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Talmudic Medicine and Greco-Roman Science
Crosscurrents and Resistance

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I. Introduction

Since the publication of Julius Preuss' classic 'Biblisch-talmudische Me-
dizin', study of the history of Jewish medicine in the Talmudic period has been,
to borrow from Whitehead's famous dictum on Plato's influence, largely a
series of footnotes to Preuss (on his work, cf. Fred Rosner, Jewish Medicine
in the Talmudic Period, above in this volume [ANRW II 37,3], p. 2868). Encyc-
clopedic in scope and exhaustive in treatment, this monumental volume re-
mains fundamental to an understanding of ancient Jewish medical theory.
Preuss brought to his work the medical training of the practicing physician,
the linguistic expertise of a Semitist, and an intimate familiarity with both

1. Julius Preuss, Biblisch-talmudische Medizin: Beiträge zur Geschichte der Heilkunde und
der Kultur überhaupt (Berlin: Karger, 1911; reprinted 1921 and 1923). Preuss's work
was translated into English by Fred Rosner under the title 'Julius Preuss' Biblical and
Rosner's translation is reviewed by Stephen T. Neumyer in Clio Medica 19 (1984),
pp. 165-167.

Free Press, 1978; corrected edition, ed. by David R. Griffin and Donald W. Sherburne,
p. 39), "The safest general characterization of the European philosophical tradition is that
it consists of a series of footnotes to Plato."
classical and Jewish sources. Much research in biblical and Talmudic medical history undertaken since the appearance of Preuss' work has sought to refine his observations in the light of more recent Jewish legal thinking, or to clarify medical issues about which Preuss remained in doubt. Of those branches of the medical art touched upon in Jewish thinkers, only medical climatology remains virtually untreated in Preuss' work, despite the remarkable insights on the relation between environment and human health which may be isolated in rabbinic sources. In addition, the vital question of the extent and nature of the debt of rabbinic science to its Greco-Roman counterpart is treated only incidentally in Preuss' otherwise systematic coverage of Talmudic medical theory. The present paper examines the evidence which bears upon this question, suggests reasons why this issue remains curiously neglected in studies of Talmudic medicine, and isolates some elements of rabbinic medical thinking which appear to show influence from classical sources.

The study of possible interrelationships between Talmudic and classical scientific theory is rendered difficult at the outset by a lack of evidence on the nature and source of rabbinic medical education. While much has been written on the history of Jewish education in antiquity, the question of the sources of rabbinic scientific education, in particular as this relates to medical training, is regularly glossed over in standard histories of Jewish education. The reason

3 The principal shortcoming of previous attempts at comprehensive accounts of the history of Jewish medicine was that their authors lacked either medical expertise or familiarity with Semitic languages, a problem that limited the value of such works as E. Carmoly's 'Histoire des Médécins Juifs anciens et modernes' (Bruxelles: Société Encyclopædique des Sciences Médicales, 1844), R. J. Wunderbar's 'Biblisch-talmudische Medicin oder pragmatische Darstellung der Arzneikunde der alten Israeliten, sowohl in theoretischer als practischer Hinsicht etc.', 1–4. Abth., Riga, Leipzig, 1850–1855; N.F., II. Bd., 1–4. Abth., ebd. 1857–1860, and W. Ebstein's works 'Die Medizin im alten Testament' (Stuttgart: Enke, 1901) and 'Die Medizin im neuen Testament und im Talmud' (Stuttgart: Enke, 1903).

4 Such issues include identification of conditions, like kordiakos and zara'at, whose nature remains uncertain. Important work in updating Preuss' observations has been done by Fred Rosner, the translator of Preuss, in such works as his 'Medicine in the Bible and the Talmud: Selections from Classical Jewish Sources' (New York: KTAV—Yeshiva University Press, 1977) and 'Modern Medicine and Jewish Ethics' (New York: KTAV—Yeshiva University Press, 1986).


6 Nathan Drazin, History of Jewish Education from 515 B.C.E. to 220 C.E. (During the Periods of the Second Commonwealth and the Tannaim) (Baltimore: Johns Hopkins
for this is not far to seek. Jewish scholars recall the famous Talmudic
pronouncement,

“Cursed be the man who would breed swine and cursed be the man who
would teach his son Grecian Wisdom.”

Jewish medical historians like SOLOMON KAGAN take this prohibition as sure
proof that Greek scientific knowledge could not have permeated into Palestine,
although he admits that Jews living in Alexandria might have been exposed to
such pagan thinking. ARTURO CASTIGLIONI, on the other hand, adopts a far
more positive attitude toward the possibility of Jewish students partaking of
Greek medical instruction, “Jewish philosophers and physicians participated
actively in the flourishing science of Alexandria and, at the time of the Ptole­
 mies, enjoyed a great popularity. The Greeks were inclined to admire these
strange people and to accept them in the schools, in the public discussions, and
in the professions....” Indeed, SAUL LIEBERMAN has argued convincingly that
Jews who engaged in professional activities in centers dominated by Greek
speakers were fully cognizant of the necessity of mastering the Greek language,
so that the supposed ban on the study of Greek learning is more monitory than

