

Ma'ase Tuviya

Venice 1708

Tuviya on Medicine & Science

MA'ASE TUVIYA (Venice 1708)

Tuviya on Medicine & Science

edited by

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with a Foreword by Fred Rosner



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Cover Illustration, Front cover: human body compared to a house, Back cover, left: portrait of Tuviya Cohen; right: armillary sphere. From *Sefer Ma'aseh Tuviya* (Venice: Bragadin, 1707/08),

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JEREMY BROWN

The Medicine of Tuviya Cohen in Comparison and Contrast

In what kind of a world did Tuviya live? By this we mean to ask: what were the fears and hopes of his society, how did it understand the way in which nature worked, and how, precisely, did Tuviya see his role as a physician-scientist?¹ We can glimpse an answer in one of the shortest sections of the *Ma'ase Tuviya*, called 'Olam ha-Qatan – *The Small World*.² In this section, Tuviya describes the “qualities, traits, and nature of man, and his behavior, and all that happens to him, from the time of

¹ In this chapter, we will refer to certain personalities as *scientists* and to some of their actions as “doing science”. The term *science*, however, was not yet used at the time that many of these people described as scientists actually lived. The word *scientist* was not coined in the English language until the nineteenth century and not regularly used until the twentieth. In the seventeenth century, the term describing one whom we would today think of as a scientist was “natural philosopher” or “naturalist,” and what today we describe as science would then have been called “natural philosophy.” We are using the modern term *scientist* to describe those people who aimed to learn more about the natural world by observation, experiment, and exploration. It also avoids what one historian has called “linguistic chauvinism,” for the Italian term *scienziato* (scientist) appeared in Galileo’s writings, indicating that its use in languages other than English has a longer history. See Michael Cyril William Hunter, *Boyle: Between God and Science* (New Haven: Yale University Press, 2009), 1-2, and Steven Shapin, *The Scientific Revolution* (Chicago, IL: University of Chicago Press, 1998), 5-6. Ross claims that William Whewel first used the term “scientist” in English in 1834 (Sydney Ross, “Scientist: The Story of a Word,” *Annals of Science* 18 (1962); see also Maurice A. Finocchiaro, *Defending Copernicus and Galileo* (New York: Springer, 2009), 66.

² Tuviya ben Moshe ha-Kohen, *Ma'ase Tuviya* (Venice: Nella Stamperia Bragadina, 1708). We will reference the first edition, and it should be noted that the second (Jessnitz, 1721) and later editions have different paginations or no pagination at all.

his conception until he returns to dust.”³ Tuviya then informs us that a person’s growth and development can be divided into seven stages, each of seven years’ duration. “The stage of maturity lasts until the age of forty-nine, and the stage of old age that descends down lasts until fifty-six.”⁴ Even the growth of the embryo followed the rule of sevens: “The initial growth of the embryo is completed in seven weeks. In the seventh month the fetus starts to move towards birth ... and seven days after its birth the baby is considered to be a living child. After two weeks it moves its eyes towards the light. Its teeth [begin to] erupt at seven months, and after three times seven months it begins to speak. At four times seven it begins to walk properly, and after five times seven months it is finally weaned.”

Tuviya acknowledged that the rule of sevens was a Hippocratic discovery, and indeed it was a widely accepted way in which to divide life. Tuviya was born thirty-six years after the death of William Shakespeare, and we have no evidence that Tuviya knew of Shakespeare’s corpus. But it was the great bard himself who immortalized the seven ages of man in his celebrated “All the world’s a stage” monologue in Act II of *As You Like It*.⁵ Like Tuviya, the Jewish philosopher Philo attributes the seven stages to Hippocrates,⁶ and the seven stages are also mentioned in the *Midrash Tadshe* (also called *Baraita de-Rabi Pinḥas ben Ya’ir* after the second-century rabbi to whom it is attributed).⁷ And so we may make our first tentative conclusion: Tuviya was a product of his Jewish upbringing and his medical education at the University of Padua (for how could he be anything

³ Ibid., 74a.

⁴ Ibid.

⁵ “At first, the infant, / Mewling and puking in the nurse’s arms. / Then the whining schoolboy, with his satchel / And shining morning face, creeping like snail / Unwillingly to school. And then the lover, / Sighing like furnace... / Then a soldier, full of strange oaths and bearded... / And then the justice, / In fair round belly with good capon line... / The sixth age shifts / Into the lean and slippered pantaloons... / Last scene of all, / That ends this strange eventful history, / Is second childishness and mere oblivion, / Sans teeth, sans eyes, sans taste, sans everything.”

⁶ C. D. Yonge, *Works of Philo Judaeus*, vol. 1 (London: George Bell & Sons, 1890), “On the Creation of the World,” 31.

