich an international teaching center. The predilection for neglected fields may also account for Jewish preeminence in biochemistry, immunology, *psychiatry, and in hematology, histology, and microscopic pathology – sciences which were collectively referred to at the time as "microscopy." The microscope attracted Jewish physicians, many of whom combined the study of microscopy with the practice and teaching of clinical medicine. Outstanding among these men were Ludwig *Traube, a great teacher and pioneer of experimental pathology, anatomy, and neurohistology; Robert *Remak, a pathfinder in embryology, neurohistology, and electro-therapy; Moritz *Romberg, the founder of neuropathology; and the surgeon Benedict *Stilling, whose discovery of nerve nuclei was a turning point in basic neurology. These investigators laid the foundation of modern neurology, which numbered among its great names Leopold *Auerbach, Ludwig *Edinger, and Herman *Oppenheim – discoverers of many neurologic disorders now bearing their names.

Microscopy was also pursued by investigators who were exclusively devoted to basic science. To this category belong the histologist-anatomist Jacob *Henle, who anticipated the germ theory of infection; Gabriel *Valentin, who enriched every branch of basic science; the histologist-pathologist Julius *Cohnheim, who proved that pus cells are derived from the blood; the physiologists Hugo *Kronecker, Rudolf *Heidenhain, Nathan Zuntz, and Hermann *Munk, who were trail-blazers in this field; and Carl *Weigert, whose novel concepts and staining techniques advanced many sciences, particularly bacteriology. Jewish contributions to bacteriology date back to the botanist Ferdinand Cohn (1828–1898), who established the vegetable nature of bacteria (1853). These contributions increased during the latter part of the century when bacteriology and the allied science of immunology became integral parts of medicine. Jews became conspicuous in the discovery of bacteria and the development of immunologic methods for diagnosing and preventing bacterial infection. Prominent in this field were Fernand *Widal, who devised a test for typhoid fever and for its prevention; Mordecai Waldemar *Haffkine, who prepared vaccines against cholera and plague; August von *Wasserman, who researched anti-toxins and antisera; and Nobel laureate Paul *Ehrlich, the father of hematology, chemotherapy, and theoretical immunology.

At the same time, clinical medicine was also receiving Jewish contributions. Among the outstanding internists were Heinrich von *Bamberger, for his contributions to cardiology; Hermann *Senator, for his work on the kidney; and Ottomar Rosenbach (1851–1907), for his researches in functional disease and psychotherapy. Outstanding pediatricians were Edward Henoeh (1820–1910) who described a bleeding disease named after him; Adolf *Baginsky who investigated nutrition and infectious diseases; and Max Kassowitz (1842–1913) who shed light on



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congenital syphilis and rickets. Jews were also prominent in otolaryngology, a specialty founded by Adam *Politzer, and in ophthalmology, with the contributions extending from 1810, when George Gerson (1788–1844) investigated astigmatism, to the close of the century, when Karl *Koller began to use local anesthesia in the treatment of eye diseases. Obstetrics and gynecology owe much to Samuel *Kristeller, Wilhelm Freund (1833–1917), and Leopold *Landau for new concepts, observations, and operative techniques. X-ray therapy was founded in 1897 by Leopold Freund (1868–1944). Even surgery, a specialty not too accessible to Jews, numbered many notables. Anton Wolfer (1850–1917) performed the first gastroenterostomy in 1881, James Israel (1848–1926) pioneered urologic surgery, and Leopold Von Dittel (1815–1898) devised new surgical techniques and instruments. Jewish doctors also contributed to the history of medicine. Noted historians were August *Hirsch, Judah *Katzenelson, and Julius *Pagel.

It is apparent from some of the aforementioned names that Jewish contributions to medicine were not confined to German-speaking countries. In France, many Jewish doctors attained eminence. Julius Sichel (1802–1868) established the first eye clinic in Paris in 1830; Michel Levy (1809–1872) introduced new concepts in the field of public health; Georges Hayem (1841–1933) pioneered hematology; and Fernand Vidal made a world impact with his work on the detection and prevention of typhoid fever. In Denmark the great anatomist Ludvig *Jacobson and the pioneer in occupational diseases, Adolph *Hannover, were active during the first half of the century; and the epidemiologists Carl *Salomonsen and "the father of pediatrics in Denmark," Harold Hirschprung (1830–1916), during the second. Holland was the home of the physiologist Van Deen (1804–1869); Italy of the anatomist-physiologist-psychiatrist, Cesare *Lombroso, whose views on criminology have now been discredited; and Poland, of the anatomist Ludwig *Hirschfeld, the neurologist Samuel Goldflam (1852–1930), and the ophthalmologist Ludwig *Zamenhof, the creator of Esperanto. England knighted its greatest laryngologist Sir Felix *Semon. Even restrictive Russia honored the distinguished ophthalmologist Max *Mandelstamm with the title "Privatdocent" and the physiologist, Elie de-*Cyon, with a professorship (1872).

In America, where the Jewish community was small and medical science was not yet advanced, Jewish contributions to medicine were modest, and as often related to organization, administration, and the foundation of hospitals as to scientific pursuits. The ophthalmic surgeon Isaac Hays (1796–1879) was editor of the influential American Journal of Medical Sciences (1827) and one of the founders of the American Medical Association. Jacob da Silva *Solis-Cohen, a pioneer in laryngology who performed the first laryngectomy for laryngeal cancer (1867), was the acknowledged "father" of organized instruction in his specialty. Another "father" – that of American pediatrics – Abraham Jacobi was the founder of the American Pediatric Society and in his later years (1910), the president of the American Medical Association. Jewish doctors were also active in establishing and staffing Jewish hospitals that provided training for Jewish interns and residents. In time these hospitals became important research centers affiliated with medical schools that absorbed many Jewish students.

Challenges to Jewish Medical Scientists and Clinicians

Medicine has undergone profound changes since the start of the 20th century. Advances in medical science have gradually transformed clinical practice from a largely pragmatic skill based on anecdotal experience into a discipline underwritten by verified laboratory and clinical observations. The increasing pace of scientific discovery continues to offer therapeutic possibilities of unprecedented complexity and expense. Medical teaching has changed from apprenticeship to individual teachers with varying degrees of skill and knowledge to organized instruction in universities with courses and teachers with appropriate academic credentials. Before the 1950s patients were rarely given explanations for their illnesses and treatment. Patients now have ready access to medical knowledge and expect to be involved in decisions about their clinical management. They also have increasing expectations in terms of the standards of medical care. Change in attitude and technical advances have made ethics an integral part of clinical practice. In general, an overview of the Jewish contribution to medicine in modern times must consider advances in scientific knowledge, the application of this knowledge to clinical



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practice, medical education, the organization of medical practice, and the proper education and participation of patients.

Medicine in the Jewish world must take account of four special factors. Firstly, clinical decisions are often influenced by Jewish ethics that differ in varying degree from the constraints related to other forms of religious adherence. Secondly, antisemitism culminating in the Holocaust profoundly affected the lives of Jewish medical scientists and doctors. Thirdly, there is a strong incentive to apply research and clinical skills to diseases to which Jews are genetically predisposed (see *Hereditary Diseases). Finally, the establishment of the State of Israel created the need for sophisticated medical research, teaching, and services in a region of initially endemic infectious diseases in the face of massive immigration, wars, and continuing terrorism.

Contributions to Medical Science

Advances in clinical medicine have followed progress in the biomedical sciences and the development of novel technologies. Biomedical research in the last quarter of the 20th and the beginning of the 21st centuries is characterized by better understanding of the molecular and pathological processes, the deciphering of the human genome, and the elucidation of complex intra-cellular processes. These have led to the engineering of disease-specific and targeted therapies and the development of non-invasive technologies. Jewish researchers and clinicians have made significant contributions to these advances.

Jewish contributions to the advances in basic science that have transformed medical practice are considered in the entry *Life Sciences. Often the implications of these discoveries for medicine are not initially apparent. There are additional areas of scientific research that are from the outset more clearly relevant to medicine to which Jews have made important contributions. However in medical as in scientific research it has become increasingly difficult to single out specifically Jewish contributors to a global enterprise that is for the most part now carried out by large, interdisciplinary teams, often working in different institutes.

INFECTIOUS DISEASES

At the beginning of the 20th century infections were the major causes of human morbidity and mortality. Increased understanding of immunity and natural resistance to infection lead to diagnostic and eventually therapeutic advances. August von *Wasserman introduced the first diagnostic test for syphilis (1906).

Bela *Schick devised a diagnostic test for detecting exposure to *C. diphtheriae*, the cause of diphtheria. Michael *Heidelberger's work on antibody structure and function laid the basis for protection against and treatment of infections with preformed antibody (passive immunization). Developments in vaccine production (active immunization) made it possible for Jonas *Salk and Albert *Sabin to produce vaccines with the potential ability to eliminate poliomyelitis.

Advances in drug production also reduced the threat of infection. *Ehrlich's dream of a "magic bullet," which would selectively destroy bacteria as salvarsan does spirochetes, has been partially realized by the discovery of sulfonamides and antibiotics. In 1940 Sir Ernst Boris *Chain isolated penicillin, the first naturally occurring antibiotic to be discovered. Streptomycin was isolated in 1944 and neomycin in 1948 by Selman *Waksman of Rutgers University. Harry Eagle (1905–1992) and Maxwell Finland (1902–1987) made important contributions to progress in antibiotic therapy by devising accurate methods for measuring the potency, anti-bacterial specificity, and safety of antibiotics. Unfortunately, microbial resistance to antibiotics threatens to reverse the relative security achieved in the golden age of drug treatment. Stanley Farber discovered one important mechanism in the development of antibiotic resistance, namely the ability of gene fragments called plasmids to confer resistance on previously susceptible bacteria. Combating infection also depends on the efforts of scientists who understand the biology and epidemiology of infection, as exemplified by the research of Baruch *Blumberg and Barry Bloom.



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Astute clinical observation is also part of the process of controlling infections, as illustrated by Saul Krugman's elucidation of the many causes of "infectious hepatitis."

CELL BIOLOGY AND CANCER

The links between cell biology and cancer research are prime examples of the contributions of basic research to medicine. For example the formation of new blood vessels (angiogenesis) is essential for tumor growth and metastasis. Judah *Folkman's discoveries in this field point the way to new forms of treatment that may interdict this process. The application of basic genetics to the biology of malignant cells has illuminated many areas of cancer research where inherited or acquired mutations are fundamentally important. A pertinent example is the work of Bert Vogelstein (1949–) in understanding the molecular basis of colo-rectal cancer. Long-held hopes of manipulating patients' immune system to reject cancer have been greatly encouraged by the innovative work of George *Klein.

BLOOD DISORDERS

Advances in immunology have improved our understanding of many hematological diseases and have also influenced clinical practice. Gerald *Edelman's research on immunoglobulin structure clarified the nature of myeloma and other neoplastic diseases characterized by abnormal immunoglobulin production. The discovery and classification of blood groups by Karl *Landsteiner, and his associates Philip *Levine and Alexander Wiener (1907–1976), rationalized the hitherto haphazard and dangerous practice of blood transfusion. Their findings also revealed the nature of blood disorders resulting from immune attacks on blood group antigens, notably hemolytic disease of the newborn. Jewish investigators have contributed to the solution of other hematological problems. William *Damashek was responsible for the logical classification of many immune-mediated and neoplastic blood diseases and was also an innovator in treating leukemia with anti-proliferative drugs. Robert B. Epstein (1928–) collaborated with E.D. Thomas in the first successful bone marrow transplantation. Louis Klein *Diamond made major advances in classifying and characterizing many blood disorders of infancy and childhood. Ernest Jaffe (1925–) contributed to the understanding of hemoglobin synthesis. Ernest Beutler (1928–) elucidated many facets of iron metabolism in red cell formation and proposed a means of tracing the cellular origin of many bone marrow-derived diseases. Maxwell *Wintrobe developed hematology as a laboratory and clinical discipline.