University Press, 1940), still the standard study of Jewish education, echoes the standard
Jewish position on medical education in antiquity when he remarks, p. 92, “...In learning
the laws of permissible and prohibitive foods and those relating to blemishes that render
animals unfit for sacrifices in the Temple, the child learned some animal anatomy, physiol­
ogy, zoology, and medicine.” Earlier works on the subject, including FLETCHER H. SWIFT,
Education in Ancient Israel from Earliest Times to 70 A. D. (Chicago: Open Court, 1919)
and MEYER J. ROSENBERG, “The Historical Development of Hebrew Education from An­
cient Times to 135 C. E. (Privately published, 1927), are unenlightening. ROSENBERG re­
marks, p. 58, “Nor do we know of the sciences which were taught... Some priests may
have known something of medicine, hygiene, astronomy, but we do not know of science
as subjects of education.” JACOB NEUSNER, A History of the Jews in Babylonia (Leiden:
merely mentions some Talmudic medical beliefs without speculating on their origin. The
Talmudic tractate Shabbath (BT 133a) mentions a special medical school at Mehoza
headed by Benjamine the Physician. This supposedly flourished in the third century A. D.
SÜSSMAN MUNTNER, in his seminal study of Asaph Judeaus, the earliest Hebrew medical
author extant, remarks, The Antiquity of Asaph the Physician and his Editorship of the
Earliest Hebrew Book of Medicine, Bulletin of the History of Medicine 25 (1965), p. 120,
“At such medical schools the scholars acquired their detailed knowledge of medicine.” In
addition, the Talmud occasionally alludes to Hebrew medical literature which is lost, e. g.
at BT Yoma 38a.

7 BT Baba Kamma 82b; repeated in BT Soṭah 49b and BT Menajoth 64b. Quotations
from the Talmud in this paper are taken from the The Babylonian Talmud, translated into
English with notes, glossary, and indices under the editorship of DR. I. EPSTEIN (London:
Soncino Press, 1935; reissued 1948), abbreviated here as BT with folio following. The
Babylonian recension of the Talmud contains most of the medical lore of the Talmud.
8 SOLOMON R. KAGAN, Jewish Medicine (Boston: Medico-Historical Press, 1952), pp. 34–
35.
9 ARTURO CASTIGLIONI, The Contributions of the Jews to Medicine, in: The Jews: Their
real. Teaching Greek to one's own children might be unacceptable, but learning Greek for the benefit of one's livelihood is certainly permissible, according to LIEBERMAN's construction of the ban.\endnote{10}

Considerations other than expressions of distrust of Greek learning scattered throughout the Talmud make us pause in attempting to assess the degree to which classical medical doctrine is reflected in Talmudic sources. The Talmud is a compilation of orally-transmitted interpretation of the Hebrew Bible that reached its final published form around A.D. 500. In the course of the millennium during which the materials eventually incorporated into the Talmud were accumulated, rabbis reflected upon pronouncements by early Sages, with the result that the Talmud, rather than constituting a coherent, logical whole, has an amorphous texture with subjects taken up and put aside as appropriate, in a style rather suggesting free association of ideas. Rabbis of one century comment on pronouncements of their predecessors, and indeed seem to engage in dialogue with them, as if they were contemporaries. The consequences of this procedure for questions of the dating of rabbinic medical advances are obvious. One can seldom be certain to what period a rabbinic medical pronouncement can safely be dated. In addition, the contributors to the Talmud are generally reticent as to their sources, and are particularly loath to name Greek writers. While we may suspect the presence of Greek medical thinkers behind certain Talmudic pronouncements, we must recall that of Greeks who might by a generous construction be considered scientific writers, the Talmud in fact mentions by name only Epicurus and the Cynic philosopher Oenomaus of Gadara.

A no less cogent consideration that must be taken into account in assessing Talmudic familiarity with classical medical sources is the profound ideological difference that divided Greco-Roman science from its Jewish counterpart in all periods of antiquity. So fundamental to Jewish thought is the notion that disease and health come from God, a belief grounded in such biblical pronouncements as Exodus 15:26, "For I the Lord am your healer," and the Lord's words at Deuteronomy 32:39, "I put to death and I keep alive, I wound and I heal," that the Talmudists grappled with the question of whether mortal man had divine sanction to engage in healing at all, or whether medical intervention constituted a violation of divine prerogative. Throughout Jewish medical history in antiquity, disease and health are regarded as religious categories, and the physician is reckoned as the agent of God's will. Such a conception is fundamentally foreign to Hippocratic science which fought to separate Greek medicine from religious domination. In such an atmosphere, we must resist the

\endnote{10} SAUL LIEBERMAN, Hellenism in Jewish Palestine: Studies in the Literary Transmission of Beliefs and Manners of Palestine in the I Century B.C.E.—IV C.E., Texts and Studies of the Jewish Theological Seminary of America 18 (New York: The Jewish Theological Seminary of America, 1962\endnote{3}, pp. 100–114, especially pp. 103–104. JACOB NEUSNER (note 6 above), I, p. 10, remarks along these same lines, "It is perfectly obvious that some Jews must have known much Greek to live in the Greek cities, and many Jews knew little, if only to read the coins of the realm and communicate with their neighbors."
temptation to classify as influence what may in fact be an instance of similar outlook, particularly if we keep in mind the undercurrent of suspicion of Greek learning that pervades the Talmud.

This Talmudic tendency to regard medical questions as religious categories may be observed as well in certain of the remarkably forward-looking Talmudic pronouncements on the relationship between climate and human health and intelligence. Rabbinic sages developed a line of argument equating residence in the Holy Land with freedom from disease, a position reminiscent of the position developed with regard to the superiority of Europe over Asia in promoting health that can be observed in the Hippocratic treatise 'Airs Waters Places', but in some particulars rabbinic insistence upon residence in Palestine was motivated by social and economic considerations as they sought to discourage emigration from the biblical lands by Jews forced to such measures by high taxes in Palestine. The motivation of some rabbinic pronouncements of an apparent medical content may be demonstrated to lie in considerations in fact more closely allied to religion or even economics than science.  