⁷ *Midrash Tadshe* (Warsaw: Ḥayim Kalter, 1875), Chapter 6.

other?) and his worldviews were none other than the widely accepted conclusions of his time.⁸

One of the best examples of this is Tuviya's acceptance of, and reliance on, using what he called *Hokhmat ha-Partsuf* and what we today might recognize as an amalgam of phrenology, physiognomy, and palm-reading. Tuviya defined *Hokhmat ha-Partsuf* as "the ability to divine the future by understanding the form, size, and limbs of the body, the way a person looks, his color, size, nature, intelligence, his spirit, whether it be large or small, and many other qualities like this." All of these, wrote Tuviya, were reliable predictors of a person's future. Tuviya dedicated four pages to this science, citing among others the works of Ptolemy who said that "if a person shares his features with those of an animal, then certainly that animal's nature will be etched on him...." Tuviya accepted it as a way to predict the future, and he opined that phrenology had been tested and was intellectually acceptable (*qerovim la-sekhel*). As such, there was no prohibition for a Jew to use it, since it was "mentioned in the halakhic texts in a number of places and in the Talmud and in the holy Zohar in a number of amazing incidents" – though none is referenced. He did, however, reject palm-reading, calling it "as useless as a single grain of salt," and its study *bitul zeman*, "a waste of time."⁹ His reliance on what we know today to be discredited pseudo-scientific theories, such as phrenology, should be understood in a historical context. Phrenology was once widely practiced. Even one hundred years after the first publication of *Ma'ase Tuviya* it continued to be popular in France, in the United States, and in early Victorian Britain, where the Archbishop of Dublin declared: "I am as certain that Phrenology is true as that the sun is now in the sky."¹⁰

⁸ And we cannot but note the famous British *Up Series* directed by Michael Apted which has followed the lives of fourteen children every seven years. The most recent installment of it was *56 Up*, aired in 2012. Apted's idea has now been repeated by TV documentarians in at least thirteen other countries.

⁹ *Ma'ase Tuviya* (cit. n. 2), 74b.

¹⁰ T. M. Parssinen, "Popular Science and Society: The Phrenology Movement in Early Victorian Britain," *J Soc Hist.* 8, no. 1 (1974). In the United States, readers had *The American Phrenological Journal* (first published in Philadelphia in 1839), *The Phrenological Journal and Life Illustrated*, and a number of annual publications on the

Tuviya also described the nature of giants, which were described in the Bible as *Nefilim* or *Refa'im*.¹¹ He noted that giants (*'anaqim*) were to be found in a number of different climates, but for the sake of brevity, he wrote, he would only describe one event to which he was an eye-witness. In 1694 in Salonika in northern Greece, workers in a salt mine uncovered the remains of a giant “thirty-three *amot* in length.”¹² Tuviya describes seeing two bones of the forearm and one tooth, “which weighed 350 drachmas,” or about 1.5 kg, and in *Ma'ase Tuviya* he included a sketch of the tooth.¹³ Tuviya likely had seen fossilized prehistoric remains, which he attributed to the bones of a giant human. Similar experiences led many of his contemporaries to conceive of the bones as “vestiges of giant or monstrous humans.”¹⁴ Tuviya was by no means the first to confuse dinosaur for human bones. Pausanias, a Greek geographer and scholar who lived in the second century CE, also wrote of his witnessing giant skeletons in Asia Minor. Tuviya also claimed that giants could still be found across the world, and he had

subject. For a history of phrenology and physiognomy in France, including their eventual intellectual decline, see Martin S. Staum, *Labeling People: French Scholars on Society, Race and Empire, 1815–1848*, McGill-Queen's Studies in the History of Ideas (Montreal: McGill-Queen's University Press, 2003). A simple internet search will reveal a number of recent books published in Hebrew on the same *Hokhmat ha-Partsuf* that so intrigued Tuviya.

¹¹ For the occurrence of *Nefilim*, see Gen. 6: 4. For the occurrence of *Refa'im* in the Bible, see for example Deut. 2: 10–11, 20–21, Isaiah 14: 9, Psalms 88: 1, Proverbs 9: 18.

¹² It is difficult to be sure of the precise length that this represents. On the assumption that one *tefah* is the width of four fingers (about 8 cm), and four *tefahim* make up one *ama*, the remains would have been more than 10 meters in length.

¹³ *Ma'ase Tuviya* (cit. n. 2), 77a. Tuviya writes that he has seen these items in the collection of the French ambassador in the Ottoman Empire, Sire Pierre Antoine [de] Castagnère, [marquis] de Chateauneuf (1647–1728). On the weight of a drachma, see Donald J. Mastronarde, *Introduction to Attic Greek* (Berkeley: University of California Press, 1993), 222.

¹⁴ Adrienne Mayor, *The First Fossil Hunters: Dinosaurs, Mammoths, and Myth in Greek and Roman Times* (Princeton: Princeton University Press, 2011), 60. Mayor suggests that bones discovered in Syria that had been identified as belonging to a giant human likely belonged to a mastodon or a steppe mammoth (*ibid.*, 73). In his recent book on the history of the Menorah, Steven Fine notes that the implications of Mayor's work on ancient Greek and Roman fossil hunters “have yet to be absorbed by scholars of rabbinic literature.” See Steven Fine, *The Menorah: From the Bible to Modern Israel* (Cambridge, MA: Harvard University Press, 2016), 254.

seen one himself. “Know this, that about twenty years ago when I was studying medicine in *Ashkenaz* [Germany] one woman was brought to me who was extremely tall. Perhaps she was one of these creatures.”¹⁵

Tuviya also found no reason to doubt the existence of centaurs, mermaids and sirens, and creatures who were nourished through an umbilical cord that attached them to the earth. The latter, which resembled sheep and grew from the Boramets tree, were to be found in Africa, and although Tuviya had not personally seen them, he relied on new but unnamed works of geography to inform his own readers of the existence of these fantastic creatures.¹⁶ Once again, context is everything, and Tuviya’s belief in these fantastic creatures was shared by other naturalists. There is a full page illustration of the creature in Claude Duret’s 1605 work on natural history, and interestingly Duret himself claimed that he first read of the Boramets tree while reading a Latin translation of the Jerusalem Talmud.¹⁷ After reading this shortest section of *Ma’ase Tuviya*, we can make some preliminary remarks about Tuviya’s approach to what we today might call science.¹⁸ He seems not to have been a particularly critical thinker, and relied on the uncorroborated reports of others as much as he did on his own anecdotal evidence. In this he may not have been unique, but if the reader is hoping to find in *Ma’ase Tuviya* a critical approach to what we call science, she will likely be disappointed.