IMMUNOLOGICAL DISEASES

Jewish scientists have made outstanding contributions to understanding the molecular basis and clinical manifestations of disordered immunity, a field that has assumed increasing importance in allergy, transplantation medicine, and auto-immunity. Alexander *Besredka of the Pasteur Institute in Paris was a pioneer in allergy research. Current understanding of the pharmacological basis of allergic disorders owed much to the findings of Baruj *Benacerraf. Ernest Witebsky (1901–1969) and Felix Milgrom (1919–) made important observations on immune mechanisms underlying autoimmune diseases. Robert Schwarz (1928–) introduced new experimental and therapeutic strategies based on the concept that the immune system in auto-immunity loses the ability to distinguish between self and non-self, a defect termed "loss of tolerance." Peter *Lachmann helped delineate the role of a disturbed complement system in these diseases. Fred *Rosen (1930–2005) was a world authority on the management of inherited immunodeficiency diseases in childhood. The availability of monoclonal antibodies arising from Cesar *Milstein's work has provided immense benefits for research and clinical practice in many fields.

NUTRITIONAL DISEASES

Casimir *Funk introduced the idea of vitamin (which he called "vitamines") deficiency to nutrition and medicine. He recognized that beriberi is caused by nutritional deficiency and he also isolated nicotinic acid, a member of the vitamin B complex. Joseph *Goldberger deduced that pellagra is a disease resulting from vitamin deficiency. In the



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1920s Alfred Hess, working in parallel with Harry Steenbock, started the important field delineating the relationship between vitamin D deficiencies, rickets, and other bone disorders.

METABOLIC DISEASES

Progress in understanding metabolic diseases went through many transformations of approach and technique in the 20th century to which Jewish scientists and physicians made crucially important contributions. Mapping biochemical pathways in health and disease has depended on laboratory discoveries in experimental animals, the introduction of ethically acceptable methods of investigation in humans, improved techniques of laboratory analysis, and the adaptation of molecular genetics to this field.

The high prevalence rate of many metabolic diseases in Jewish populations makes this an area of especial Jewish interest. Diabetes mellitus, now recognized as occurring in two main forms, is a compelling example. In 1899, Oskar Minkowski (1855–1931) demonstrated the association of diabetes with the pancreas, and in 1920 Moses Barron (1883–1961) described observations of the pancreas that suggested the experimental approach that led to Banting and Best's momentous discovery of insulin. Rachmiel Levine (1910–1998) showed that insulin promotes the transport of glucose from blood to cells, a process termed "the Levine effect." Progress in other fields was helped by observations by Jewish biochemists such as Seymour Reichlin and more fundamentally by the description of major metabolic pathways by Max *Meyerhof and Hans *Krebs and many others. A key example of the interrelationship between genetic predisposition to metabolic problems such as type II diabetes, disorders of lipid metabolism, and obesity is provided by the observations of Jeffrey Friedman, Sir Philip *Cohen, and other investigators.

ENDOCRINE DISEASES

Endocrine diseases illustrate the need to draw together many disciplinary themes in order to understand disease mechanisms and predisposition to these diseases. Jewish medical scientists have contributed to the genetic, metabolic, pharmacological, and immunological studies needed to explore the basis of endocrine diseases such as diabetes and thyroid disease. However, central to advances in this field was the development of precise methods for measuring hormone levels for research and clinical purposes. Rosalyn Sussman *Yalow and Andrew *Schally were largely responsible for the assay techniques that made these measurements possible and which also accelerated research in many other fields.

HEART, LUNG, AND KIDNEY DISEASES

The fields of cardiovascular, pulmonary, and renal diseases have many pioneering Jewish contributors. Arthur *Master introduced the concept of coronary insufficiency and the "Master Step Test" for its detection; Louis Katz (1897–1973) elucidated the principles of cardiovascular hemodynamics, metabolism, and electro-physiology, research fields also enriched by Simon Dack (1908–1994), Richard Bing (1909–), Eugene Braunwald (1929–), and Eliot Corday (1913–1999). Michel Mirowski (1924–1990) invented the automatic implantable cardioverter (AICD) which transformed the management of life-threatening cardiac arrhythmias. The gradual introduction of surgical methods of treating cardiovascular problems necessitated the development of increasingly sophisticated biotechnology to which Adrian Kantrowitz (1918–) has made many indispensable contributions. New approaches to the study of pulmonary circulation have been introduced by Alfred P. Fishman (1918–). Arthur Maurice Fishberg (1898–1992) correlated the pathological and clinical manifestations of kidney disease. In 1934 Harry Goldblatt (1891–1977) demonstrated the mechanism of secondary hypertension caused by renal vascular disease. Kurt Lange (1906–?) investigated immunologic, biochemical, and pathological facets of kidney disease in children.

GASTROENTEROLOGY



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At the turn of the 20th century, Max Einhorn (1862–1953) and Samuel Weiss (1885–?) were amongst the first clinicians to develop gastroenterology as a medical specialty. In 1931 Burrill *Crohn described the inflammatory bowel disease named after him and Heinrich Necheles (1897–1979), Joseph Kirsner (1909–?), and Leon Schiff (1901–?) extended our understanding of the pathophysiology and therapy of many gastrointestinal and liver diseases. Increasing knowledge produced a need to establish departments devoted to research and treatment of patients with these disorders of the kind set up by Henry *Janowitz at Mount Sinai Hospital, New York.

NEUROLOGY

Progress in clinical neurology is largely dependent on increased understanding of brain structure and function. Jewish scientists have participated in this problem from the early days of Joseph *Erlanger's research on nerve conduction to Richard *Axel's dissection of the pathways relevant to olfactory function. Among the clinical neurologists who made the first attempts to correlate disease and basic pathology were Bernard Alpers, who studied neuro-syphilis and vascular degenerative diseases; Benjamin Boshes, who investigated Parkinson's disease; and Leo Alexander who investigated multiple sclerosis. Israel *Wechsler compiled one of the first systematic textbooks on clinical neurology (1927) which became a standard work.

DERMATOLOGY

The longstanding interest of Jewish physicians in skin diseases might traditionally be said to have begun with the Bible. Marion Sulzberger (1895–1983), a pupil of Bruno Bloch of Zurich, Stephen Rothman (1894–1963), Herman Pinkus (1905–1985), and Louis Forman were amongst the first dermatologists to appreciate the need to underpin merely descriptive diagnosis with systematic observations of pathological changes readily observed in this most accessible of human organs. Edmund Klein (1922–1999) was an early winner of the Lasker Award for Clinical Medical Research in recognition of his pioneering treatment of skin diseases, and especially pre-malignant diseases.

RHEUMATOLOGY

Rheumatology is a relatively young but important clinical specialty because of the high incidence of debilitating joint diseases especially in the elderly. The prospects for controlling rheumatoid arthritis have been greatly increased by the successful application of monoclonal antibody techniques. Morris *Ziff was influential worldwide in establishing the essential links between basic science and clinical practice in this discipline.

PEDIATRICS

The demanding technical and psychological challenges of health care in infancy and childhood have intrigued many Jewish scientists and clinicians. In the early stages of its development, Abraham Jacobi (1830–1919) was largely responsible for the emergence of pediatrics in the U.S. Isaac A. *Abt and Julius Hess (1876–1995) were pioneers in child nutrition and care of the premature infant. Henry *Koplik added to knowledge of infectious diseases in children, and Louis *Diamond contributed to pediatric hematology. Sidney Farber (1903–1973) transformed the outlook for childhood leukemia by introducing new anti-proliferative drugs and a regime of comprehensive management. The universally known Dana-Farber Cancer Institute commemorates his achievements. In addition, Alexander Nadas (1913–2000) was a pioneer in pediatric cardiology and Henry Shwachman (1910–1986) was among the first clinical scientists to appreciate the complexities of cystic fibrosis.

SURGERY, OBSTETRICS, AND GYNECOLOGY

Jewish doctors have made many contributions to the rapidly developing scope of surgery, obstetrics, and gynecology. Charles Elsberg (1871–1948) introduced new methods in the treatment of spinal-cord tumors. Markus



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*Hajek of Vienna devised new techniques in nasal and laryngeal surgery. A pioneer in thoracic surgery, Max Thorek (1880–1960) founded the International College of Surgeons, and Irving Cooper (1922–1985) introduced an operative procedure for the treatment of Parkinson's disease. In obstetrics, Joseph de Lee (1869–1942) contributed an authoritative textbook and original papers and was an outstanding teacher and clinician. Isidor S. Rubin (1883–1958) made many important contributions to gynecology, including the test for fallopian tube patency when investigating sterility. Lord Robert *Winston's achievements include a worldwide reputation for his contributions to solving the problems of female infertility.

RADIOLOGY

U.S. Jewish radiologists have enriched every branch of their specialty. Outstanding contributions have been made by Hymer Friedell (1911–) to radiation biology, by Harold G. Jacobson (1912–2001) to neuroradiology, and Leo Rigler (1896–1979), who was president of the American Radiologic Society, to the radiology of the chest and abdomen. Gustav *Bucky invented the X-ray diaphragm that bears his name.

DRUGS AND THERAPEUTICS

Advances in pharmacological knowledge and drug design, testing, and production have transformed the management of virtually every acute and chronic disease. In addition to the development of anti-microbial agents, this is an area to which Jewish scientists and clinicians have made so many contributions that selected examples must suffice. Isidor Ravdin (1894–1972) was a pioneer in anti-cancer chemotherapy. Gertrude *Elion developed the immunosuppressive drug azathioprine, the first anti-viral drug acyclovir, and allopurinol used to treat gout. Ralph Alexander *Raphael's discoveries illustrate how a profound understanding of organic chemistry can be translated into innovative drug design active against a wide range of diseases. Josef Fried (1914–2001) developed anti-inflammatory steroids and Gregory Goodwin *Pincus (1903–1967) and Carl *Djerassi developed the first successful female, oral contraceptive drugs. The successful career of Max *Tishler (1906–1989) also showed the increasing importance of combining scientific and entrepreneurial skills in drug development. This point is emphasized by the increasing dominance of bioengineering companies able to exploit advances in genetics and other fields. The innovative achievements of Robert S. *Langer are a pertinent example. Jewish scientists have also made key contributions to anti-HIV treatment. They include Jerome Horwitz, who synthesized the first drug that inhibits the viral enzyme reverse transcriptase, and Irving Sigal (1953–1988), who first showed the efficacy of drugs which inhibit viral proteases. Sigal died in the terrorist bombing of Pan Am flight 103.

PATHOLOGY

Jewish pathologists made important contributions at the stage when pathology was developing from an observational skill into one demanding more widely based scientific insight and knowledge. The efforts of Hans Popper (1905–1988) and Fenton Schaffner (1920–2000) clarified the pathology of liver disease. David Spain (1913–) in cardiac pathology and Averill Liebow (1911–1978) in pulmonary pathology performed a similar service. Benjamin Castleman (1906–1982) described the pathology of the parathyroid glands and a proliferative disease of the immune system which bears his name and is a paradigm for many, more common diseases of a similar nature. Paul *Klemperer's imaginative interpretation of the damage inflicted by "connective tissue diseases" laid the basis for what are now known as multi-system autoimmune diseases.

PUBLIC HEALTH

Jews helped to lay the foundations of public health and hygiene in the U.S. and elsewhere. Sigmund Goldwater (1873–1942) founded the first occupational disease clinic in New York in 1915. His contemporary Milton J. Rosenau (1869–1946) promoted important measures for preventing epidemics of infectious diseases in the Americas and



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elsewhere. Jeremiah Stamler (1919–) was one of the first investigators to conduct epidemiologic studies on environmental factors influencing coronary heart disease.

HISTORY OF MEDICINE

While many Jewish doctors were making history, some were writing it. Outstanding early historians were Max Neuberger (1868–1955) in Austria, Charles *Singer in England, Arturo Castiglioni (1874–1953) in Italy, and Harry *Friedenwald, Victor Robinson (1886–1947), and Saul Jarcho (1906–2000) in the U.S.