In the same regard, one must not overlook the fact that the Talmud, the text upon which any comparison of Jewish and classical views on medicine must rest, is in no sense a medical textbook. FRED ROSNER'S characterization of the nature of the Talmud clarifies the relationship of medicine to the content of the Talmud as a whole, “The Talmud is a compendium of commentaries and elaborations on biblical teachings — legal, theological, philosophical, ethical, historical, mathematical, scientific, and folkloric. It also includes discussions of medical problems.”  

Medicine came under the purview of the Talmudic sages principally as it pertained to questions of the suitability of sacrificial animals for human consumption, that is, they were concerned to devise techniques for determining whether animals exhibited blemishes which would render them treifa, or unsuitable for use. While such investigation occasionally resulted in valuable medical insights, in many instances, Rabbinic observations on the unsuitability of meat for consumption are based on legal impurity, rather than medical considerations. Abstract medical theorizing, in the manner of the Hippocratic school and the other Greek medical sects, is intrinsically foreign to Jewish medicine in all periods in antiquity. Consequently, we may expect to observe a greater abundance of observations on such matters as anatomy and physiology than on more theoretical branches of medicine.

11 See the studies by NEWMYER (note 5 above).

12 ROSNER, Medicine in the Bible and the Talmud, p. 12. ROSNER also notes, p. 13, “The Talmud reflects the influence of Greek, Babylonian and Persian elements, including some elements of superstition (e.g., the evil eye, amulets, angels, etc.).”

13 For example, in their investigation of whether the spleen was fit for consumption (kosher), the Talmudists noted instances of shriveling of the spleen (BT Gittin 69 b); in tractate Hullin (BT 45 b) the Rabbis discuss how various injuries to the “cavities” (probably the right and left halves of the heart rather than a distinction between auricles and ventricles) render an animal incapable of life, and therefore useless for consumption.
II. Evidence for Classical Influence on Talmudic Medical Theory

It is clear from the evidence cited above that the difficulties confronting the investigator who seeks to define the nature and extent of Greco-Roman influence upon Talmudic medical knowledge are formidable indeed, a fact which may account for the hesitation of medical historians to tackle this question. As we have noted, the most prominent Jewish medical historians are themselves divided as to the meaning of the ostensible ban on the study of Greek learning which is several times voiced in the Talmud, and they declare themselves convinced, because of the undeniable wariness toward Hellenism that surfaces occasionally in the Talmud, that influence by pagan science upon the thinkers who contributed to the Talmud is out of the question. Yet there is ample evidence that Rabbinic distrust of Hellenism was mingled with an undeniable fascination with the insights of Greek sages, traces of which may be detected throughout the Talmud as unmistakably as can expressions of distrust. While the weight of such evidence is no surer proof of Greek influence upon Jewish thought than occasional expressions of suspicion are proof against, certain passages in the Talmud argue forcibly that Rabbinic authorities were not only cognizant of pagan thinking in some of their scientific pronouncements, but were even willing at times to adopt pagan theories in preference to Jewish thinking.

Even a casual perusal of the scientific discussions of the Talmudists indicates the degree to which the medical vocabulary of the Talmud has been infiltrated by Greek terminology. A century ago, this question was investigated in detail by Samuel Krauss, who isolated over one hundred terms relating to anatomy, the work of the physician, medicines, and diseases which he identified as derived from the Greek. As examples, we may note podagra, the Talmudic term for gout (BT Sotah 10a), and boulimos, the Talmudic term for boulimia (BT Yoma 83a), two obvious borrowings from Greek terminology. While the adoption of technical terms by one language from another does not of course prove endorsement of the theoretical foundations of one nation's science by another and may in fact indicate no more than a linguistic expedient, the employment of Greek terminology in the scientific discussions of the Tal-

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14 Samuel Krauss, Griechische und lateinische Lehnwörter im Talmud, Midrasch und Targum, mit Bemerkungen von Immanuel Löw (Berlin: S. Calvary and Co., 1899), 2 volumes. Krauss' work must be used with some caution, as was noted already by Löw in his Nachträge to the volumes. We are confronted with the question as to what constitutes a Lehmoort and what is in fact merely a borrowing from a foreign language adopted for the sake of convenience. That is to say, we are forced to ask to what extent Talmudic vocabulary is indicative of assimilation of foreign scientific knowledge. Vocabulary is by itself only a superficial indicator of foreign influence. Readers may consult with profit the article of Samuel Kottke, Selected Elements of Talmudic Medical Terminology, passim, above in this volume (ANRW II, 37,3) pp. 2912–2932.
mud, not to mention in legal, economic, and agricultural discussions, instances of which Krauss also isolates, at least affirms the willingness of the Talmudists to make use of the vocabulary of a science which they acknowledge to be in this area at least more advanced than their own, and it certainly proves firsthand familiarity with Greek science.

While Jewish historians of medicine are certainly correct to point out that Talmudic physicians were not adherents of Greek humoral doctrine, which formed the theoretical underpinning of much of Hippocratic and Galenic medicine, there is nevertheless some evidence suggesting that the Rabbis were at least aware of humoral theory. In the Talmudic tractate entitled Soṭah (BT 5b), we encounter the fascinating statement, attributed to Rabbi Johanan, “the word for man [adam] indicates dust, blood and gall.” Rabbi Johanan understands the name to be a combination of the Hebrew terms adamah, “earth,” dam, “blood,” and mar, “bitter.” We may have here an allusion to the Hippocratic humors blood and gall. It is argued, further, in tractate Baba Kamma (BT 92b) that mahalah, “gall,” causes 83 types of disease, a statement which recalls the Hippocratic definition of disease as an imbalance of humors resulting from a dominance of one humor over the others. The word mahalah may be related etymologically to the Greek ξυλί “gall.” It must be admitted that Jewish medicine would at no time have accepted the somewhat mechanical and mathematically overprecise theory of disease etiology implicit in the humoral doctrine, but they may be here allowing the reading to infer, through some typical rabbinic wordplay, that they are cognizant of Greek thinking on the subject of disease causation.