Tuviya’s methodology was never to question the scientific wisdom that appeared in classic Jewish sources such as the Talmud. This is

¹⁵ *Ma’ase Tuviya* (cit. n. 2), 77a. Tuviya studied in Germany in Frankfurt an der Oder.

¹⁶ *Ibid.*, 78b.

¹⁷ Claude Duret, *Histoire Admirable des Plantes et Herbes* (Paris: Nicholas Buon, 1605), 323. For a comprehensive review of this mythical animal, see Henry Lee, *The Vegetable Lamb of Tartary* (London: Sampson Low, Marston, Searle and Rivington, 1887), especially pages 6–7, where he notes his correspondence with Rabbi Hermann Adler, Chief Rabbi of the British Empire. Rabbi Adler apparently cited Tuviya’s writings on the creature. It is indeed mentioned in the Talmud Yerushalmi (*Kil’ayim* 8: 4) where it is described as “human being of the mountains. It lives through its navel; if its navel is severed it cannot live.” For a more general discussion see Nosson Slifkin, *Mysterious Creatures: Intriguing Torah Enigmas of Natural and Unnatural History* (Southfield, MI: Zoo Torah in conjunction with Targum/Feldheim, 2003), 310–.

¹⁸ In this essay I will mention Tuviya and others as “doing science.” The term *science*, however, was not yet used at the time that he lived. For details, see n. 1 above.

made abundantly clear in his rejection of the Copernican model of the universe, which he identified as being of a satanic origin. “[E]very godly philosopher,” he wrote, “should certainly oppose Copernicus and those who follow him, for all the proofs that he and his supporters bring are against the words of Holy Scripture and the true prophets.”¹⁹ Elsewhere he declares his allegiance to traditional Jewish sources. The goal of his book was “to collect philosophers’ words that agree with our holy Torah and with our sages of blessed memory....”²⁰ This allegiance included defending the belief that there were only four elements, “no more and no less,” against the beliefs of alchemists who counted as elements also, for example, yeast, fluids, oil, rain, and wind. Tuviya’s world was framed by his Judaism with its unwavering belief in the words of the sages. It was a world in which giants, monsters, and mermaids abounded, and in which a person’s future could be divined by reading her palm. Once mindful of this, we may turn to the medicine contained in *Ma’ase Tuviya*.

ON THE DUTIES OF A PHYSICIAN

“How easy is the work of a physician in the eyes of a fool,” wrote Tuviya, “and how hard it is in the eyes of a physician.” With this observation, Tuviya opened the second section of his *Ma’ase Tuviya*, titled *A New Land*.²¹ He called it this because of “the new medicine that is now in the bosom of the modern physician.” So much new medical science had been discovered that medicine in some ways shared something with geography, a field in which new lands, and even a new continent, had been revealed. But while Tuviya believed that there was an air of innovation in his profession, he cautioned the reader to choose

¹⁹ *Ma’ase Tuviya* (cit. n. 2), 51b–52a. For a detailed review of Tuviya’s rejection of the heliocentric model see Jeremy Brown, *New Heavens and a New Earth: The Jewish Reception of Copernican Thought* (Oxford and New York: Oxford University Press, 2013), Chapter 5.

²⁰ *Ma’ase Tuviya* (cit. n. 2), 80a.

²¹ *Ibid.*, 70b. In the Lvov 1867 edition the second section was published in a separate volume by a different printer than the first.

a physician with care. It was not enough to simply accumulate medical experience, because experience without a firm theoretical foundation was dangerous. And so Tuviya warned against using the services of a surgeon who had only learned by apprenticeship rather than using the expertise of one who had studied medicine in a university. If it was possible to become a physician by apprenticeship alone, “why would a doctor waste his time, spend his money, inflict his body, and even risk his own life in order to study in gentile universities?” Here Tuviya was not only speaking hypothetically. At the age of twenty-six and after he had studied at Yeshiva in Cracow, he had entered the University of Frankfurt-an-der-Oder to study medicine. But he never completed his studies there, because anti-Jewish sentiment prevented him from graduating.²² Tuviya understood the very real dangers that faced a Jewish medical student, because he had suffered them. Tuviya had studied medicine at great personal risk, and this biographical detail helps us understand the contempt in which he held physicians who had never bothered to attend a medical school.

A thorough theoretical basis was not the only requirement of good medical training; Tuviya insisted that for a Jew, that basis must include traditional religious texts.

No-one from Italy, Poland, Germany or France should ever consider studying medicine before having completed a deep study of the written and oral law (*Tora she-bi-khtav ve-she-be-'al pe*) ... which is not the case in these impudent lands, where even someone without even the slightest understanding of Torah is called “wise” and “doctor.”