EDUCATION AND PUBLICATION

Jews have played a prominent part in the interrelated fields of medical education and publication. Abraham *Flexner is still remembered for his "Flexner Report" (1906), which charted the subsequent course of medical education in the United States. After World War II a steadily increasing number of Jews have joined the teaching staffs of medical schools. Many have also contributed to teaching as textbook authors and by editing medical journals. The well-known medical editor, Morris *Fishbein, edited the Journal of the American Medical Association (1924–49) and played a leading role in shaping American healthcare policies. Alexander Gutman (1902–1973) edited the American Journal of Medicine and Alfred Soffer (1922–) was editor of Chest. Subsequently there has been an at least commensurate increase in the numbers of Jewish medical scientists and teachers needed to meet the enormous demand for journals, books, and education at all levels.

Advances in research and education have also created a demand for medical scientists with the rare combination of the research expertise and administrative skills needed to run vast institutions of unprecedented complexity. Jewish scientists with these capabilities include Arnold Levine at the Rockefeller, Walter *Bodmer, Sir Gustav *Nossal, Harold *Varmus, and Philip Fialkow at the University of Seattle.

Jewish Medicine in the Diaspora

UNITED STATES

The early years of the 20th century witnessed a continued immigration to the U.S. that changed the "ethnic" and cultural pattern of American Jewry and its medical representation. The first Jewish doctors in the U.S. were of Sephardi origin. During the second part of the 19th century Jewish immigrants from Germany assumed leading roles in communal affairs and medicine. Russian Jews, who began emigrating after the pogroms of the 1880s, added a third element, which was destined to grow in numbers and influence. Later, the U.S. gained new immigrants from the Jewish population that had moved to East European countries when these broke away from the Russian and Austro-Hungarian empires after World War I. These Jews were again unsettled by unfavorable economic and political conditions.

Jewish emigration from Europe to the U.S. yet again increased sharply in the 1930s with the rise of the Nazi Party. After World War II the majority of those who escaped the Holocaust immigrated to the United States or Israel. Physicians who found refuge in America arrived at a propitious time. The 1930s and 1940s marked the beginning of the current golden age of scientific medicine, ushered in by the discovery of antibiotics and cortisone and advances in molecular biology and medical technology. With the decline of traditional European centers, the United States became the new world center of scientific and medical activity with Jewish immigrants joining the country's extraordinarily creative universities and institutes. Rid of vestiges of intolerance and receptive to new talent, the country's medical establishment and public welcomed the newcomers. Jewish hospitals, such as Mount Sinai in New York and Michael Reese and Mount Sinai in Chicago, as well as non-Jewish hospitals, research foundations, and universities absorbed many of them into the mainstream of medical progress. By the 1980s Jewish physicians in the United States greatly outnumbered those in other countries. In the State of New York alone there were



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7,500 practicing Jewish doctors compared with 5,500 in Israel and 3,000 in France. Overall 9% of U.S. physicians were Jewish, compared with a 3% representation in the general population. More than 17,000 of the approximately 27,000 U.S. Jewish physicians in private practice resided in the thickly populated states of New York, California, Illinois, Pennsylvania, New Jersey, and Massachusetts. Of these, approximately 4,700 were general practitioners, 6,500 specialists in general medicine and its branches, 3,000 in surgery, 2,900 in obstetrics and gynecology, 1,000 in ophthalmology, 800 in radiology, 650 in dermatology, and 600 in otolaryngology. However the distribution among medical specialties was uneven. Whereas only 5% of doctors in occupational medicine were Jewish, they comprised 20% of general physicians and more than 30% of psychiatrists. This predominance in numerical terms is likely to have persisted but is difficult to quantify and compare with earlier periods. There has been increasing specialization marking the virtual demise of the "general internist" and the current Jewish population is less homogeneous compared with the initial immigrant Jewish population. However, the Jewish contribution to U.S. and thereby to medicine worldwide should not be assessed simply in terms of the numbers of practicing physicians but should also take account of Jewish contributions to medical science and education.

CANADA

Jewish doctors and medical scientists in Canada also benefited from the opportunities available in the U.S. to improve the provision of medical services and education. Their numbers included the pediatrician Alton Goldbloom (1890–1962) and Arthur Vineberg (1903–1988), who developed techniques for improving blood circulation to diseased heart muscle.

WESTERN EUROPE

The countries of Western Europe other than Germany and Austria had long settled Jewish communities whose numbers were increased by refugees from Russia at the beginning of the 20th century and from Nazi persecution in the 1930s. Jewish doctors are well represented in clinical practice and in academic centers. Their contributions to medicine and medical science in the United Kingdom are reflected by the high national honors accorded to Sir Ludwig *Guttmann for his work on rehabilitation, and to Lord *Cohen, Lord Rosenheim, Lord Turnberg, Sir Raymond Hoffenberg, and Sir George Alberti for their achievements in clinical medicine, teaching, and research. French scientists made important contributions to the formative stages of molecular biology and the contributions of Jewish medical scientists in France are illustrated by the achievements of Jean Hamburger (1909–1992) in renal transplantation. Switzerland's Jewish community of indigenous and refugee medical scientists has included Tadeus *Reichstein, who isolated cortisone, and Pierre Rentchnick (1923–), the foremost authority on public health and hygiene in a country which traditionally takes these subjects very seriously. Sweden sheltered the Nobel Prize winner Robert *Barany and is now the home of the cancer research specialist George *Klein and of the endocrinologist Carl Luft, well-known for his research on diabetes. The Jewish medical academic communities of Germany and Austria were extinguished by the Nazis and the preeminence of these countries in research and practice thereby passed to the countries where Jewish refugees settled.

RUSSIA AND THE FORMER SOVIET UNION

World War I, the Russian Revolution, and the *Balfour declaration had demographic and political consequences that profoundly influenced Jewish participation in medicine. Many Russian Jews moved to large university centers, where they had been forbidden to reside. As a result of this movement and of the new policy of open university admissions, the number of Jewish doctors greatly increased. Unofficial admission quotas reappeared during the later years of Stalin's rule. However, neither their number nor their achievements can be readily determined because of the isolation of Russian Jewry from the Western world.

POLAND AND EASTERN EUROPE



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Despite poor economic conditions, Jews in pre-Hitler Poland maintained 40 hospitals where many of the country's 3,500 Jewish doctors provided services. Poverty, backward technology, and a hostile academic environment prevented Jewish scientists from attaining the achievements reached by their colleagues in Western Europe. Still, their contributions were far from negligible. Edward Platau, the doyen of Polish neurologists, researched meningitis and brain tumors. Adolf Beck investigated nerve physiology and Henry K. Higier explored the autonomic nervous system. Samuel Goldflam studied reflexes and the diseases myasthenia gravis and periodic paralysis. Zygmunt Bychowski investigated traumatic epilepsy and multiple sclerosis. Anastaszy Landau was prominent in metabolic research, Stanislaus Klein in hematology, Seweryn Sterling in social medicine, and Gerszon Lewin in tuberculosis. Aron Solowiesczyk, who was killed during the Warsaw ghetto rising, was prominent in surgical research. But the scientific potential of Jewish doctors in Poland was not destined to develop. During the German occupation, Jewish doctors devoted their energies to caring for people doomed to starvation, torture, and death. Many distinguished themselves by acts of dedication and heroism and over 2,800 were killed. The tragic events in Poland were paralleled by similar developments in other German-occupied territories.

SOUTH AMERICA AND MEXICO

In the early part of the 20th century, geographic remoteness meant that Jewish contributions to medicine in Latin America received less recognition abroad than they deserved. Nevertheless, the large communities in South America were reinforced by immigration from Europe ensuring that Jewish medical scholarship thrived, even if not to the extent enjoyed by colleagues in North America. Since World War II the opportunities to contribute to advances in medical research have suffered from political instability and periods of economic decline. In Argentina, where Jewish immigration began in 1889, the figure of the pioneer physician Noah Yarchi is still remembered and revered. The doctors who followed in his footsteps helped sustain the health and morale of the colonists and the early settlers in the cities. With the establishment of the Ezra Hospital in Buenos Aires in 1921, a center was provided for medical activity; it grew in importance as the Jewish population increased. Jews have been prominent in every phase of the professional and academic life of the country; Professor Quiroga was president of the Academy of Medicine of Buenos Aires and Ricardo Rodríguez dean of the Medical Faculty of La Plata. Jewish physicians published the Journal Archives de Medicina Argentina-Israel.

For a long period the Jewish population in Brazil was 140,000, and much lower in other Latin American countries. Jewish participation in medicine increased significantly after the arrival in the 1930s and 1940s of refugee doctors who brought the sophisticated approach of European medicine. Many Jewish physicians rose to eminence. Victor Soriano of Montevideo, Uruguay, was the editor of the World Journal of Neurology. Mexico had 120 Jewish doctors in 1970, many of whom attained professional distinction. Characteristic of the medical pioneers' sense of Jewish identity was their publication of the medical journal *Ars Medici* early in the century, when their numbers were very small.

SOUTH AFRICA

At the peak of communal activity South Africa had about 750 Jewish doctors who made major contributions to medical research, education, and practice. Among these were Philip *Tobias, president of the Royal Society of South Africa, Maurice Shapiro, the immuno-hematologist who became head of the country's transfusion services, the gynecologist S. Joel Cohen, the physician M.M. Sussman, the cardiologist Valva Shrir, and the surgeon Jack Wolfowitz. The plastic surgeon Jack Penn (1909–1996) carried out many facial reconstruction operations on Israeli soldiers wounded in the War of Independence and subsequently became honorary visiting professor of plastic surgery at the Hebrew University of Jerusalem. During the period of political uncertainty before the country achieved independence many doctors immigrated to the United Kingdom, the U.S., and Israel. Those achieving distinction include Israel Chanarin, the hematologist and expert on megaloblastic anemias, and Anthony Segal, the authority on the white blood cells called neutrophils.



Medical Science and Practice in Israel

Sussman *Muntner, Joshua O. *Leibowitz (1895–1993), who was professor of medical history in the Hebrew University of Jerusalem, and David Margalit have fully described the history of medicine in Palestine under the Mandate and in the early years of the State of Israel. At the beginning of the 20th century infectious diseases were rampant in Palestine. Clinics established by European Jewish communities provided medical care for the Jewish population of Jerusalem. These clinics became hospitals that expanded to meet the needs of a modern city, notably Bikkur Holim, established in 1843, and Sha'arei Zedek, established in 1902. Fortunately for the needs of the Jewish population, physicians were prominent in the Zionist movement since its inception. The first Jewish physician in Palestine, Simon Fraenkel, was sent to Jerusalem in 1843 by Moses Montefiore. Menahem Stein was the first Jewish doctor in Jaffa (1882), Hillel *Joffe the first in Haifa (1890), and Bathsheba Yunis (1880–1947) the first in Tel Aviv. Leib Pashkovsky was the first surgeon to settle in Palestine (1906). In 1912, the year a medical association was founded in Tel Aviv, there were 35 Jewish doctors in the country, the majority specially trained in ophthalmology, dermatology, and parasitology in order to cope with the country's most prevalent diseases. Prominent among the early specialists were the ophthalmologist Aryeh *Feigenbaum, the dermatologist Aryeh Dostrovsky (d. 1975), and the bacteriologist and founder of the Pasteur Institute in Jerusalem (1913), Israel J. Kligler. Other notable doctors were Aryeh Boehm, who was responsible for many improvements in public health, and the otorhinolaryngologist Moshe Sherman, founding president of the country's first Medical Association. Although public health remained a major preoccupation, increased control of malaria, rabies, trachoma, and other infectious diseases allowed more scope for other specialties to develop.