On some rare occasions in the Talmudic corpus, more or less specific reference is made to Greek scientific discussions in a manner that assures the reader that the Rabbis were aware of gentile opinions on the matter at issue. Such an instance occurs in tractate Pesahim (BT 94b), wherein Rabbi Judah ha-Nasi passes judgment on the relative worth of Jewish and pagan (that is, Greek)

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15 A typical expression of this belief in the complete rejection of the humoral theory by the Talmudists is voiced by Süssman Muntner, Medicine in the Talmud, Medica Judaica 2, 1 (1972), p. 4, “The Greek influence on Jewish medical thought of the time was considerable, but not absolute, since many scholars were not blind adherents of humoral pathology, following instead the more rational course of anatomic pathology....” In sharp contrast to the general tenor of Jewish belief regarding humors, we may note that the medical treatise Sefer Refuot of Asaph the Jew accepts humoral theory wholeheartedly, a topic treated in chapters 12–22 of that work. On this curiously undervalued document of Jewish medical history, see Ludwig Venetianer, Asaf Judaicus, der aelteste medizinische Schriftsteller in hebraischer Sprache, 3 volumes (Budapest, 1915–17); Isidore Simon, Asaph ha-Iedoudi: Medicin et Astrologue du Moyen Age (Paris: Librairie Lipschutz, 1931); Süssman Muntner, Hebrew Medical Ethics and the Oath of Asaph, JAMA 205 (1968), pp. 912–913, and id., The Antiquity of Asaph the Physician and his Editorship of the Earliest Hebrew Book of Medicine, Bulletin of the History of Medicine 25 (1931), pp. 101–131; and Elinor Lieber, Asaf’s Book of Medicine: A Hebrew Encyclopedia of Greek and Jewish Medicine, Possibly Compiled in Byzantium on an Indian Model, in: Symposium on Byzantine Medicine, ed. John Scarborough, Dumbarton Oaks Papers 38, 1984, pp. 233–249.
opinions on the movement of celestial bodies. In this debate, we are informed
that rabbinic authorities hold the opinion that the sun travels beneath the sky
by day and above it by night, while gentile scientists hold that the sun travels
beneath the sky by day and below the earth by night. On this, Rabbi Judah
remarks,

"... and their view is preferable to ours, for the wells are cold by day and
warm by night."

Rabbi Judah was the erudite redactor of the body of oral interpretation to the
Jewish Bible that came to be called the mishnah, to which its own body of
interpretative material, called gemara, was added to form, together, the Tal­
mud. He was famed for his interest in scientific matters, in particular biological
and medical questions, and was well known for enjoying a special closeness to
Roman authorities in Palestine.16 His judgment here therefore carries consid­
erable weight. We may assume, then, that if a Jewish sage whose reputation for
learning was such as to win over a Jewish audience on a matter of astronomical
lore prevailed in this discussion, Jewish sages might have been willing to accept
the validity of gentile, that is, Greek, views on other scientific, and not least
medical issues.

Our brief survey of Talmudic texts that demonstrate evidence of rabbinic
knowledge of Greek science may be supplemented by some considerations of a
more theoretical nature. However much Jewish Sages voiced a desire to keep
their thought free from contamination by pagan doctrine, it must be borne in
mind that they viewed this matter consistently from a religious standpoint. So
long as the theological integrity of their Jewish faith was maintained, the Tal­
mudists saw no objection to benefitting from the insights of a rival school of
thought. While the Rabbis were not disposed to adopt humoral doctrine whole­
sale, they saw no harm, on the other hand, in availing themselves of the highly­
developed vocabulary of Greek medicine since this use of pagan lore constituted
no threat to their faith. Some of the theoretical underpinnings of Greek medi­
cine must in fact have proven strongly attractive to Jewish physicians as being
in complete agreement with their methodology. Talmudic medicine shares with
its Hippocratic counterpart a reliance upon rational observation not encoun­

16 The subject of Rabbi Judah’s cordial relations with Roman authorities, which encouraged
him to discuss scientific questions with his Roman friends, is the subject of an extensive
literature. Already in 1868, the matter was aired in ARNOLD BODEK, Marcus Aurelius
Antoninus als Zeitgenosse und Freund des Rabbi Jehuda ha-Nasi (Leipzig: Duncker and
Humblot, 1868), pp. 142 ff. The taxing problem of the identity of the “Antoninus” in
question was reopened and argued exhaustively by SAMUEL KRAUSS, Antoninus und Rabbi
(Frankfurt: Sänger and Friedberg, 1910) and, in a rejoinder to Krauss, by RUDOLF LEZ­
ZYNISKY, Die Lösung des Antoninusrätsels (Berlin: Mayer and Müller, 1910). In more re­
cent times, Rabbi Judah’s scientific interests are detailed in LUTTPOILD WALLACH, The Col­
loquy of Marcus Aurelius with the Patriarch Judah I, Jewish Quarterly Review 31 (1940–
41), pp. 259–286, especially pp. 270–275, and in STEPHEN T. NEWMYER, Antoninus and
Rabbi on the Soul: Stoic Elements of a Puzzling Encounter, Koroth 9 (1988) (Special Is­
ssue), pp. 108–123.
tered in the medical science of other ancient nations. While one finds occasional references to demons and amulets in the Talmudic corpus, as well as scattered mentions of disease-causing spirits, called mazzikin,17 these are stray occurrences, for Talmudic medicine is firmly grounded in the belief that the nature of disease may be comprehended through rational observation of phenomena without undue recourse to supernatural explanations, an attitude toward scientific investigation strongly reminiscent of that seen in the best of Greek medicine.