And just when Tuviya’s elitism seems to have reach its peak, comes this:

All this, and more: even elderly, dirty women who bake at night and during the day, who incant spells over wounds, are

²² Ibid., 5a. As a result of this sentiment he left for the University of Padua, from where he later graduated. “Typical of this prejudice was the hostile attitude expressed by the Medical Faculty of Vienna University in 1610: ‘The Jews are bound by their law to destroy the life of every tenth Christian patient by drugs.’” Cited in N. Allan, “Illustrations from the Wellcome Institute Library: A Jewish Physician in the Seventeenth Century,” *Med Hist.* 28, no. 3 (1984).

called “doctor” by the mouths of fools ... if a person was to slaughter a bird or check the slaughtered meat of an animal, we would require that he have a document of his proficiency. In addition, we would ask him questions to ascertain his expertise ... if a person wishes to heal other people, who are the choicest of mankind and made in the image of God ... then how much more should we be sure that he is sharp and organized and understands how to proceed....

That Tuviya, who often wrote of the need to be brief, would add this warning tells us that in addition to those who studied medicine in universities, there were others who had no formal training and yet were frequently treating others. Were this not perceived by Tuviya to have been a real threat, he surely would not have addressed it. Today, a person who practices unproven or fraudulent medicine might be called a *quack*, but nearly all medicine practiced before the middle of the nineteenth century contained, to a greater or lesser degree, unproven or fraudulent practices.²³ None of this, of course, was understood at that time, and a physician trained in a medical school would have been certain that his treatments were the very best available.

BLOODLETTING AND ASTHMA

Like all the physicians of his time, Tuviya recommended bloodletting. This practice had originated in antiquity, and it is mentioned in the Talmud many times.²⁴ It dates back to at least the fifth century BCE and is mentioned in the writings of Erasistratus (300–260 BCE), who opposed the procedure, and Galen (c. 130–200 CE), who practiced it and taught that it was an important tool that could heal the sick. Maimonides recommended it in moderation, and only for those under

²³ David Wooten, *Bad Medicine: Doctors Doing Harm since Hippocrates* (Oxford: Oxford University Press, 2007).

²⁴ See, for example, TB *Shabbat* 129a, *Yoma* 84a, *Yevamot* 72a, *Gittin* 70a, *Nedarim* 54b, *Avoda Zara*, 29a. See also L. A. Parapia, “History of Bloodletting by Phlebotomy,” *Br J Haematol*. 143, no. 4 (2008).

fifty,²⁵ and it was widely practiced during the middle ages and beyond. As George Washington lay dying of a throat infection, his doctors decided the best therapy was to let his blood. This they did four times, the last just a few hours before Washington died.²⁶ In fact, the practice seems to have undergone somewhat of a renaissance in the early twentieth century and was even administered by some physicians during the great influenza pandemic of 1918.²⁷

Tuviya recommended bloodletting for those with a fever or in pain, but not for a complaint of generalized weakness, nor for children or the elderly.²⁸ As was also widely accepted, Tuviya instructed that the blood be removed on the same side of the body as there was pain. Tuviya was well aware of the discovery of the circulation of blood made by William Harvey and published in 1628.²⁹ He cited Harvey by name and detailed the discovery:

The gentiles have a sharp physician from England named Harvey who undertook dissections and found the truth, such that all the physicians of his time agreed with him. He demonstrated that the heart does not get blood exclusively from the liver but from the entire body through a vessel called the *cava*. From there it enters the right chamber of the heart and then it travels in vessels called arteries to the lungs.³⁰

Harvey had also noted that the blood flow was circular, though he had not identified the capillaries that connected the arterial and venous

²⁵ Maimonides, "Hilkhot De'ot" 4: 25 in *Mishne Tora*.

²⁶ D. M. Morens, "Death of a President," *N Engl J Med*. 341, no. 24 (1999).

²⁷ C. E. Cooper Cole, "Preliminary Report on the Influenza Epidemic at Bramshot in September-October 1918," *The British Medical Journal* 2, no. 3021 (1918).

²⁸ *Ma'ase Tuviya* (cit. n. 2), 100b.

²⁹ William Harvey, *Exercitatio Anatomica De Motu Cordis Et Sanguinis* (Frankfurt: Guilielmi Fitzeri, 1628).

³⁰ *Ma'ase Tuviya* (cit. n. 2), 114b. It is interesting to note that a space for the year of this discovery is left empty in the first edition of his book, which was written first in Adrianople and then in Constantinople. It would seem that he was not able to supply his Venetian printer with the date in time for the publication. In later editions the space disappeared, and the date was never inserted.

sides.³¹ And yet despite this discovery (about which we will have more to say below), Tuviya saw no need to change his recommendation that to treat pain, blood be removed from the *same side* of the body. Bloodletting was, therefore, more than just an exercise in removing blood, but what end it served in addition was never made clear.

To better understand Tuviya's therapeutics, it is helpful to compare his understanding of asthma with those of his contemporaries. He notes that there are three classes of respiratory diseases, although they are more accurately described as respiratory *symptoms*: dyspnea, asthma, and orthopnea. Among the causes of asthma Tuviya noted dampness, but for all three symptoms the treatment was identical. First, an emetic was to be ingested to expel the contents of the stomach. Then tobacco, which had only recently been discovered, was to be ingested using two methods: by drinking tobacco water and by rapidly inhaling it. Of course, he also recommended bloodletting unless the asthma was the result of sputum in the trachea, in which case bloodletting was of no use.³² Bizarre as these interventions are to us today, they were, sadly, state of the art medicine in the early eighteenth century. Just eight years after the publication of *Ma'ase Tuviya*, Peter Kennedy, a British physician working in London, published his *Essay on External Remedies*. Kennedy had learned his trade in London and at hospitals in Paris and Flanders. But not being satisfied, he wrote, he traveled to hospitals in Florence, Rome, Bologna, Venice, and Padua and later spent time in Leyden, Utrecht, and Amsterdam.³³ Here is how Kennedy described the condition he called *asthma*:

... this distemper proceeds from either an obstruction or rupture of the ventricles, or of the vasa minima of the lungs. In the first case there is hope for a cure, though in the latter with much more difficulty. Phlebotomy, issues, emetics and gentle cathartics are found to be of use, and by often repeated

³¹ Harvey, *Exercitatio Anatomica De Motu Cordis Et Sanguinis* (cit. n. 29), part VIII.