After the Balfour Declaration, the number of Jewish physicians in Palestine increased sharply and their pace of immigration accelerated with each wave of persecution in Europe. Health services improved under the Mandate with an expanded network of clinics and public health measures including an immunization program. Thus a medical infrastructure was in place when the State was established which could cope with the added demands of immigration and the War of Independence. With subsequent expansion, Israel had approximately 27,000 physicians in the early 21st century, so that the ratio of doctors to population has become one of the most favorable in the world. The country had some 47,000 nurses, of whom 50% were registered. As a result Israel had a very low infant mortality rate (7.5 per 1,000 live births) and long life expectancy (79.1 years on the average for women and 75.3 years for men). Medical care is provided by a network of hospitals and clinics, many affiliated to the health funds, the Ministry of Health, or other organizations like *Hadassah and *Magen David Adom. The hospitals and medical services are also geared to deal with the emergencies arising from wars or terrorist attacks.

Mental health, rehabilitation, and social support services are also highly developed.

Advanced methods of treatment developed elsewhere in the world have also been promptly introduced into Israeli clinical practice. The Hadassah Hospital carried out its first successful in vitro fertilization ("test-tube baby") in 1982 and heart transplantation in 1983.

The Israel Medical Association, founded in 1929, helped to raise the standards of the profession and to improve service to the public during the difficult years of economic hardship and political and military tension. The Association's official organ, Harefuah, founded in 1913, has maintained a high scientific and journalistic standard. The Non-Resident Fellow Project of the Association has helped forge close links with Jewish doctors in the Diaspora. There is also an extensive network of academic exchanges and collaboration between institutes and individuals in Israel and other countries.

Medical research and education have had a consistently high priority, even before the establishment of the State. Moshe Prywes (d. 1999), editor of the Israel Journal of Medical Sciences, founded in 1965, contributed to medical education, and Hanoch Midwitsky to the promotion of postgraduate studies. Most medical research is now carried out at the country's four medical schools, namely the *Hebrew University of Jerusalem (founded in 1949), *Tel



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Aviv University (founded in 1965), *Ben-Gurion University (founded in 1974), the *Haifa Technion (founded in 1969), and their affiliated hospitals. Biomedical science is performed in the relevant faculties of these universities, at *Bar-Ilan University, which does not have a medical school, and at the *Weizmann Institute of Science.

The first research priority was the control of infectious diseases. Saul *Adler, a world authority on parasitology and tropical medicine, directed research on amebiasis, leishmaniasis, and relapsing fever. Zvi *Saliternik was responsible for the elimination of malaria and the parasitic disease schistosomiasis. Subsequently attention could be turned to the disorders prevalent in the developed world and to genetic disorders prevalent in various Israeli populations. Clinical research was linked to improving teaching and patient care in all branches of medicine.

Chaim Sheba, surgeon-general of the Israeli army, over-saw the rise in medical standards. Bernhard and Hermann *Zondek continued their endocrinologic research, interrupted by the European upheaval, and Moshe *Rachmilewitz, professor of medicine at Hadassah Hospital Medical School, carried out much-cited studies of folate and vitamin B12 deficiency and metabolism. Bracha *Ramot organized a modern hematological service at the Tel Hashomer (Sheba) Hospital and undertook a systematic program of investigation of the prevalence and management of inherited disorders of hemoglobin synthesis. Andre de Vries (1911–1996) was a distinguished physician and hematologist at the Beilinson (Rabin) Hospital. Karl Braun initiated research programs in cardiology and Lipman *Halpern in neurology. Under the leadership of Bruno Lunenfeld (1927–), the Tel Hashomer (Sheba) Hospital became a world center in research and treatment for female infertility. In the same institute Baruch Padeh had laid the foundations for clinical genetics in the country. David Erlick in Haifa improved techniques of renal transplantation. Isaac Michaelson developed ophthalmological services at Hadassah Hospital and used his expertise to treat patients with trachoma and other sight-threatening diseases in Africa. Michaelson was thereby amongst the first who initiated Israel's continuing medical collaboration with disadvantaged countries. He was also amongst the first clinical scientists to realize the importance of angiogenesis (new blood vessel formation) in retinal disease; an international medal and series of conferences have been named in his memory.

Latterly the pace of research has quickened and there is room to mention only a few of the outstanding contributors. Rina *Zaizov (1932–2005) organized a national center for pediatric oncology. Marcel *Eliakim of Hadassah Hospital has made important advances in the field of liver diseases. Yehezkiel *Stein of the same hospital is an international authority on lipids and atherosclerosis (vascular degeneration). Mordechai Pras of Tel Hashomer Hospital is an international expert on amyloidosis and Rami *Rahamimoff's work on nerve transmission in health and disease is also universally respected. The advances in basic immunology made by Michael *Sela and Ruth *Arnon at the Weizmann Institute have been adapted to many promising strategies for treating multiple sclerosis and autoimmune diseases. Michel *Revel's research on the antiviral interferon system also has important clinical implications. Irun Cohen's immunological studies at the Weizmann Institute on experimental and clinical autoimmune diseases and novel ideas on treating these diseases have attracted continued international attention. Stem cell research is an active area of research carried out in a fully coordinated program involving the country's major academic research centers and biotechnology companies. Sophisticated medical bioengineering is also an area of intense research activity.

The current organization of medical departments in acute care hospitals in Israel has changed from the classical European model with its fully autonomous medical wards to broader-based departments in which all medical sub-specialties are represented, providing comprehensive, multi-disciplinary medical care. In parallel with the remarkable developments in new therapeutic approaches a more realistic view has grown of scientific medicine's limitations and an understanding of the patient's rights. This has introduced a new field in medicine that includes palliative care, safeguarding the quality of life of patients and their families, and their right to be involved in decisions affecting medical management and the end of life. This progressive approach is now being adopted by the Israeli public and medical community with appropriate legal backing. There has also been striking progress in the provision of medical teams able to participate in disaster relief anywhere in the world.



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THE JEWS AND MEDICINE

ESSAYS

BY

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INTRODUCTION BY

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VOLUME I



MEDAL CAST IN HONOR OF ELIJAH BEER, A PHYSICIAN,
AND OF HIS SON BENJAMIN.

Reduced from original diameter 18 cm. Discovered in
Lyons in 1656. See page 595.

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"Never refuse to lend books to anyone who has not the means to purchase books for himself, but only act thus to those who can be trusted to return the volumes. . . . 'Withhold not good from him to whom it is due' (Prov. 3:27) and take particular care of thy books. Cover the book-cases with rugs of fine quality; and preserve them from damp and mice, and from all manner of injury, for thy books are thy good treasure. If thou lendest a volume make a memorandum before it leaves thy house, and when it is returned, draw thy pen over the entry. Every Passover and Tabernacles call in all books out on loan."

Could anyone express greater, more tender love for his books than did Judah Ibn Tibbon? How much he must have cherished them when he made them, their use and their care, the object of special mention in bequeathing them to his only son!

II

THE RELATION OF THE JEWS AND OF JUDAISM TO THE MEDICAL ART

INTRODUCTION.—Much has been written about the influence which the Jewish people during their long history have exercised upon the science and the practice of medicine. There are many works on the medicine of the Bible, on the medicine of the Talmud, on the history of Jewish physicians, on their contributions to medicine.¹ But as yet no comprehensive history of the relation of the Jews to medicine has been attempted. The writer proposes no such task for himself; he desires to prepare what may be regarded as only an introduction to such a work. It is his intention to present historic facts, bearing first upon the relation of the Jewish people to the practice of the medical art and to the profession of medicine and next upon the relation which the non-Jewish world, Christian and Mohammedan, in various lands and at various times bore to the Jewish physician and to the rights and privileges of the Jews to engage in the practice of medicine. This will include the legal, ecclesiastical and social conditions which form the background of a history of Jewish physicians. The first chapter will embody the historic relation of the Jews and of Judaism toward the science and the art of medicine, and the esteem in which this profession was held by the Jewish people from the earliest period of which we have record down through the long annals of their history.

Medicine and religion were closely allied among the ancient Jews. The priests were the custodians of medical knowledge and they were charged with the supervision of public sanitation. The conflict between religion and science began in very early times.

¹ In his address on Morgagni in 1894 before the International Medical Congress in Rome, Virchow said: "In early mediæval times it was the Jews and the Arabs who made a definite impression upon the progress of medical science. In our times Hebrew manuscripts have been brought to light which show with what zeal and learning Jewish physicians of early mediæval times were active in the preservation and advancement of medicine. We may in truth say that down to these times the hereditary talent of the Jews, which has contributed so much that is great to science, can often be discerned."

The question was raised whether it is permissible to call on physicians for relief in illness and not to rely upon God alone. Simple interpretation led to the view that medical effort on the part of man was useless or even sinful interference with the will of God, as diseases were the punishment for sinful conduct, the manifestations of divine displeasure and rage. "If thou wilt diligently hearken to the voice of the Lord thy God, and wilt do that which is right in His eyes, and wilt give ear to His commandments, and keep all His statutes, I will put none of the diseases upon thee, which I have put upon the Egyptians; for I am the Lord that healeth thee" (Ex. 15:26). The satirical account of the death of King Asa puts this view clearly: "And in the thirty and ninth year of his reign Asa was diseased in his feet; his disease was exceedingly great; yet in his disease he sought not to the Lord, but to the physicians. And Asa slept with his fathers and died in the one and fortieth year of his reign" (II Chron. 16:12, 13). Job (13:4) speaks of "physicians of no value" and Jeremiah (8:22) asks: "Is there no balm in Gilead? Is there no physician there? Why then is not the health of the daughter of my people recovered?" Tobit (2:10) tells that he "went to the physicians" for his diseased eyes, "they helped (him) not" and he was cured by miracle.

At a later period the Midrash says: "The door that is not open to good deeds will be opened to let the physician enter" (Cant. r. ad 6, 11 fol. 35 b.).

The practice of medicine for which justification was found in Biblical Law (Ex. 21:19) was harmonized with the belief that disease and its cure lay in the hands of God and with submission to Divine will. This is clearly stated by Ben Sira (Ecclesiasticus, 38). I shall quote from Dr. Schechter's² translation of his rediscovered original Hebrew version. According to Dr. Schechter, Ben Sira "belonged to a generation which had already come under the Hellenistic influence under which Asia fell by the conquest of Alexander the Great, but . . . never saw the reaction . . . by the Maccabaeans."³

- 1 Honour a physician before need of him.
Him also hath God apportioned.

² Schechter, *The Wisdom of Ben Sira*, 43 and 44.

³ Schechter, *Studies*, II. 55.

- 2 From God a physician getteth wisdom.
And from a king he shall receive gifts.
- 3 The skill of a physician shall lift up his head;
And he shall stand before nobles.
- 4 God bringeth out medicines from the earth;
And let a prudent man not refuse them.
- 5 Was not water made sweet with wood,
For to acquaint every man with his power?
- 6 And he gave man understanding;
To glory in his might.
- 7a By them doth the physician assuage pain;
8a And likewise the apothecary maketh a confection:
8b That his work may not fail;
- Nor health from among the sons of men.
- 9 My son, in sickness be not negligent:
Pray unto God, for he will heal.
- 10 Flee from iniquity, and from respect of persons;
And from all transgressions cleanse thy heart.
- 11 Offer a sweet savour as a memorial;
And fatness estimated according to thy substance.
- 12 And to the physician also give a place;
And he shall not remove, for there is need of him likewise.
- 13 For there is a time when in his hand is good success:
- 14a For he too will supplicate unto God,
14b That he will prosper to him the treatment,
And the healing, for the sake of his living.
- 15 He that sinneth against his Maker
Will behave himself proudly against a physician.⁴

Dr. Schechter's comments are most interesting.

"Ben Sira's pleading: 'Was not water made sweet with wood, to acquaint every man with His (God's) power' (38:5) seems to have been directed against a sort of Jewish scientist who saw in the physician a man counteracting the designs of God. The Rabbinic remark on Exodus 21:19, 'that the law gave permission to the physician to practice his art,' points also to the existence of such objections on the part of some 'peculiar' Jews. 'Nothing is new under the sun,' not even folly.