A certain spiritual kinship exists between Greek and Talmudic medicine as well on the question of the correct behavior of physician toward patient. Of all ancient nations that made a positive contribution to medical science, the Greeks and Jews had the most highly developed sense that medicine was a lofty calling that imposed a strict moral code upon its practitioners. The injunctions of Hippocratic deontological treatises like 'Decorum' and 'Precepts' are reflected to a remarkable degree in comments scattered throughout the Talmud. In the latter of these Hippocratic works, it is recommended that a physician not be overly insistent about fees since this is troubling to an ill person (II). This pronouncement recalls the famous Talmudic anecdote, recounted in tractate Taanith (21 a), that the leech Abba kept a money-box in his examining room in which poor patients were free to place what payment they could, or none at all. In general, however, payment was expected by Talmudic physicians, for the Talmud teaches (BT Baba Kamma 85 a), "A physician who heals for nothing is worth nothing."18 The Hippocratic treatise 'Decorum' instructs the physician to maintain a cheerful manner before the patient so as not to worry him unduly (VII), and it recommends (VIII – X) that the physician be completely prepared before entering the sickroom lest an appearance of uncertainty reduce the patient's confidence in the physician. This same sense of considerateness toward the suffering is reflected throughout the Talmud. It is suggested there, for example, that one refrain from visiting a sick person during either the first three hours of the day or during the last three hours of the day, because at these times a person suffering from illness appears healthier than he is (in the early hours) or sicker (in the late hours) (BT Nedarim 40 a). Out of this same considerateness, a person should refrain from visiting persons suffering from

17 Some scholars have seen the Talmudic idea of disease-causing demons as a precursor to the modern conception of airborne pathogenic bodies. See, for example, BENJAMIN LEE GORDON, Medicine throughout Antiquity. Foreword by MAX NEUBURGER (Philadelphia: F. A. Davis, 1949), p. 750, "In the light of modern bacteriology and hygiene, the Talmudic conception of pathogenic demons is of much interest. Their mode of attack, their predilection for certain organs, their prevalence in certain localities and during certain seasons of the year, the symptoms they produced and the measures taken for the prevention and cure of their attacks, might not be out of place in a modern book on hygiene."

18 An excellent general discussion of Jewish medical ethics is offered in HARRY FRIEDENWALD, The Ethics of the Practice of Medicine from the Jewish Point of View, in: Id., The Jews and Medicine, Publications of the Institute of the History of Medicine, Series 1, Vol. 2,3 (Baltimore: Johns Hopkins University Press, 1944), I, pp. 18–30.
headache, diarrhea or eye ailments because such visits are especially taxing of these individuals (BT Nedarim 41a). Such recommendations obtain in equal measure for physician and friend. Indeed, under Jewish law, visitation of the sick, a practice called bikkur holim, was reckoned to be a commandment, or mitzvah, applying to all persons, and in consequence no one could neglect to do so or could expect payment for such visitations. Strict codes of proper behavior were incumbent upon the visitor, designed to respect the privacy and delicate condition of the patient. This sense of moral responsibility toward the patient allies Talmudic medicine to Greek medicine in a significant philosophical bond. As in their attraction to Greek rationalism, so in their realization of the noble stance taken by the Greek physician toward his patient's rights, Talmudic physicians could feel themselves justified in availing themselves of the best of pagan science without compromising their religious integrity.

At the outset of our study, we noted that some historians of medicine, in particular Jewish historians, have downplayed or denied the possibility of any infiltration of Greek medical ideas into the thinking of the Rabbis who contributed to the Talmud. We may note, for example, the characteristic utterance of Solomon Kagan, alluded to above, "Dr. L. Kazenelson stated that the ancient Greek medicine had no influence upon the medical thoughts of the Talmudists during the stages of development of the Talmud, as there was at that time continuous warfare between Judaea and Greece, and no exchange of ideas or knowledge could filter through. It should be borne in mind that the Talmud prohibited the study of Greek culture (B. Kamma 82b), and therefore the Talmudic Rabbis did not study the writings of the Greek sages." Our investigation of several sorts of evidence that more or less specifically link Talmudic and Greek medical thought suggests that Kagan considerably overstates his case, especially in view of the fact that Rabbi Judah ha-Nasi, a Palestinian Jew, was clearly conversant with pagan science and recommended it to his compatriots. Having demonstrated that Jewish science of the Talmudic period was considerably less averse to outside influence than has been maintained, we shall turn our attention, in the final section of this paper, to an examination of one branch of medical science in which outside influence upon the rabbinic theorists who contributed to the medical lore of the Talmud seems unmistakable, namely in their theories on the biology of human reproduction. In no area of medical science does the Greek propensity for abstract speculation in the absence of means for accurate firsthand observation emerge more strikingly. Some of the most fanciful ideas to be found in classical medical theory are those which relate to the processes of reproduction, and many of these peculiar notions reappear in Talmudic sources in a form bearing an astonishing resemblance to their Greek formulations.