³² *Ma'ase Tuviya* (cit. n. 2), 114a.

³³ Peter Kennedy, *An Essay on External Remedies* (London: Andrew Bell, 1715), preface.

experience the Nicotianum is much commended and frequently found to be very successful ... and this we very well know may effectually be given, either by way of ointment, lotion or fomentation. I have also given mercurial preparations with very good success.³⁴

Kennedy described a regimen that was virtually identical to that of Tuviya.

TUVIYA ON URINE

Tuviya wrote that much could be learned from the urine of a patient, which, he noted, was the product of digestion.³⁵ After directing that a urine sample be taken first thing in the morning and allowed to stand in a glass vessel, Tuviya notes that the urine will settle into three layers. The top layer corresponds to the head, the middle to the chest, and the lowest layer to the digestive system. He further categorizes the urine sample into three, based on its clarity, color, and smell. Urine that is as dilute (*daq*) as water indicates that the veins and kidneys are blocked, or “that a disease is beginning.” If dilute urine then becomes more concentrated and cloudy (*‘akhurim ve-gasim*), the patient will either become critically ill or die.

Much too could be learned from the color of the urine. “The urine of men is redder and more dilute than that of women,” he wrote. “From the first to the sixth month of pregnancy the urine of a women is likely to be more yellow and cloudy.... From the sixth month of pregnancy and onwards the urine is more like cloudy water with a small amount of blood in it.”³⁶ But Tuviya hedged too and added that the same qualities could be found in urine from women who were barren or post-menopausal. Finally, there were different types of urine odor. Urine that lacked any smell was “always pale” and indicated a problem with the liver, kidneys, or digestive system.

³⁴ Ibid., 74.

³⁵ *Ma’ase Tuviya* (cit. n. 2), 97b-100a.

³⁶ Ibid., 98b.

Yellow urine with an “intermediate smell” and that does not appear fetid is a sign of health, while pleasant smelling urine resulted from ingesting spices.

It is tempting to look for any evolution in the descriptions of urine qualities and their causes. The tenth-century physician Isaac Israeli wrote a treatise on the qualities of urine, which was translated from the Arabic original into Latin in the second half of the eleventh century and into Hebrew as early as 1324.³⁷ As will be evident from Table 1 below, comparisons are challenging because of the imprecision of terminology. Assuming that the different terms for the stage of infancy (*na'arut*, *qatan*) apply to the same group and that the Hebrew translation is an accurate rendering of the Arabic original, it remains uncertain if Tuviya's description of urine as appearing “like milk” is the same as Isaac's description of urine as thick, “almost white.”³⁸ Comparing urinalysis in the writings of Isaac Israeli and Tuviya Cohen might give the impression that over the seven centuries that separated them, nothing had changed. And yet this is not quite correct. Although there were no significant differences between the writings of Isaac and Tuviya on the urine, by the time of the latter uroscopy was no longer without its critics.

In fact, these critics were relatively numerous in the seventeenth century. The College of Physicians of London warned against overusing inspection of the urine in its statutes in place in 1647:

It is ridiculous and stupid to attempt to interpret anything definite and certain merely from inspection of the urine and by inference therefrom, whether about the type and nature of the illness, or the state and condition of the sufferer.³⁹

³⁷ Benjamin Richler, “Hebrew Translations of Isaac Israeli's Treatise on Urine,” in *Isaac Israeli: The Philosopher Physician*, ed. Samuel Kottek, Helena Paavilainen, and Kenneth Collins (Jerusalem: Muriel and Philip Berman Medical Library, Hebrew University of Jerusalem, 2015).

³⁸ The English translation of *Sefer ha-Sheten* is from Kottek, Paavilainen, and Collins, *Isaac Israeli: The Philosopher Physician* (cit. n. 37).

³⁹ Cited in H. Connor, “Medieval Uroscopy and Its Representation on Misericords – Part 1: Uroscopy,” *Clin Med.* (Lond) 1, no. 6 (2001).

Table 1. Comparison of Urinalyses by Isaac Israeli and Tuviya Cohen.