"Of course, as a pious Jew, Ben Sira perceived in the physician an instrument of Providence, or, as he expresses it:

"'From God a physician getteth wisdom' (38:2). Hence his advice to the patient:

⁴ Schechter, *The Wisdom of Ben Sira*.

" 'Pray unto the Lord for He will heal.' (38:9). Ben Sira likewise assumes that the physician

'He, too, will supplicate unto God,
That he will prosper to him the mixture' (38:14).

"But he distinctly warns the people not to neglect the physician. 'Honour the physician,' Ben Sira says, 'before thou hast need of him' (38:1) and concludes the chapter with the words: 'He that sinneth against the Maker, will behave himself proudly against a physician' (38:15). In consequence of a misreading of the Hebrew by the Greek translator, the versions give: 'He that sinneth against the Maker let him fall into the hands of the physician.'"

The important place which the physician had secured in the time of Ben Sira is clearly shown in the passages quoted. Ben Sira sees in the physician the divine servant appointed to carry out the will of his Master, upon whose help he calls and relies. This view is likewise expressed in the *Talmud* which assumes that the physician is granted divine permission to treat disease.

A late Midrash⁵ tells us that R. Ismael and R. Akiba were walking through the streets of Jerusalem. Another man was with them. They met a sick man. "'Masters,' said he, 'tell me how can I be cured?' 'Do thus and thus,' they answered, 'and you will be cured.' Then the man who was walking with the rabbis asked: 'Who has inflicted the illness upon this poor man?' and they answered: 'The Holy One, blessed be He!' And the man replied: 'You interfered in a matter which is not your concern. God has punished and you wish to heal! Are you not acting contrary to His will?' 'What is your vocation?' asked the rabbis. 'I am a tiller of the soil. Do you not see the vine-cutter in my hand?' 'But who created the vineyard?' they asked. 'The Holy One, blessed be His name.' Then said the sages: 'You interfered in this vineyard which is not yours? He created the vineyard and you cut away its fruits?' And the farmer answered: 'Did I not go out to cut to weed out and to gather, surely the vineyard would not produce the least fruit.' 'Then fool that you are, have you not learnt in your work what is written: (Psalm 103:15) "As for man his days are as grass." Just as the vine without care and

⁵ Temurah Chap. 2 in *Jellinek's Bet ha-Midrash* I. page 107. The Midrash is "the ancient homiletical exegesis of the Torah."

preparation will not grow and bring forth its fruit, but will die; so it is with the human body. Man requires herbs and medicine and the tiller is the physician.'"

The Karaites held that "God alone should be sought as physician and no human medicine should be resorted to." But the *Talmud* does not question the propriety of calling upon the physician for help in illness nor does it regard this as failure to rely upon God to restore health. Exodus 21:19 was looked upon as the authoritative basis for this view. The *Talmud* says: "Who is in pain let him go to the physician" (Baba Kamma 46b).

The supreme duty of protecting life was shown in the Rabbinic dictum that when life is in danger, efforts to save override even the prohibitions of the Sabbath.⁶

The importance of prayer which is emphasized in Ecclesiasticus 18:9 is thus put in the *Talmud*: "Man must ever pray not to become ill; for if he becomes so, it is demanded of him to show merit in order to be relieved" (*Talmud* Sabbath 32a).

The *Talmud* (Berach, 60a)⁷ records a prayer recited before and after bloodletting: "May it be Thy will, Oh Lord my God, that this act may restore my health and heal me, for Thou art the faithful Healer and Thy healing is true." The prayer recited after the bleeding was: "Blessed be He who freely gives healing."

The *Talmud* (Berachoth 10b Pessachim 56a) relates that King Hezekiah made away with books on medicine and the sages approved of this act, because it deterred the sick from relying entirely on human aid.⁸

The responsibility of his profession was felt by the physician, Ben Sira (Ecclesiasticus 10:10) says: "The slightest illness excites the physician. Today (he is) a king, tomorrow he falls."⁹

A distinction was made between the physician (Rophe or Asje), the surgeon (Rophe umman) and the leech who was regarded

⁶ *Mishnah*, Yoma. 8b.

⁷ J. E., VII, p. 447.

⁸ The reason Maimonides gives for King Hezekiah's action is that the books contained magical formulas and superstitious and idolatrous methods of treating disease and that they were destroyed so as to remove from the people this lure to idolatry.

⁹ Professor Louis Ginzberg thus translates the passage which in other translations is unintelligible.

with less esteem.¹⁰ Physicians in the period of the *Talmud* were also known as "Hakim."¹¹

Prof. Paul Haupt in a letter, November 28, 1917, informed me that he had "pointed out in the *American Journal of Semitic Languages*, Vol. XXXIII, p. 48, that the primary meaning of Hebrew *rapha*, to heal, seems to be 'to ease.' The Aramaic *aseya* or *asu*, healer = Assyrian *asu*, is the Sumerian *asu* which may be a compound of *a* water, and *zu*, to know, referring to urinoscopy and urumancy (cf. 'watercaster'). In the new *Journal of the Society of Oriental Research*, Vol. I, p. 7, (he has) shown that the Sumerian term for 'disease' is *tin*, invasion (scil. of evil spirits)."

There appears to have been some form of licensure for a distinction is made in the *Talmud*¹² between physicians who practiced under the authority of the Courts (Bet Din) and those who had no such authority.¹³ The physician was called in by the rabbis in appropriate cases as expert.

A number of epigrammatic sayings in the *Talmud* about physicians and the commentaries upon them will prove interesting as bearing upon the relation of the Jewish people to the practice of medicine.

Abba Arika, head of the Academy of Sura (born in Palestine about 150, died in Babylonia in 247 C. E.), said to Rabbi Asi, "Do not live in a city whose head is a physician."¹⁴

According to Professor Louis Ginzberg this "does not reflect discredit on the medical profession. A very similar saying is 'Do not live in a city whose head is a scholar.'¹⁵ Of course the rabbis do not know any more praiseworthy profession than that of the scholar, yet they are of the opinion that a scholar should not take a leading part in political life. Some of the commentators (Rashi, *ad loc.*) maintain that 'physicians in this saying stands for scholars.' Another explanation of this passage is that 'Asi' is the name of the person to whom the advice was given, and the passage is to be translated as follows: Says Rab to Rabbi Asi: 'Do not live in a city whose head is Asi.'¹⁶ This is very clever but far from being the truth."

¹⁰ Preuss, *Virchow's Archiv*, Vol. 138, p. 275.

¹¹ Quoted from Rapoport in the *Bibliothèque ho-litim*, Vol. 8 by Fein. *Die Stellung der Aerzte im Juedischen Alterthume*. Ben Chananja 1860, III. 539.

¹² *Tosefta*, Gittin IV, 6.

¹³ Preuss, *Virchow's Archiv*, 138, p. 268.

¹⁴ *Talmud*, Pesachim 113a.

¹⁵ Comp. *Tosefta* on Baba Batra, 110a, and *Aruk* *sub voce*.

¹⁶ *Talmud*, Pesachim 112a.

"In a city where there are not ten things no learned scholar must live" and among these are a physician and a surgeon.¹⁷ Maimonides (Yad haheesakah) includes this among the ordinances of ancient Jewry.¹⁸

We may here add that the Midrash¹⁹ states: "Unhappy is the town whose physician has the gout!"²⁰

The *Talmud* (Baba Kama 85a) discusses the question arising in a case of an injury inflicted, when the one who produced the injury suggests the treatment. Should the latter say: "I will call a physician for you without pay," the former would answer: "A physician without pay is of no use." Should the latter say: "I will procure a physician from a distance," the former would answer: "The physician is far away, the eye is blinded."²¹

An epigram that has led to endless discussion is the well known sentence "The best of physicians is fit for Gehenna," attributed to Rabbi Judah.²² I am indebted to Professor Ginzberg for the following: "Rashi's explanation was in its main aspect accepted by all the later commentators. According to Rashi's view the Mishna censures the physicians for two reasons. They are blamed for their overconfidence in their craft, which results in their trusting in it, instead of trusting in God. They are further blamed for commercializing their profession, to that extent that they some-

¹⁷ *Talmud*, Sanhedrin 17.

¹⁸ Quoted by Opler *Einiges aus der Altyuedischen Medizin*, Deutsch. Arch. fuer Gesch. d. Med., IV, p. 62.

¹⁹ *Levit.* R. Fol. 9a.

²⁰ Quoted by Preuss *Der Arzt in Bibel und Talmud*, *Virchow's Archiv*, Vol. 138, p. 26.

²¹ This sentence has been variously interpreted and translated. The translation given is that kindly furnished me by Professor Ginzberg who adds, "The meaning of this proverb is adequately explained in *Aruk* as follows: 'The patient will lose his eye before the physician from far away will arrive.' The Greeks and the French have similar proverbs. 'Après la mort le médecin.' Rashi understands the passage to mean that a physician who does not live in the neighborhood of the patient is careless, as he does not care for the consequences. A similar explanation is given by Rabbi Menahem Meiri (as quoted in *Shiva Meubbezer ad loc.*), who is of the opinion that the expression . . . is to be taken figuratively: The physician from far away blinds the eye, i.e., misleads the people."

Jastrow translates, "If the surgeon is far off, the eye will be blind" (before he arrives). See Cohen *Ancient Jewish Proverbs*, p. 77.

²² Cassel (Ersch and Gruber, Vol. 27, p. 44), interprets the sentence thus: "The physician from afar destroys the eye" because he is not likely to be as conscientious as one from the home town would be.

²³ *Mishna Kiddushin* IV, 14.

times fail to attend the poor. The death of the neglected poor is tantamount to homicide committed by the physicians. The one sin as the other is rightly punished with the pains of Gehenna. Berakot 60b gives the prayer²³ to be recited while undergoing an operation, or taking medicine, and in this prayer special emphasis is laid upon the fact that all cures come directly from God, though men are accustomed to make use of physicians. It is obvious that the physicians claimed more for themselves than this doctrine of the rabbis granted them. There is nothing surprising, therefore, in the condemnation of the medical profession by the theologians.²⁴

By the way, I have no doubt that the statement of the Mishnah, in its original form, was nothing but a pun, based on the assonance of 'Rophim,' physicians and 'R'phoim,' the dwellers of the nether world. . . . It should also be mentioned that Septuagint Isaiah 26:19, renders 'R'phoim' by 'ungodly,' while 26:14, is rendered 'neither shall physicians by any means raise (them) up.' All this goes to show how easily 'Rophim' and 'R'phoim' were confused.

The famous Polish Talmud commentator, Rabbi Samuel Edels explains the saying of the Mishnah concerning the physician in the following way: 'He who thinks himself the best of physicians is destined for Gehenna.' Such a one is apt to have overconfidence in his skill and to risk too much, so as even to cause the death of his patients. There may be some truth in this statement, but of course the Mishnah does not mean it. The great Italian Talmudist, Lampronti, who was at the same time a famous physician, is of the opinion that the Mishnah censures the surgeon, who without the advice of a good diagnostician performs operations and often causes death. A Cabalistic philosophical interpretation of the Mishnah is given by the great Rabbi Loeb of Prague: the Gehenna stands for the material world, which according to the doctrine of the Cabalists is nothing but the negation of real existence, the spiritual. The physician or in other words the naturalist, who knows only the material world, will end in Gehenna, in 'non-existence.' . . . In the original form of the saying about the physician and the nether world the point made was that even the

²³ Referred to above.