19 For a consideration of the Jewish concept of bikkur holim and its implications for medical practice, see Rosner (note 4 above), pp. 113-118.
20 See above, p. 2.
21 Kagan (note 8 above), pp. 34-35.
Gynaecological matters interested Talmudic physicians even more intensely than they did their Greek counterparts, in large part because of considerations more closely related to the determination of the ritual purity of females during and after episodes of vaginal bleeding, than to purely medical considerations. Nevertheless, even in instances where rabbinic physicians acknowledged non-medical motivations for their investigations, such investigations occasionally resulted in important medical advances. Determining whether a discharge of blood from the vagina was consequent upon a woman's regular menstrual cycle or was the result of some potentially pathological condition, was fundamental in deciding whether that woman could take part in offerings in the Temple or could indeed continue in a married state. If a woman experienced bleeding at a time not coinciding with her menstrual cycle, she was considered to be ritually unclean and had to refrain from religious observances, a prohibition voiced already in Leviticus 15:25. Scholars of Jewish medicine readily acknowledge that in its injunctions concerning the ritual impurity of menstruants, as in so many other pronouncements in the Torah which would seem to have medical motivations, the medical reasons for such prohibitions cannot be determined with certainty, even if the Torah implies that such prohibitions are necessitated by concern over pathological conditions.

One reason for the Jewish preoccupation with menstrual bleeding is that, under Jewish law, a husband is required to refrain from sexual contact with his wife during the period of her menses. The Rabbis took a special interest in cases of bleeding after sexual intercourse, for if a woman bled on three successive occasions following intercourse, her marriage had to be dissolved. It was believed that such blood could emanate from the uterus, and uterine bleeding rendered a woman ritually unclean. A woman who showed evidence of such uterine bleeding was permitted, however, to remarry on the belief that intercourse with different husbands might not have identical consequences. Remarriage was permitted after a woman submitted to a medical examination by a rabbinic physician. The examination was effected by a speculum inserted into the vagina with a cotton swab attached to the tip. Blood found on the tip of the swab was believed to indicate bleeding from the uterus, a situation which, under Jewish law, rendered a woman ritually unclean (BT Niddah 66a). Although the Talmud does not here isolate medical reasons for the examination, it is noteworthy that this passage constitutes the earliest record in medical history of the use of a vaginal speculum, indicating that even when their motiva-

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tions were not strictly medical, rabbinic physicians had a contribution to make to the history of medicine. The speculum was described by the renowned rabbinic physician Mar Samuel, who died around A.D. 257, making this the earliest known mention of a vaginal speculum. 23

This brief survey of Talmudic gynaecological notions illustrates a point made earlier, that in medical questions whose interest was for the Talmudists most narrowly focused upon points of Jewish law, outside influence is least likely to be identifiable. While it has been maintained that rabbinic physicians had no interest in the more theoretical side of pagan science, 24 examination of Talmudic beliefs on the mechanics of human reproduction suggests otherwise.

There is scarcely a topic relating to human reproductive science upon which classical theorists speculated that does not find its counterpart in the deliberations of Talmudic physicians, although their reasonings and conclusions frequently differ from those of their pagan colleagues (other aspects of this topic are discussed in FRED ROSNER, Jewish Medicine in the Talmudic Period, above in this volume [ANRW II 37,3] p. 2879). The Rabbis joined in the heated ancient debate to determine the part of the body from which embryonic development begins. Like their Greek counterparts, the Rabbis failed to reach a consensus. While some Jewish Sages argued that this development began with the head, Rabbi Saul is said to have opted for the navel, arguing that this sent out roots to all parts of the body, determining their shape. 25 We recall along these lines that Aristotle argued that the heart is the first body part to be distinguishable in the embryo, 26 and that he criticized Democritus for holding that the external parts of an animal embryo are distinguishable before the internal parts. 27 Alcmaeon had held that the head develops first, 28 while Pliny the Elder argued for the heart. 29

23 The woman may also perform self-examination with such a speculum, as is detailed in BT Niddah 66a, “She inserts a tube within which is attached an absorbent. If blood is found on the top of the absorbent it may be known that it [i.e., the blood] emanated from the source [i.e., it is therefore clean].” It is usually believed that Aearius of Amida, writing in the sixth century A.D., first mentioned a speculum. But cf. now E. KÖNZL, Forschungsbericht zu den antiken medizinischen Instrumenten, above in this volume (ANRW II 37,3), p. 2452.

24 Typical of this attitude is CASTIGLIONI (see note 9 above), p. 194, “We may, therefore, pass only a general judgment on the practice of medicine and believe that the Jewish physicians of those days accepted the diagnostic rules and therapeutic means prescribed by Greek medicine, but did not care too much for the clinical doctrines or the theoretical scientific explanations that were the characteristic elements of Greek science.” Likewise KAGAN (note 8 above), p. 35, “…The Hebrews did not accept the main principles of Greco-Roman medicine, such as its theory of humors, semiology and prognostics...”

25 BT Soṭah 45b, “From where is the embryo formed? From the head ... Abba Saul says: It is from the navel, and its root spreads in all directions [from there]!”

26 Aristotle, De gener. animal. 740 a3–4, διό ἀποκρίνεται πρῶτον ἡ καρδία ἐνεργείαν.

27 Aristotle, De gener. animal. 740 a 13–15, διότερ δοὺς λέγοντιν, διότερ Δημόκριτος, τὰ ἔξω πρῶτον διακρίνεισθαι τῶν ἐκών, ὑστερον δὲ τὰ ἐντὸς, οὐκ ὀρθῶς λέγοντιν.

28 Plutarch, De placitis philos. 907E.

29 Pliny the Elder, NH XI, 181, Cor ... primum nascentibus formari in utero tradunt, deinde cerebrum, sicut tardissime oculos ....
The Rabbis contributed as well to the ancient discussion on the question of the day upon which sexual differentiation was observable in a human embryo. The Hippocrates had held that the sex of a female was completely differentiated on the forty-second day after conception, while that of a male was observable already on the thirty-first day. Some Rabbis who had examined aborted embryos agreed with this widely held ancient notion that male embryos were sexually differentiated at an earlier time than were female embryos. Rabbi Ishmael, for example, is said to have argued that a male embryo was distinguishable on the forty-first day, while a female embryo could be distinguished only on the eighty-second day. The majority rabbinic opinion seems to have been, however, that both sexes could be observed already on the forty-first day.