	Description of the patient's age		Description of the patient's urine	
	<i>Ma'ase Tuviya</i> 1708	MS Hunter (10v) ⁴⁰	<i>Ma'ase Tuviya</i> 1708	MS Hunter (10v)
Infants	קטן <i>qatan</i> "small"	נערות <i>na'arut</i> "adolescence"	מיץ חלב <i>mits ḥalav</i> "milk[y] juice"	הרבה עטה ללובן מעט <i>harbe 'ate le-loven me'at</i> "copious, tends a little toward whiteness"
Adolescents	נערים <i>ne'arim</i> "youths"	בחורים <i>baḥurim</i> "young men"	אתרוגי, נוטה לעכירות <i>etrogi, note la-'akhirut</i> "lemon-colored, tending to cloudiness"	נוטה אל האש ואל האדממות <i>note el ha-esh ve-el ha-admimut</i> "tending to fire and to reddishness"
Adults	בחורים <i>baḥurim</i> "young men"	ישישים <i>yeshishim</i> "old men"	זהב <i>zahav</i> "[like] gold"	נמשך לגרוגר מימית מעט <i>nimshakh li-grugar memit me'at</i> "gravitating toward slightly watery grugar (?)"
Elderly	זקנים <i>zeqenim</i> "old/elderly men"	זקנים <i>zeqenim</i> "old/elderly men"	לבן, מעט ענן <i>lavan, me'at 'anan</i> "white, [with] some cloud[ing]"	מאוד דק עטה ללובן ואל הקרירות <i>me'od daq 'ate le-loven ve-el ha-qerirut</i> "very thin, tends toward whiteness and coolness"

⁴⁰ Kenneth Collins, "On the Glasgow Hebrew Manuscript of Isaac's 'Book of Urine,'" *Korot* 20 (2009–2010). MS Hunter is a fourteenth-century manuscript.

Several works highly critical of uroscopy were published across Europe. In London, for example, *The Pisse-Prophet* was published in 1655.⁴¹ In this satirical work the author warned against relying on quacks who used uroscopy. The precis on the title page sums its contents well:

... wherein are newly discovered the old fallacies, deceit and juggling of the Pisse-Pot Science, used by all those (whether Quacks and Empiricks, or other methodicall Physicians) who pretend knowledge of Diseases, by the Urine, in giving judgement of the same.

However, there is no evidence that Tuviya had encountered any of these works, and he remained a firm believer in diagnosing ailments from the urine that had been advocated since Hippocrates, just as Isaac Israeli had done, over seven hundred years prior.

TUVIYA ON POLISH *PLICA* AND FRENCH DISEASE (*SYPHILIS*)

One condition which occupied Tuviya was *plica polonica*, in which the hair became matted. It occurs when there is poor physical hygiene but Tuviya – and his contemporaries – believed it to be a disease:

Its signs are primary and secondary and are many. The principal signs are matting of the hair, severe headaches, lice, cramps, breaking of the loins, looseness of the vertebral joints, and joint and finger pain. In some cases the fingernails are long and black, like the horns of goats.... Sometimes the beard becomes so matted that men are forced to hide the beard under their clothes ... this is a painful condition, and women suffer worse joint pain than do men.⁴²

⁴¹ Thomas Brian, *Pisse-Prophet or Certaine Pisse-Pot Lectures* (London: S. and B. Griffin, 1637). Other books with aim of disproving uroscopy include Johan Van Dueren, *De Ontdekking der Bedriegeryen vande Gemeene Pis-Besienders* (Amsterdam: Timothius ten Hoorn, 1688) and J. Primrose, *Popular Errours or the Errours of the People in Matter of Physick* (London: Nicholas Bourne, 1651). See more generally Connor, “Medieval Uroscopy and Its Representation on Misericords” (cit. n. 40).

⁴² *Ma'ase Tuviya* (cit. n. 2), 109b et seq.

Tuviya considered a number of possibilities as the cause of *plica*. These included contaminated water:

There are a number of possible suggestions as to its cause, but they are all incorrect [lit. “built on shaky foundations”]. Nevertheless, I will cite them even though they are questionable. The first suggestion made by physicians is that it is due to the water that flows from Hungarian mountains and collects in a number of Polish tributaries.

That the disease could be due to some “thing” in the water is in itself a fascinating suggestion, but it was not original to Tuviya. It was Girolamo Fracastoro (d. 1553), an Italian physician, who is generally thought to be the first to suggest what we now call the germ theory of disease.⁴³ Fracastoro studied in Padua and later became a professor at the medical school there for nine years.⁴⁴ He wrote two works about epidemic disease: the first was a poem *Syphilis sive morbus Gallicus* (Syphilis or the French Disease), which we will consider below. The other was a three-book work *De contagione et contagiosis morbis et eorum curatione* (On Contagion and Contagious Diseases), and it was in this work that he suggested that there were *seminaria* [lit. “a seed plot”] that propagate and cause disease.⁴⁵ In the same work he suggested that disease may also be caused by the constellations, foods, water, and vapors from the soil. Tuviya, too, considered these causes and wondered whether *plica* may be due to a constellation of stars that exert their influence over a specific country, or a result of evil spirits’ activity. He rejected these and other possibilities, though he noted that evil spirits were certainly a reality, since the rabbis of the Talmud believed that they existed.⁴⁶ Evil spirits could not cause *plica* because

⁴³ See generally V. Nutton, “The Reception of Fracastoro’s Theory of Contagion: The Seed That Fell among Thorns?” *Osiris* 6 (1990).

⁴⁴ N. Thyresson, “Girolamo Fracastoro and Syphilis,” *Int J Dermatol.* 34, no. 10 (1995).

⁴⁵ Norman Howard-Jones, “Fracastoro and Henle: A Re-Appraisal of Their Contribution to the Concept of Communicable Diseases,” *Med Hist.* 21 (1977).