²⁴ Prof. Israel Davidson in a letter, October 31, 1917, to the writer adds: "As a mere matter of bibliographical information I may add that R. Israel Lipschütz in his commentary on the Mishnah brings a long story to illustrate the meaning of the passage in *Kiddushin* IV. 14. His interpretation is in the main the same as that of Rashî."

most skilled physician cannot save himself from death and it read accordingly *הַיֵּשֶׁבֶת הַיָּשׁוּבִים בָּהֶן* 'The best of physicians has to descend to the dwelling of the nether world.'"²⁵

In a personal communication (November 10, 1915), Professor H. Malter wrote: "The ancient rabbis had foreseen that a time will come when there will be no more rabbis; doctors will replace them. Only doctors and no rabbis will reign; doctors who will cure the eyes, and leave the heart and soul sick, and in a burst of passion and jealousy they scolded these doctors, saying, 'The best of the doctors should go to hell.'"²⁶

Jewish physicians relied upon natural methods of treatment and despised the magical arts.²⁷ Incantations and amulets were certainly used less among the Jews than among other people.²⁸ Amulets of various kinds have however never disappeared from among the Jews, down to this day, in spite of their strong condemnation by many rabbis. Maimonides inveighed against them. In his great work "The Guide for the Perplexed," he says: "Do not be led astray by the madness of writers of amulets, by what you may hear or read in them. The divine names which they put together in various letters have not the least significance. These mystics, it is true, are possessed with the delusion that in their inscription there must needs be purification and sanctification and

²⁵ The above is taken from a personal letter to the writer from Professor Ginzberg, dated November 6, 1917. An interesting explanation of this difficult sentence is to be found in Rabbi Solomon Ibn Verga's *Sechevet Jehuda* in the course of a discussion between Pope Martin V and Don Samuel Abrabalia and Don Salomo ha-Levi, ambassadors of the Spanish Jews to Rome (1418). The latter in answering said: "The best physician is fit for Gehenna, signifies that he should always see Gehenna opened before him should he cause the death of anyone whose health had been entrusted to him. As a consequence he must carefully consider (the treatment) and apply all his thought to it. It is well therefore that he should be mindful that he is destined for Gehenna if he does not give sufficient thought to his patients (*Sechevet Jehuda*, Chap. 41)." Ibn Verga was a physician and lived in Seville in the second half of the fifteenth century.

²⁶ In 1496 Emperor Sigismund decreed that every Imperial State in Germany should have a public medical officer, who should be paid 100 gulden yearly from Church revenues and attend the poor gratis 'for the high masters and physicians never do this and therefore they go to Hell.'" Writington, 238.

²⁷ The above I copied for you as a curiosity from a book of Dr. B. Iloway (father of our friend Dr. H. Iloway), which I prepared for print."

²⁸ Cassel in Eisch and Gruber, Vol. 27, p. 44, who quotes Origenes (185-254, C. E.).

²⁹ Cassel, *loc. cit.*

that they will produce miracles. A sensible and educated person however, should not listen to such absurdities and still less give them credence." It is only in cases of dangerous disease that Maimonides permits an exception to be made, yielding to popular superstition "lest the mind of the patient be too greatly disturbed."

Maimonides' (1135-1204) opposition did not receive universal assent. Nachmanides, himself a physician, and Abraham b. Solomon b. Adret approved of the use of amulets for curative purposes; they even permitted their writing on the Sabbath, if demanded by the patient.²⁹ On the whole, however, we agree with Abrahams³⁰ who says: "If there was one characteristic excellence in Jewish medicine in the middle ages, it was precisely its dependence, not on authority or mystery, but on actual trial or experiment. 'Do not apply a remedy which thou hast not thoroughly tested,' wrote Judah Ibn Tibbon for his son's guidance in the twelfth century. Jewish doctors were placed under such strict and jealous surveillance that they urged one another 'never use a cure the efficacy of which they could not prove with scientific reasons.'"

It must not be inferred that the discussion was closed as to the propriety of medical practice from the theological point of view, a question which disturbed the Christian Church until recent times. Maimonides gave a clear and unequivocal answer, stating that "one who is ill has not only the right but also the duty to seek medical aid,"³¹ without citing biblical authority, probably regarding this as unnecessary. Criticizing the view that the sick should rely on prayer instead of seeking medical aid, he points out that "the means of curing disease are given by God as is bread we eat and we must give thanks for the one as for the other; and that He has given wise and skillful men the knowledge how to prepare and how to apply them."

Ibn Ezra the contemporary of Maimonides about 1170 held the singular opinion that it was permissible for physicians to treat only in cases of external disease.³²

²⁹ Professor A. A. Neumann has called my attention to this in a citation from the Responsa of Solomon b. Adret. (Vol. II, 281; IV, 245; V, 119).

³⁰ Abrahams, *Jewish Life*, introduction page XIX.

³¹ Commentary to Mishna, *Pesachim* IV.

³² Cited by Preuss, *Virchow's Archiv*, Vol. 128, p. 277.

This is not the place to discuss the attitude of the mediaeval Christian world toward medicine in particular. But we can better appreciate the attitude of the Jews when we remember the position taken by the Christian Church. In the sixth century, Pope Gregory I showed his hostility to the study of medicine. "In the beginning of the twelfth century the Council of Rheims interdicted the study of law and physic to monks and a multitude of other councils enforced this decree." "St. Bernard declared that monks who took medicine were guilty of conduct unbecoming to religion. Even the school of Salerno was held in aversion by multitudes of strict churchmen, since it prescribed rules for diet thereby indicating a belief that diseases arise from natural causes and not from the malice of the devil; moreover, in the medical schools Hippocrates was studied and he had especially declared that demoniacal possession is 'nowise more divine, nowise more infernal, than any other disease.' Hence it was, doubtless, that the Lateran Council, about the beginning of the thirteenth century, forbade physicians, under pain of exclusion from the church, to undertake medical treatment without calling in ecclesiastical advice."

"This view was long cherished in the church, and nearly two hundred and fifty years later Pope Pius V revived it by renewing the command of Pope Innocent and enforcing it with penalties. Not only did Pope Pius order that all physicians before administering treatment should call in 'a physician of the soul,' on the ground, as he declares, that 'bodily infirmity frequently arises from sin' but he ordered that, if at the end of three days the patient had not made confession to a priest, the medical man should cease his treatment, under pain of being deprived of his right to practice and of expulsion from the faculty if he were a professor, and that every physician and professor of medicine should make oath that he was strictly fulfilling these conditions."³³

Even at the time of greatest depression and reaction in Jewish history when for a short period the revolt against science and philosophy led, in 1305, to the threat of excommunication against those who read works on philosophy before they were twenty-six years of age, even at this time medicine was specifically excluded

³³ White, II, 37.

from the ban and its study permitted on the ground that its practice is permitted in the Talmud.³⁴ It is worth mentioning that in this struggle between reaction and progress the latter won the victory. We read its spirit in a remarkable letter of Jedaiah b. Abraham Bedersi ("Penini"), written in 1305-6 and addressed to Rabbi Solomon b. Adret (Rashba),³⁵ who had pronounced the ban of excommunication upon those engaged in the study of philosophy and the sciences. "We cannot give up science; it is as the breath of our nostrils. Even if Joshua were to appear and forbid it we would not obey him; for we have a warranty which outweighs them all, viz.: Maimuni, who recommended it, and impressed it upon us. We are ready to set our goods, our children and our lives at stake for it."³⁶

The position which medicine took among the Jewish people, the esteem in which physicians were held, is best seen in the long line of their rabbi-physicians beginning in the days of the Tannaim and headed by Mar Samuel (165-257) and reaching down through the centuries to comparatively recent times; one of the delegates to the Sanhedrin called by Napoleon in 1806 was a rabbi-physician.³⁷ Various reasons are assigned for the frequency with which the Jews combined these professions. During all their history the rabbis were devoted to science, in part because of its important bearings upon sacred literature. It has already been pointed out that medicine was sanctioned by biblical and Talmudical law and therefore enjoyed a certain sanctity in their eyes. Then again it must be borne in mind that it was not regarded as proper to earn one's livelihood through the study or the teaching of the word of God and the sacred law. "Rabbi Gamaliel, the son of Rabbi Judah the Prince, said: 'An excellent thing is the study of the Torah combined with some worldly occupation, for dividing your application to both equally makes sin to be forgotten,' and Rabbi Zadok said: 'Make not of the Torah a crown wherewith to aggrandize thyself, nor a spade wherewith to dig.'" So also Hillel used to say, "He who makes worldly use of the crown of the Torah shall waste away. Hence

³⁴ Graetz, IV, Chap. 1, 40.

³⁵ Solomon b. Adret, *Responsa*, Vienna ed., p. 52, cited by Muenz, 1877 ed., p. 56; J. E., I, 213.

³⁶ Cited by Chotzner *Hebrew Humor*, p. 79.

³⁷ He was Graziado Neppi (1759-1836), J. E., IX, 224.

thou mayest infer that whosoever derives a profit for himself from the words of the Torah is helping on his own destruction."³⁸ It was at a late date that a distinguished rabbi-physician, Simon Duran (1361-1444) was compelled to depart from this rule and accept a salary as rabbi.³⁹

The rabbi-physician chose the practice of medicine not only as a means of livelihood but as a favorite occupation because of the opportunity it afforded to devote one's life to good deeds and to become the instrument of Providence to bring relief. The consequence has been that the words of Ben Sira have reechoed throughout the history of the Jews down to this very day and the physician has been held by them in the highest honor; in this they have been excelled by no other people.

³⁸ Ethics of the Fathers. *Daily Prayer Book*, Singer.
³⁹ Graetz, IV, 199.

III

THE ETHICS OF THE PRACTICE OF MEDICINE
FROM THE JEWISH POINT OF VIEW¹

NO PEOPLE have laid greater emphasis upon the sacredness of life than have the Jews. The human being reflected the holiness of God, for "in the image of God made He man" (Gen. 1:27). But life itself, even the life of the lower animals, was held dear, for "the righteous man regardeth the life of his beast" (Prov. 12:10). To care for one's health was regarded as a religious duty.

The people who looked upon life as sacred were naturally solicitous in their care of the sick. One of the highest duties was to visit the sick, and in the Talmud we read that this obligation extended equally to visiting the Gentile and the Jew. (*Talmud*, Gittin 61a.) This was in conformity with the verse "Thou shalt not abhor an Edomite, for he is thy brother; thou shalt not abhor an Egyptian, because thou wast a stranger in his land" (Deut. 23:8). The tolerant spirit of the Jew was shown in his readiness to help the Gentile in distress.

Throughout Hebrew literature we find the most humane references to the sick. Thus in the Sefer Hasidim of R. Judah of Ratisbon (12-13th cent.) we read:

If a rich man and a poor man be sick and thou seest all the world going to see the rich man, go thou to the poor one, even though he be ignorant and unlettered. . . . Make no sign of visible disgust when thou meetest people afflicted with loathsome visible disease; for they are God's creatures, remember, and healthy as well as sick are all alike dependent upon him.²

The duty to treat the injured is expressed in Exodus (21:18, 19): "And if men contend, and one smite the other with a stone, or with his fist, and he die not, but keep his bed; if he rise again, and walk abroad upon his staff, then shall he that smote him

be quit; only he shall pay for the loss of his time, and shall cause him to be thoroughly healed."³

The theological dispute as to the propriety of human interference in disease, looked upon as a visitation of God is discussed later. (See Essay II.) There it is pointed out that, though the dispute was long waged both among Jews and Christians, the practice of medicine won its proper position among the Jews at an early date. We are not surprised to learn that the Jews made great demands of the physician, that the ethical standards they set up for him were very high. Could less have been expected of those who followed the profession of Him who said: "I am the Lord that healeth thee" (Exodus 15:26).

It was regarded as proper that the physician should receive recompense for his service. Of course this was not to act as a hardship to the poor. We read that Abba (a leech and therefore belonging to a class that did not enjoy the same esteem as did the physician) had in his office a money-box into which those who received treatment would place what they desired to give. But no one could tell how much or how little each one paid. When a learned man came he would accept no payment, and if the patient was poor he would help him with a gift and refuse to accept any fee. (*Talmud Tann*, 21b.)