The Rabbis speculated quite as extensively as did their pagan counterparts on the question of how prospective parents may preselect the sex of their offspring, and their conclusions echo classical notions. A suggestion obviously borrowed from folklore is offered by the Talmudic Sage Abba Benjamin, who recommended that a couple place their bed facing north if they desire a male child. Such a recommendation recalls Aristotle's statement that shepherds recount that the sex of farm animals is determined by the direction which animal parents face during copulation, not less than by the direction from which the wind is blowing at that time. Indeed, Aristotle himself subscribed to the notion that male offspring are engendered when north winds are blowing, a phenomenon he explained as due to the circumstance that wind conditions influence the concentration of semen and menstrual fluid contributing to the sex of the unborn. This entire question of the influence of climate upon human reproduction was handled in detail in the Hippocratic treatise 'Airs Waters Places', where the impact of each wind upon the constitution of human

30 Hippocrates, De nat. puer. XVIII. 1, Καὶ γέγονεν ἡδη παῖδιον καὶ ἐς τόσο άρκειται, τὸ μὲν θήλυ ἐν τεσσαράκοντα ἡμέραις καὶ δύο τὸ μακρότατον, τὸ δὲ ἄρσεν ἐν τριήμεροι ήμέραις τὸ μακρότατον.

31 Rabbi Ishmael adduces evidence from Greek history to support his classically-influenced opinion (BT Niddah 30 b), "Then said R. Ishmael to them: A story is told of Cleopatra the Grecian queen that when her handmaids were sentenced to death under a government order they were subjected to a test and it was found that a male embryo was fully fashioned on the forty-first day and a female embryo on the eighty-second day."

32 BT Berachoth 5 b, "Abba Benjamin says, All my life I took great pains about two things: that my prayer should be before my bed and that my bed should be placed north and south... For R. Hama b. R. Hanina said in the name of R. Isaac: Whosoever places his bed north and south will have male children,..."

33 Aristotle, De gener. animal. 767 a 9–13, φασι δὲ καὶ οἱ νομεῖς διαφέρειν πρὸς θηλυκονίαν καὶ ἄρενονοχονίαν οὐ μόνον ἕως συμβαίνῃ τὴν ἁγίαν γέννησαι βοραίς ἡ νοτίος ἀλλὰ κἂν ὀχευόμενα βλέπῃ πρὸς νότον ἢ βοραίαν.

34 Aristotle, De gener. animal. 766 b 34–37, καὶ τὸ βοραίος ἄρενονοκεῖν μᾶλλον ἡ νοτίος ὑγρότερα γὰρ τὰ φῶματα νοτίος ὥστε καὶ περιτταμικότερα, τὸ δὲ πλείον περίττωμα δισεκπέτοετον διὸ τοῖς μὲν ἄρεσιν ὑγρότερον τὸ σπέρμα, ταῖς δὲ γυναιξίν ἡ τῶν καταμηνίων ἐκκρείσις.
beings is analyzed thoroughly. The Talmudists seem to have been less in agreement on this question than on others that bear on human reproduction. There seems to have been a degree of reluctance on the part of some Rabbis to speculate at all on the matter of sexual preselection, probably because it was felt that that matter was solely the province of God. Here too, as is often the case with Talmudic pronouncements on medical questions, the Sages sometimes express themselves in obscure metaphors the interpretation of which is still not agreed upon by modern scholars. It is suggested, for example, that a man who desires male offspring should marry a woman who is worthy of him and “sanctify himself” toward her. The meaning here is certainly unclear; the passage may be recommending that the male allow the female to reach orgasm first, which will induce God to confer male offspring as a reward for the husband’s restraint. In any case, the recommendation did not satisfy all Talmudic Sages as yielding the desired results, for in the same passage it is remarked that although many men have so conducted themselves, many have nevertheless not succeeded in fathering males. Some Rabbis concluded that it was ultimately impossible to choose the sex of one’s offspring, and that attempts to do so were intrinsically blasphemous, citing Ecclesiastes 11:5,

“You do not know how a pregnant woman comes to have a body; nor do you know how God, the maker of all things, works.”

Deliberations in classical medical writers on the possibility of unusually extended gestation periods in human infants and on the viability of prematurely-born infants offer some of the more fanciful ideas surviving from ancient reproductive science, and in this branch of their reproductive theory, evidence for Greek influence upon Talmudic doctrine seems particularly compelling.

35 Hippocrates, Aer. III–IV. The Talmudic use of Hippocratic climatological doctrine is examined in detail in the articles of Newmyer cited in note 5 above. Use of classical climatological theory in later ages is analyzed exhaustively by Clarence J. Glacken, Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century (Berkeley: University of California Press, 1967) and in Frederick Sargent, Hippocratic Heritage: A History of Ideas about Weather and Human Health (New York: Pergamon, 1982). Neither of these works treats of Jewish familiarity with Greek climatological theory.

36 The discomfort felt by some Talmudic Sages on the ethics of attempting to preselect the sex of an unborn child is in fact but one aspect of the debate which surfaces occasionally in the Talmud on the broader issue of whether a Jew may practice medicine at all. For a convenient discussion of the permissibility of practicing medicine by Jews, see the volume by Friedenwald cited in note 18 above, especially pp. 5–17, “The Relation of the Jews and of Judaism to the Medical Art.” For a more recent treatment of this question in the light of current Jewish legal thinking, see Fred Rosner, Modern Medicine and Jewish Ethics, pp. 7–58 (see note 4 above).