⁴⁶ “We should disregard the beliefs of the philosophers who deny their existence. Rather, we should believe the words of the rabbis, may they rest in peace, which are

the disease “effects both Jews and Gentiles, and the rabbis have taught that a single spirit cannot hold sway over two nations.”⁴⁷ Nevertheless, he reproduced a number of charms (*segulot*) and remedies from a book of remedies of his father.⁴⁸

Tuviya focused predominantly (though not exclusively) on the cause being due to poor hygiene, which we know today to be a reasonable assumption. Tuviya noted that Poland was filthier than other countries and that the people there “wore dirty clothes and did not even comb their hair or beards once a year.”⁴⁹ But rather than to suggest that a cure could come from better hygiene, he proposed a number of additional steps which are fascinating as a window into the world of pre-modern therapeutics.⁵⁰

First, induce vomiting in order to expel the poison.... Take five or six grains of tartar emetic for a healthy person and mix them with chicken soup or honey water or beer ... and after he has vomited twice, he should drink a little chicken soup.... Second, to open the main channels of the body take the honey of purging roses [lit. roses that cause diarrhea].... Ninth, attempt to clean the scalp from dirt and lice using herbal remedies....

Tuviya continues in this way and includes, as step ten, the use of bloodletting, the effects of which would depend on the qualities of the bloodletter, the time and location of the procedure, the type of instruments that were used, and the amount of blood that was removed.

In 1897 Francis Eustace, a Polish physician working in the U.S., published a review essay on *plica polonica* in *The St Louis Medical and Surgical Journal*.⁵¹ He noted that that *plica* was found far beyond Poland

more certain. For they said that evil spirits eat and drink and reproduce just like mankind.” *Ma’ase Tuviya* (cit. n. 2), 110a.

⁴⁷ Ibid., 110b.

⁴⁸ Ibid., 112a.

⁴⁹ Ibid., 110b. Here are his original words:

ויראתי כי שמנה הארץ מכל ארצות הגוים אבל מלאה טנופות ואשפות ... ומושב בני אדם סרוכים ובגדי האדם מלוכלים ואינם סורקים שערות ראשם וזקנם אפילו פעם בשנה.

⁵⁰ Ibid., 111a.

⁵¹ Francis Eustace Fronczak, “Plica Polonica,” *The St. Louis Medical and Surgical Journal* LXXIII, no. 6 (1897).

and was “a monument to uncleanness.”⁵² But that was a modern notion, and not one generally shared by Tuviya or his contemporaries. Between 1600 and 1621 more than 21 books on *plica* were published in Polish and Latin.⁵³ Tuviya’s contemporaries believed that *plica* was caused by witchcraft and would have blamed this on the Jews, “but as they also suffer from it (*plica*) we can hardly write of it.”⁵⁴ The condition was also, and perplexingly, considered by some to be beneficial; in a medical dissertation published in 1682 it was noted that some women considered themselves to be of illegitimate birth if they did not have *plica*.⁵⁵ Eustace noted that even as late as 1838 there was a belief that “*plica Polonica* defends [sic] Poles especially against blindness, deafness, paralysis [and] apoplexy.” There was no general agreement on whether it was a disease or a means of protection, nor on whether it was caused by witchcraft or water, and Tuviya’s medical writings reflect this general confusion.

Like many of his contemporaries, Tuviya discussed “the French disease,” which today we call *sypilis*. The word had first been used more than a century before Tuviya’s birth in 1530, in Fracastoro’s poem *Syphilis sive morbus Gallicus* (Syphilis or the French Disease). Syphilis is introduced as a Greek shepherd who insulted the sun god Apollo. Apollo in turn afflicts the entire population with a new disease that bears the name of the shepherd who caused its introduction. Tuviya described the French disease as being recently introduced from India or the newly discovered America:

pudendagra In 1496 the great explorer Christopher Columbus returned with his sailors from exploring the new world, but they began to act immorally with the women of Italy, which angered God greatly and He brought about a great calamity and a great sickness. And the French army which was then fighting around Naples also became sick, which is why the disease is known today as *mal francese*, although it is in fact an

⁵² Ibid., p. 301.

⁵³ Ibid.

⁵⁴ Jakub Haur, *Skład Abo Skarbiec Znakomitych Sekretow Oekonomiey* (Krakowie, 1693), 418.

⁵⁵ Fronczak, “Plica Polonica,” (cit. n. 51), 302.

Indian or an Italian disease. Some Latin books call it *lues veneris* or *pudentagra*.⁵⁶ But I call it the small plague because it attacks women and men. I call it this for three reasons: First, it is the result of immorality. Second, its poison is like that of a plague. It is spread by a man having intercourse with an infected woman, and in an instant it spreads throughout the body. Thirdly, it acts just like a plague but a plague kills, and this is not usually lethal ... but rather causes suffering that is worse than death.⁵⁷

There are, Tuviya noted, a number of theories as to the etiology of the French disease. Galen believed it was from rotting blood, and the alchemists thought it was caused by an acidic poison. "However," he concludes, "it is sufficient for us to know that it is caused by unclean intercourse [*bi'a teme'a*] that transmits uncleanliness through contact. This causes God to become angry, for he abhors immorality."⁵⁸ Tuviya noted the disease should be treated with a stepwise regimen of therapeutics. This included first laying a *diachylon* plaster over the buboes in the groin and then incising the buboes with a surgical knife. Mouth and anal ulcers were treated with milk, and ulcers on the limbs were treated with various plant extracts. If these failed to improve, Tuviya recommended another popular treatment of the day: mercury. Of course, Tuviya also recommended cathartics and laxatives, for these were the standard treatment for any disease he encountered.