The physician was expected to treat his patients in a sympathetic and humane manner. This is beautifully shown in a passage in the Midrash, the ancient homiletical exegesis of the Torah:

Even when the physician sees that death is approaching, he still says to the patient "Eat this and abstain from that, drink this and not that," but he does not say "Your end is near," and it rebukes the prophet Isaiah in the name of King Hezekiah for telling him bluntly "Set thy house in order for thou shalt die and not live" (II Kings 20:1).⁴

In the great code, the Shulhan Aruch, which Rabbi Joseph Caro⁵ wrote in the third quarter of the 16th century and which

¹ A curious version is found in the Vulgate and other translations: "That he make restitution for his work and for his expenses upon the physicians." (Douay version.)

² This subject is taken up in detail by Preuss, *Virchow's Archiv*, CXXXVIII, 260.

³ R. Joseph Caro was born in Portugal in 1468 and died in Safed, Palestine, in 1575.

¹ The reader is referred to the interesting article of Iosewne on "Disease and Medicine" in *Hastings's Encyc. of Religion & Ethics*, IV, 756.

² See Zunz: *Jewish Moralists in Hebrew Characteristic*. American Jewish Publication Society, New York, 1875, p. 22.

embodies rabbinic laws, we find an important chapter dealing with the rules governing the practice of the physician.⁶

TEXT OF RABBI JOSEPH CARO

1. The Torah permits the physician to treat disease. It is a meritorious act to do so, under the general principle of saving a life in danger. One who refrains from doing so, sheds blood [i. e., is guilty of sacrificing life]. Even if there is another who can treat the sick man, the physician dare not refuse his services, because it is not through the aid of every man that the patient has equal chances to be cured. Yet should no man occupy himself with medicine, unless he is well trained and there is no one better fitted than he in the place; otherwise, he is shedding blood. If one treats a patient without the approval of the court [official license] he is in duty bound to pay damages, even though he is an expert. And if he treats a patient with the approval of the court and errs and injures the patient, he is not responsible to the human court but he is not absolved from his obligations to the higher, the heavenly court. If he kills the patient through negligence and he becomes aware that he is guilty of unintentional murder, he goes into exile [as "the manslayer that kills any person through error." See Numbers, 35:9-34; Deut., 19:1-13.]⁷

⁶ Shulhan Aruch Yorah Deah, 336.

⁷ The responsibility of the physician is formulated in the *Tosefta*, an ancient collection of detailed statements of the traditional law. *Tosefta* (ed. Zuckermandel), Gittin, IV, 6. A professional doctor, authorized by Beth Din, who has caused harm to his patient is free if the error was unconscious but guilty if it was knowingly committed, for the sake of the social order.

Ibid., Baba Kama, VI, 17: A professional doctor authorized by Beth Din (the courts, the authority in both civil and religious law), who has harmed his patient is free before a human tribunal, and his judgment is referred to Heaven.

Ibid., X, 11: A professional doctor authorized by Beth Din who has caused harm to his patient is free; if he has done him injury more than was necessary, he is guilty.

Ibid., Makkot, II, 5: A professional doctor authorized by Beth Din who has caused the death of a patient is exiled (to the cities of refuge). This holds true only if the doctor did just what was required; but if he has exceeded the limit and thereby caused death, he is not exiled because he is guilty willingly. Nevertheless, he does not incur the penalty of death.

That the passages are not altogether consistent is quite apparent and Duran summarizes his exposition of these laws as follows: "If a physician authorized by Beth Din to practice caused harm to his patient, which other physicians discovered to be due to his error, then he is legally guilty of assault whether the error was

2. A physician is prohibited from taking a fee for his expert knowledge or for instruction, but only for his pains and for the time he spends.

3. If one has drugs and his sick neighbor wishes to buy them, he is prohibited from raising the price higher than is proper. Furthermore, if they agreed upon a high price because of the exigencies of the moment (for he was the only one who had these drugs) he may claim only their proper value. However, if the patient agreed to pay a large fee to a physician (for his services), he must pay it, because the physician sold his expert advice. The patient has no further redress.

Annotation by Rabbi Moses Isserles to Rabbi Joseph Caro: ⁸ It is true, it is a duty incumbent (upon the physician) to treat (the patient). For it is commanded that everyone come to the help of one whose life is in danger. If, however, the performance of this duty falls to one who refuses to act without remuneration, the court cannot deprive him of his fee. Neither can it

committed consciously or unconsciously. If he caused death, he has the status of a murderer. But if he made no error in the nature of the treatment and was unsuccessful in carrying it out, then for the sake of the social order (i. e., that the doctors should not give up their profession) he is acquitted by the human tribunal and his judgment is referred to Heaven; while, if he caused death, he is exiled. If, however, he exceeded the necessary measures, then he is guilty of assault or murder and must pay damages in the one case, and the penalty of death in the other event, if he was forewarned, or left to the vengeance of the 'redeemer,' if he was not warned." Duran, who was himself a physician (*Respona*, Part II, No. 52), ends this paragraph with the pious wish: "And may God grant our portion to be among those who are successful in their profession and may He save us from errors, Amen."

It is here that Duran proceeds to draw the contrast between medical doctors and surgeons, thus: "It appears that by 'Rophe umman' is meant one who heals wounds with the work of his hands. If he commits an error consciously or unconsciously, he inflicts a bruise; if he uses a metallic instrument he causes death . . . but one who cures the sick with medicines, laxatives, drugs, baths, and resting is not called 'Rophe umman' but 'Rophe' and is not included in the former category. He cannot be sued for damages as he did not wound his patient. If such a physician commits an error and causes death or increases the suffering of his patient, he is free even before the judgment of Heaven, if his intentions were to cure and not to harm the patient. For he can judge but what his eyes see. But he must not rely upon his own experiments and reject the opinion of greater experts. If a doctor conducts himself rightly and properly, his Heavenly reward will be great, because his profession is a dangerous one and he must have exercised great caution." (This account of the *Tosefta* has been given me by Dr. A. A. Neuman.)

⁸ Rabbi Moses Isserles lived in Crakow from 1520-1572. His annotations are regarded as essential and as binding, especially by the Ashkenasic Jews.

release those who obligated themselves from fulfilling this obligation. (This is based upon a quotation from Rabbi Jacob ben Asher on the authority of Rabbi Moses Nahmanides.)⁹

In the writings of Jewish physicians of early and later medieval times there are a number of references to medical ethics; some of these deserve consideration. An essay has recently appeared by Professor Ludwig Venetianer on Asaf Judaeus, whom he describes as the oldest medical writer in Hebrew (Budapest, 1915). He shows that Asaf Judaeus wrote various works on cosmography and medicine, and he gives evidence to prove that Asaf lived at the latest in the 7th century and in Mesopotamia. The words of admonition which Asaf and his colleague John spoke to their pupils and the oath which they required of them are of great interest to us:

Beware of causing death to anyone by administering the juices of poisonous roots. Do not administer to an adulterous wife an abortifacient drug. Let not the beauty of woman arouse in thee the passion of adultery. Divulge not any secret entrusted to thee and do no act of injury or of harm for any price. Do not close thy heart to mercy toward the poor and the needy. Say not of the good that it is evil, nor of the evil that it is good. Walk not in the path of sorcerers who raise enmity in marital couples through incantation, magic and witchcraft. Do not covet any possession as a reward for having aided in an act of infamy. In thy treatment do not apply the arts of the idolater, and place no trust in idols, for they are naught and are of no avail. On the contrary, ye must despise their servants; dead spirits are their idols without ability to help their lifeless images; how much can they avail the living human beings? Put thy trust in the Eternal, the God of Truth; He kills and He likewise brings to life; He punishes and He heals the wound; He gives to man understanding to be of help; He punishes in righteousness and justice, but He restores in love and in mercy; He makes plants of healing to grow up and He implants into the perfect heart the ability to heal, in order to make known His great grace and His wondrous works before great multitudes, so that all living may understand that He is the Creator and beside Him there is none who can help. The nations place their trust in idols which cannot help them in the hour of need, nor save them in their distress; thus their hope and their longings lead unto death. It is proper, therefore, that ye separate yourselves from them, that ye keep yourselves far removed from their idols and that ye call upon the name

⁹ The translation from the *Soultan Arush* was prepared for me by Dr. Rabinowitz.

of the Eternal, the living God, the God of the spirits of all flesh, in Whose hand lies the power over the souls of all living and the spirits of all mankind, to kill or to bring to life; no one can escape from His might. Keep Him in mind at all times, seek Him in truth, rectitude, and perfection; then will all the works of your hands succeed. He will help you to be of aid to others and ye will be praised highly by all mankind; the people will forsake their idols for the service of the Eternal, for they will recognize that they had placed their trust in nought, that they had wearied themselves in vain in the service of gods which cannot be of help. Therefore be ye strong and not indolent, for great reward awaits your work. God will be with you, if ye are with Him. If ye keep the covenant of your oath and if ye follow our instructions, then ye will be honored as saints in the eyes of all mankind who will say: "Happy the nation whose God is the Lord; the people whom He has chosen for His own inheritance" (Ps., 33:12).

Then the pupils answered and said:

Everything concerning which ye have admonished us, and everything which ye have commanded us, we shall heed, for it is the law of the Torah and it is our duty to obey it with pure heart, with whole soul and with all our strength and not to depart from it either to the right or to the left.

Thereupon they blessed the pupils in the name of the Almighty, the Creator of heaven and earth, and they continued to speak words of caution to their pupils and they said:

See the Eternal, His Holiness and His Torah are the witnesses that ye fear Him and that ye will not swerve from His laws but that ye will follow His commandments and that ye will not depart from the straight path, in order to gain profit from helping him who is lying in wait for the innocent soul, or from him who mixes poison to kill. Do not make known to anyone which plants are poisonous, nor give them to anyone. Allow no one to persuade you in any manner to produce disease in any one. Take heed lest ye cause any bodily deformity whatsoever and be not too much in haste to apply the knife. Do not apply cupping immediately but only when ye have considered and examined carefully two and three times, then only shall ye apply this remedy. Beware lest the spirit of pride come upon you and lest ye bear revengeful hate against any sick one. In your speech be upright and truthful, then will ye find grace in the eyes of God and among men will ye be regarded as honest, trustworthy and upright physicians.

One of the most remarkable statements bearing upon ethics

of medical practice from the Jewish point of view is to be found in the "Aphorisms" or "Introduction to Medicine," consisting of fifty articles,¹⁰ by Isaac ben Solomon Israeli (Abu Yakub Ishak ibn Sulaiman Al-Israeli), a name well known in medicine. He was born in Egypt about 830 (?), lived in Mauritania and Cyrenaica (Northern Africa) and died about 932. The following is a translation of a number of the aphorisms:

(2) As the science of medicine is so extensive and the life of man too short to attain the whole, physicians of experience must be separated from the foolish, they must "purify themselves, make themselves white and be refined" (Daniel 12:10), for by their constant study of literature and ceaseless investigation they distinguish themselves from the rest of mankind.

(3) The rapidity or slowness or hesitation in the work of an artisan depends upon the importance or unimportance or indifference of the object upon which he is working. He who is busied in drilling openings in pearls must be very careful not to destroy the beauty of his work through haste. But it is different with him who is collecting the filth of the street. It is fitting that he who is engaged in the cure of human bodies (which are the most precious of all of the creations of this nether world) consider and examine carefully the diseases that may occur, and give his directions after mature deliberation and consideration so that he make no irreparable error. Therefore the sage (Mesue) says: "If ye find a physician who is ready as soon as asked to give information about every disease and particularly to praise his own methods of treatment, ye may regard him as a knave." The prince of physicians (Avenzoar) says: "I have never given a person a purge without having been anxious in my mind and having spent sleepless nights before and after."

(4) Just as the physician, according to what has just been said, should not be over-hasty in acting, so he dare not be negligent or dilatory, for in the case of most diseases there is no time to be lost. He should, on the contrary, hold to the mean between these extremes and be neither too hasty and precipitate nor too tardy and negligent; in acute diseases he must think and act quickly because they are pressing.