37 BT Niddah 70b–71a, “What must a man do that he may have male children? He replied: He shall marry a wife that is worthy of him and conduct himself in modesty at the time of marital intercourse. Did not many, they said to him, act in this manner but it did not avail them?”
Hippocrates mentions the possibility of ten- and eleven-month gestation periods for human foetuses, and Aristotle asserts that human beings alone have a gestation period of varying length up to ten months. An eleven-month pregnancy is also mentioned in Aristotle. While such assertions may of course be instances of simple miscalculation of the inception of pregnancy, or a function of the type of calendar used in calculating the gestation period, or cases of retention of foetuses after full development, Aristotle at least seems to argue that unusually long gestations are the rule. In Talmudic sources, we read that Rabbi Tosfa’ah pronounced a twelve-month foetus to have been legitimate.

It was a widely-held belief among classical medical writers that a child born prematurely after seven months was viable, while one born after eight months was much less likely to survive. The Hippocratic author of ‘The Eight Months’ Child’ taught that at seven months, the foetus is particularly strong and capable of breaking the membranes which were believed to surround it and which had to be broken before birth. The eighth month of gestation, in contrast, was held by the Hippocratic author to be the most critical in that during that period of development, the foetus was most susceptible to maladies. The same claim is made by Aristotle.

The Talmudic Sages embraced this pagan idea wholeheartedly, even though their eyes taught them otherwise. This led them into interesting problems and solutions. Although it was stated almost as dogma that an eight-month foetus was not viable, the Rabbis examined living, healthy eight-month births, and developed an explanation for this anomaly. It was argued that God planned both seven-month gestation periods and nine-month periods. If a seven-month infant was retained in the womb for an extra month, the foetus was viable, but if a nine-month foetus was born one month prematurely, it could not survive. Here the Rabbis, whose science is usually

38 Hippocrates, Oct. XIII. 1, Οἱ δὲ δεκάμηνοί τῶν τόκων καὶ ἑνδεκάμηνοι ἐκ τῶν τεσσαρακοντάδων τῶν αὐτῶν τρόπων γίγνονται καὶ ἐκ τοῦ ἡμίσεως τοῦ ἑνιστοῦ οἱ ἐπτάμηνοι.

39 Aristotle, De gener. animal. 772 b–9, τοῖς μὲν γὰρ ἄλλοις εἷς ἐστὶν ὁ χρόνος, τοῖς δὲ ἄνθρωποις πλέοντες καὶ γὰρ ἐπτάμηνα καὶ δεκάμηνα γεννώνται καὶ κατὰ τοὺς μεταξύ χρόνους.

40 Aristotle, De hist. animal. 584 a38, ἐνιαίο δὲ ἐπιλαμβάνουσι καὶ τοῦ ἑνδεκάτου μηνός.

41 BT Yebamoth 80 b, “With reference, however, to the practical decision which Raba Tosfa’ah gave in the case of a woman whose husband had gone to a country beyond the sea and remained there for a full year of twelve months, when he declared the child legitimate, in accordance with whose [view did he act]?”

42 Hippocrates, Oct. I, 2, Ὅκοταν οὖν ἐς τὴν ἀρχὴν τῆς τελείωσις ἐλθῇ ταύτην, ἀδρινομένου τοῦ ἐμβρύου καὶ τὴν ἴσχυν πολὺ ἐπιδιδόντος ἐν τῇ τελειώσει μᾶλλον ἢ ἐν τοῖς ἄλλοις χρόνοισιν.

43 Hippocrates, Oct. V. 1, τὸ γὰρ ἐμβρύον τό πηροθέν ἐν τῷ ὀχήμῳ μηνὶ ἵσχυρὸς ἐνόσιεν.

44 Aristotle, De gener. animal. 772 b9–10, καὶ γὰρ τὸ ἐκτάμηνα ζῆν μὲν, ἤττου δὲ.

45 This opinion is voiced in the Tosefta, or commentary, to tractate Shabbat 15:5 and many times elsewhere in rabbinic sources.

46 This doctrine is expounded in the Jerushalmi, or shorter recension of the Talmud, tractate Yebamoth 4.
firmly grounded in reason and accurate observation, have allowed themselves to be led astray by outside sources, and the value of their own science has suffered.

The above examination of Talmudic opinions on some topics relevant to the mechanics of human reproduction has demonstrated that it is possible to adduce rabbinic parallels to most ideas and theories propounded in Greco-Roman science. At the same time, it must finally be admitted that certainty of rabbinic use of classical doctrine is virtually impossible to attain. The most daunting obstacle to any investigation of the sources of rabbinic medical beliefs is the nature of the Talmud itself. Since the Talmud is in no sense a medical treatise but rather a compilation of commentary on Jewish law, medical matters are incidental if pervasive. Tantalizing statements were made, only to be put aside without comment. One will look in vain for a systematic coverage of any medical topic in the Talmud, and discussion of any Talmudic medical theory is bound to be of necessity a collection of scattered and all too often cryptic remarks. The investigator is hampered as well by the steadfast rabbinic reluctance to mention non-Jewish sources of opinions expressed in the Talmud. We have presented here a survey of some passages in rabbinic sources where the doctrines of classical science seem to have made an impression on the deliberations of Jewish Sages and which seem to indicate that the Sages were conversant with classical ideas, even when they seem only to contradict them. The history of the study of the medical science of the Talmudists suggests that the last word on the question of borrowings from pagan science in Jewish sources has not yet been written. In all likelihood it never can be.

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This Bibliography is not an exhaustive listing of all scholarship relating to the history of Jewish medicine in the Talmudic period. It lists only materials which are especially useful in elucidating matters discussed in the present article. The results of the most recent researches in the history of Jewish medicine may be read in the issues of 'Koroth', the Israeli journal of the history of medicine and allied sciences.


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