TUVIYA'S FAMOUS ILLUSTRATION

As David Ruderman has noted, Tuviya cited the classic teachings of Hippocrates, Aristotle, Galen, and Avicenna, as well as the comparatively more recent Paracelsian school (though not Paracelsus,

⁵⁶ Here Tuviya is almost certainly referring to Torella's treatise in a book of essays on syphilis, *Tractus de Pudendagra seu Moro Gallicio* (Rome, 1497).

⁵⁷ *Ma'ase Tuviya* (cit. n. 2), 120a.

⁵⁸ *Ibid.*

who died in 1541, by name).⁵⁹ This school emphasized the chemical processes that took place in nature and introduced new plant remedies, many of which are noted in *Ma'ase Tuviya*. In addition, Tuviya often cited Franciscus Sylvius (d. 1672) who was an early supporter of William Harvey and his discovery of the circulation of the blood. *Ma'ase Tuviya* was a work that relied on ancient medical teachings that had never been challenged, together with a few more recent sources, but all of Tuviya's choices reflected the general medical consensus of his time. Perhaps more innovative is Tuviya's image of the body as a house, an image that is certainly more well-known than the book in which it appears.⁶⁰ On the left of the image is a schematic drawing of the torso of a dissected body, and on the right a four-story house with a roof and a chimney. The eyes of the body correspond to the upper windows of the house, and the shoulders correspond to the roof. The liver and the gall bladder were drawn as an oven, the heart is oddly identified hidden behind a lattice, and the kidneys correspond to a fountain. The smoking cauldron that appears in the center of the house represents the stomach. The British medical historian Nigel Allan noted that such analogies were not new. William Harvey had also described the stomach as the kitchen, and "the furnaces that draw away the phlegm,"⁶¹ but this would not have been known to Tuviya.⁶² Even if identifying the workings of the body with the technology of the era was not unique to Tuviya, this image is nonetheless a striking one and a perennial favorite in discussions of pre-modern Jewish medicine. This image did much to suggest a spirit of innovation in *Ma'ase Tuviya*, when in truth the work was far more conservative than innovative.

Writing in 1917 in one of the first academic reviews of the work of Tuviya Cohen, Levinson suggested that Tuviya was not a great man,

⁵⁹ David B. Ruderman, *Jewish Thought and Scientific Discovery in Early Modern Europe* (New Haven, CT: Yale University Press, 1995), 244 et seq. Ruderman suggests that this was because of the anti-Semitism and Christian overtones found in the writings of Paracelsus.

⁶⁰ *Ma'ase Tuviya* (cit. n. 2), 106a.

⁶¹ Allan, "Illustrations from the Wellcome Institute Library" (cit. n. 22).

⁶² E. Lepicard, "An Alternative to the Cosmic and Mechanic Metaphors for the Human Body? The House Illustration in *Ma'aseh Tuviyah* (1708)," *Med Hist.* 52, no. 1 (2008).

far ahead of his generation. He was, instead, “an ordinary practitioner, [one of] the men who do the actual work.”⁶³ Others have thought of him as somewhat of an iconoclast, which is certainly how Tuviya saw himself. In fact, introducing new science was of such importance that it was the motivation behind the name of Cohen’s book, *Ma’ase Tuviya*. Cohen reminded his readers of a *Mishna*: “It happened (*ma’ase*) to Tuviya the doctor who saw the new [Moon] ... and the Bet Din [rabbinic court] accepted his testimony.” Cohen saw himself as another doctor who would “see the new.”⁶⁴ This is reflected in the titles he gave to some of the sections in his book: *A New Land*, or *A New House*. A careful reading of the text, however, reveals that there was little in Tuviya’s approach to medicine that was new. In fact, much of it contained the ancient classic teachings of Hippocrates, Aristotle, and Galen, and many of the more “recent” plant remedies that Tuviya cited were about one hundred and fifty years old by the time that he published them. Even William Harvey’s discovery of the circulation of the blood could not be considered a novel idea by the time it was mentioned by Tuviya. Harvey had first published his discovery in Frankfurt in 1628, and by 1650 it had been widely discussed throughout Europe and cited in books published in Frankfurt, Venice, Leyden, Rotterdam, and London. Rene Descartes cited Harvey’s work in some detail in his *Discourse* published in 1637. The Pope’s own physician defended the Harveian hypothesis in 1642, and it was discussed by Italian physicians soon after. In 1650 another graduate of the medical school at Padua, Paul Slegel, published a book on the circulation, and by 1656 at least thirty-six printed books had mentioned the discovery of the circulation.⁶⁵ It is therefore far from surprising that Tuviya mentioned William Harvey, and doing so makes his early eighteenth century textbook up to date, rather than pioneering.

⁶³ A. Levinson, “A Medical Cyclopedist of the Seventeenth Century,” *Bulletin of the Society of Medical History of Chicago* 2, no. 2 (1917).

⁶⁴ *Mishna, Rosh Hashana*, 1: 7. See *Ma’ase Tuviya* (cit. n. 2), 5b. Cohen also stated another reason for his choice of book title. His children had died, “... and I do not know whether or not I will merit other children. So I said, let my deeds (*ma’asai*) be my descendants....”

⁶⁵ E. Weil, “The Echo of Harvey’s *De Motu Cordis* (1628) 1628 to 1657,” *Journal of the History of Medicine* 12, no. 2 (1957).

In the end, Levinson was correct; Tuviya was one of the practitioners who did the daily work of treating the sick in an era when there were virtually no efficacious remedies to provide. His book is an insight into that practice, now thankfully of historic interest alone.