(11) The physician does not bring about the cure, but he

¹⁰ Isak Israeli, *Prophēdeniḥ*. See also Essay XI.

prepares and smooths the way for nature; nature is the actual healer.

(15) The need of the physician is twofold, preserving health and curing disease; and the demand for the former is greater than for the latter; for it is better for man that he avoid becoming ill than that he become ill and be cured.

(17) The physician who promises to cure disease with certainty takes a serious responsibility upon himself. . . .

(21) If it is possible to bring about a cure by means of foods or healthful nourishment, then do not administer drugs because these, and especially the purging ones, are contrary to nature and are her enemies.

(23) Endeavor in thy treatment always to use the simple drugs, because it is easier for thee to acquire the knowledge of their action than that of the complicated ones.

(25) Never rely in treatment upon wonderworking cures, for these depend mostly upon ignorance and superstition.

(27) It is fitting to the profession of a physician that he should be moderate in eating—that he should not become a debaucher nor a glutton. It is a shame and a reproach, if he suffer from tedious illness, for then the people will say: "How should he who cannot cure himself, cure others?"

(28) Seal thy mouth to prophetic and self-evident expressions. What thou sayest should generally be stated as conditional.

(29) Suffer not thy mouth to condemn when something happens to a physician, for everyone has his evil day. Let thy deeds praise thee, and seek not thine honor in another's shame.

(30) Make it thy special concern to visit and treat poor and needy patients, for in no way canst thou find more meritorious service.

(31) Try to ease the mind of the patient, encourage him to look forward to being cured, even if thou art not thyself convinced of it, for this will greatly strengthen his nature.

(38) When the patient does not follow thine injunctions or his servants and people do not promptly obey thine instructions or show thee the proper respect, it were better to give up the treatment.

(39) Fix the fee of thy patient when his disease is in its

ascendancy and most severe, for as soon as he is cured he will forget what service thou hast rendered.

(40) The more thou demandest for thy service, the higher thou fixest the fee for thy treatment, the greater will they appear in the eyes of the people. Thine art will be looked upon as insignificant by those whom thou treatest for nothing.

(42) Do not visit thy patient too often and do not remain with him too long, unless the treatment of the disease demands it, for it is seeing the doctor anew that gives joy to the patient.

(43) Too large a practice confuses the judgment of the physician and causes him to give mistaken directions.

(46) Be concerned in the treatment of princes and the wealthy, for they will be liberal to thee with their means, will always praise thee and will be devoted to thee after their cure, while the common nobodies, when they are cured, will even hate thee when they think of the fee which thou hast taken from them (Prov. 23:7).

(50) Excessive activity and effort diminishes the power of the physician and weakens his spirit, for he must constantly think and be concerned about each patient, hopeful for his recovery, and pray for him as though he were "one of his kin, that is near to him" (Lev. 21:2).

An interesting glimpse into the rules of medical conduct is given in the will of Judah ibn Tibbon, a famous Jewish scholar, translator and physician, who lived in Granada, Spain (1120-1190). The following is taken from the ethical will of Judah ibn Tibbon to his son:¹¹

My son, let thy countenance shine upon the sons of man; visit their sick, and let thy tongue be a cure to them; and if thou receivest payment from the rich, attend gratuitously upon the poor; and the Lord will requite thee, and give thee thy reward. Thus shalt thou find favour, grace, and good understanding, in the sight of God and man; thou wilt be honoured by high and low among Israel and the nations; thy good name will go forth far and near; thou wilt rejoice thy friends, and make thine enemies and adversaries jealous. Thou knowest already what is said by Jedaiah b. Adret: "He who is desirous of having revenge on his enemies, should strive to improve himself to perfection." . . . My son, accustom thyself to examine the drugs and medicinal vegetables one day

¹¹ Published by Edelman, 8 & 14.

every week; and do not apply an article which thou dost not thoroughly understand. . . .

From the Responsa of Adret in the 13th century we cull the following: Asked whether a Jewish doctor may render obstetric service to a Christian woman, he replied that it was his duty to give his service to all who asked for it, to Jews and Christians alike, and that his teacher, Nachmanides, had often treated Christian women.

I shall close this account with a reference to the remarkable Oath of Amatus Lusitanus, the eminent physician and medical writer of the 16th century. Essay XXXIX.

Such were the ethical ideals of Jewish physicians. Surrounded by charlatany, ignorance, fanaticism and bigotry, suffering cruel persecutions, driven from place to place, they held fast to these high ideals, for nothing lower would have been in accord with their traditions and their religion.

Jewish physicians have given other evidence of the deep sense of moral responsibility which their profession placed upon them. They have manifested it in their prayers. Our great poet-physician, Judah ha-Levi, thus raised his voice:

My God, heal me and I shall be healed,
Let not Thine anger be kindled against
me so that I be consumed.
My medicines are of Thee, whether good
or evil, whether strong or weak.
It is Thou who shalt choose, not I,
Of Thy knowledge is the evil and the fair.
Not upon my power of healing I rely;
Only for Thine healing do I watch.¹²

In the 17th century Jacob Zahalon published his prayer of a physician. It is given in translation in the Essay on Zahalon, XIX. Professor Jacob R. Marcus has brought to my attention a shorter prayer written by Rabbi Simon Frankfurter (second half of 17th century) and published by his son Moses in his *Sefer ha-Hayyim* which follows a similar line of thought.¹³

It is tempting to include what is referred to in numerous ac-

¹² Selected Poems of Jehudah ha-Levi.

¹³ 1703, 1747. In latter edition, pp. 6, 7. See J. E., V. 493, 494.

counts as the "Prayer of Maimonides." This appeared in January, 1863 (*Allgemeine Zeitung*), in a German translation under the title: *Daily Prayer of a Physician Before Visiting His Patients*, translated from a Hebrew manuscript of a celebrated Hebrew physician of the 12th century. It is a very lofty and beautiful prayer. It has been published and republished frequently and it is ascribed to Maimonides¹⁴ or to "a distinguished Jewish physician of the 12th century," in such works on medical history as Haeser (1875, Vol. 1, page 837), and in biographies of Maimonides (such as Pagel's: Maimuni p. 244). Professor Gotthard Deutsch of Cincinnati has given an interesting account of the wanderings of this prayer and has shown that "it is the work of Marcus Herz, of Berlin (1747-1803), the friend and physician of Moses Mendelssohn, and was translated into Hebrew by Isaac Euchel, who published it in the Hebrew periodical, *Hameassef*, Vol. VI, pp. 242-244, 1790."¹⁵ On account of its intrinsic value, it is appended in an English translation.

DAILY PRAYER OF A PHYSICIAN

Almighty God, Thou has created the human body with infinite wisdom. Ten thousand times ten thousand organs hast Thou combined in it that act unceasingly and harmoniously to preserve the whole in all its beauty—the body which is the envelope of the immortal soul. They are ever acting in perfect order, agreement and accord. Yet, when the frailty of matter or the unbridling of passions deranges this order or interrupts this accord, then forces clash and the body crumbles into the primal dust from which it came. Thou sendest to man diseases as beneficent messengers to foretell approaching danger and to urge him to avert it.

Thou hast blest Thine earth, Thy rivers and Thy mountains with healing substances; they enable Thy creatures to alleviate their sufferings and to heal their illnesses. Thou hast endowed man with the wisdom to relieve the suffering of his brother, to recognize his disorders, to extract the healing substances, to discover their powers and to prepare and to apply them to suit every

¹⁴ An interesting analysis of this prayer is published by Kroner, in which he shows the harmony between it and the writings of Maimonides. (Ost und West, 1912, p. 745.)

¹⁵ *American Israelite*, March 19, 1908.

ill. In Thine Eternal Providence Thou hast chosen me to watch over the life and health of Thy creatures. I am now about to apply myself to the duties of my profession. Support me, Almighty God, in these great labors that they may benefit mankind, for without Thy help not even the least thing will succeed.

Inspire me with love for my art and for Thy creatures. Do not allow thirst for profit, ambition for renown and admiration, to interfere with my profession, for these are the enemies of truth and of love for mankind and they can lead astray in the great task of attending to the welfare of Thy creatures. Preserve the strength of my body and of my soul that they ever be ready cheerfully to help and support rich and poor, good and bad, enemy as well as friend. In the sufferer let me see only the human being. Illumine my mind that it recognize what presents itself and that it may comprehend what is absent or hidden. Let it not fail to see what is visible, but do not permit it to arrogate to itself the power to see what cannot be seen, for delicate and indefinite are the bounds of the great art of caring for the lives and health of Thy creatures. Let me never be absent-minded. May no strange thoughts divert my attention at the bedside of the sick, or disturb my mind in its silent labors, for great and sacred are the thoughtful deliberations required to preserve the lives and health of Thy creatures.

Grant that my patients have confidence in me and my art and follow my directions and my counsel. Remove from their midst all charlatans and the whole host of officious relatives and know-all nurses, cruel people who arrogantly frustrate the wisest purposes of our art and often lead Thy creatures to their death.

Should those who are wiser than I wish to improve and instruct me, let my soul gratefully follow their guidance; for vast is the extent of our art. Should conceited fools, however, censure me, then let love for my profession steel me against them, so that I remain steadfast without regard for age, for reputation, or for honor, because surrender would bring to Thy creatures sickness and death.

Imbue my soul with gentleness and calmness when older colleagues, proud of their age, wish to displace me or to scorn me or disdainfully to teach me. May even this be of advantage to me, for they know many things of which I am ignorant, but let not their arrogance give me pain. For they are old and old age is

not master of the passions. I also hope to attain old age upon this earth, before Thee, Almighty God!

Let me be contented in everything except in the great science of my profession. Never allow the thought to arise in me that I have attained to sufficient knowledge, but vouchsafe to me the strength, the leisure and the ambition ever to extend my knowledge. For art is great, but the mind of man is ever expanding.

Almighty God! Thou hast chosen me in Thy mercy to watch over the life and death of Thy creatures. I now apply myself to my profession. Support me in this great task so that it may benefit mankind, for without Thy help not even the least thing will succeed.

IV

APOLOGETIC WORKS OF JEWISH PHYSICIANS

THE LONG history of discrimination, injustice, false charges and indignities which the Jewish people experienced in varying forms through the ages led to a voluminous mass of defensive literature. In the *contra Iudeos* literature the physicians had not been spared grave attacks. And, in addition, Papal Bulls and Church Councils forbade the practice of Jewish physicians among Christians. It is not surprising that Jewish physicians took up their defense and that several works of no mean order were written in this special *Apologia* literature.¹ Among these defenders there were Jewish physicians of distinction.

The accession of Pope Paul IV (1555-59) placed a bitter enemy of the Jews in the Papal See. One of his early acts was the introduction of the special Jewish garb, with many restrictions of residence, etc. It was an Italian physician, David d'Ascoli, who wrote an *Apologia Hebraeorum, directa contra Mandatum Pauli IV. Pontif. Max. quo Iudaei jubebantur portare pileum certi coloris quo a Christianis distinguerentur*, which was published in Strassburg in 1559,² and which pointed out the uselessness of such measures; it led to his long imprisonment for criticism of ecclesiastical authority and to the burning of his book; this explains why the book is so very rare that the writer has not been able to locate any copy.³

APOLOGIA OF DAVID DE POMIS

Pope Paul IV also forbade Christians from employing Jewish physicians and in this he was followed by Popes Pius V (1565-72) and Gregory XIII (1572-85). The writer possesses a copy of the Bull of Gregory and has republished its facsimile.⁴ This Bull was issued in 1584. Four years later a book appeared in Venice en-

¹ For a general discussion of defensive literature, see Winter and Wensche, III, 669.

² Wolf, *Bibliotheca*, II, 181.

³ Vogelstein and Rieger, II, 153; Dubnow, VI, 111.

⁴ *Publications of the A. J. H. S.*, No. 28, 1922.