

'Ostrich is a Fowl for any Matter': The ostrich as a 'strange' fowl in Jewish literature

**Author:**Abraham O. Shemesh¹ **Affiliation:**¹Department of Israel Heritage, Faculty of Social Sciences and Humanities, Ariel University, Israel**Corresponding author:**

Abraham Shemesh, avi0603@013.net.il

Dates:

Received: 21 Feb. 2018

Accepted: 23 Mar. 2018

Published: 28 June 2018

How to cite this article:Shemesh, A.O., 2018, "'Ostrich is a Fowl for any Matter': The ostrich as a 'strange' fowl in Jewish literature", *HTS Teologiese Studies/Theological Studies* 74(1), 4938. <https://doi.org/10.4102/hts.v74i1.4938>**Copyright:**

© 2018. The Authors. Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

The size, strange body shape and behaviour of the ostrich aroused the imagination of the ancients, Jews and non-Jews, and therefore beginning from the classical era until recent generations, various legends and beliefs were attached to it. The ancients deliberated whether the ostrich is a bird or it is a cross between a bird and a four-legged creature. In this case, Jewish writings reflected an advanced and sometimes independent conception that the ostrich is a bird. A belief that is indeed partially based on reality has to do with the food of the ostrich. In ancient sources, the ostrich is described as eating glass or metal, and according to some testimonies, this is a major component of its food. Medieval literature includes another common belief that the ostrich is gifted with miraculous powers of sight and it can use these powers to hatch the eggs by staring at them. The general impression formed from the study is that the Jews were aware of legends that existed among the nations, and even used them in their study halls for halakhic discussions and to enrich their spiritual world.

Introduction

The ostrich (*Struthio camelus*), called *na'amit* or *na'amita* in rabbinic literature, was mentioned in Jewish sources beginning from ancient times (see, e.g., Lieberman 1955; Kilayim 5:8, 223). The extensive references to the ostrich in Jewish literature are undoubtedly related to its particular features – its impressive shape and behaviour, as well as the fact that the ostrich is the largest living bird. Moreover, the ostrich has a variety of uses. Its meat is eaten, its skin used to manufacture purses and gloves, and its feathers used for decoration (Agius 2005; Bodenheimer 1957:182, 190, 286; Garfinkel 2001; Lewis 1822, II:602–603). According to classical Jewish literature, the ancients manufactured implements from the eggs, even for ritual use in the Jewish Temple (Albeck 1952; Kelim 17:14; Zuckerman 1937:Parah 5:8, 634–635; *ibid.* Baba Metzia 7:6, 586).

In various sources, both Jewish and non-Jewish, the ostrich is described as an unusual animal in its behaviour and qualities, and some even deliberated whether it is indeed a fowl. This study has two main aims:

1. To examine the attitude of Jewish sources to the systematic definition of the ostrich. According to one of the common approaches in the ancient world, which persevered in medieval times, the ostrich was considered a cross between several different animals. The question we will focus on is whether Jewish sources related to the ostrich similarly or perceived it as a bird like any other. In the discussion, I shall present the background for the deliberations of the ancients on this question and I shall compare the different approaches in the written literature, both Jewish and non-Jewish, as well as in light of figurative art.
2. To review the various views on the deviant behaviour and qualities of the ostrich, that is, its food – metal and glass – and its special characteristic mode of hatching its eggs by looking at them, unlike other birds who sit on them and warm them.

Is the ostrich clearly a fowl?

In the large majority of Jewish sources over the generations, the main approach is that the ostrich is a fowl and not of a hybrid nature. The Bible lists *bat haya'ana* among the impure fowls (Lv 11:16), and according to rabbinical tradition, it is identified with the ostrich, that is, the ostrich is a bird (Hulin 64b). This tradition was brought in the Aramaic translations (Targum Pseudo-Jonathan Lv 11:16; Targum Jonathan Is 34:13) and the Peshitta (Zippor 2003:87), as well as by medieval sages. For example, Rav Sa'adya Gaon Al-Fayyumi (882/892 – 942) in his commentary on Leviticus 11:16 translates to Arabic: *bat ya'anah – al-na'amah* (النعامة). Nonetheless, this may not serve as unequivocal evidence as the list also includes the *atalef* (bat, *Chiroptera*),

Read online:

Scan this QR code with your smart phone or mobile device to read online.

which is a flying mammal (Lv 11:19). The list includes winged creatures, and although the ostrich cannot fly, it is also included though not obviously a bird.

A similar picture is evident from several places in rabbinical literature. The Mishna in Kelim 17:14 mentions the egg of the ostrich (*na'amit*) as having been created on the fifth Day of Creation with the fowls, indicating that the ostrich is a bird. A similar reference is made in the laws of Kilayim. The Scriptures forbid the cross-breeding of different animal species (Lv 19:19). The Mishna (Albeck 1952:8:1) explains that it is forbidden to breed beasts and animals and even to harness them together to the same wagon. In discussions of the Mishna and the Tosefta, various animals are presented as beasts or animals by rabbinical definition or as those on which the sages were disagreed, for example, dogs, pigs and elephants (Albeck1952; Kilayim 8:6; Lieberman 1955:*ibid.* 5:5, 223). As part of the definitions, the Tosefta says of the ostrich: 'The *na'amot* are fowls for any matter' (Lieberman 1955:*ibid.* 5:8, 223), and the Yerushalmi similarly states 'the *yerudot* and the *na'amit* are fowls for any matter' (Jerusalem Talmud, Kilayim, 31c). It appears that the declaration that the ostrich is a fowl resulted from a dispute and was intended to contradict the approach whereby it is not clearly a fowl.

In ancient and medieval times, many scholars from different origins and faiths believed the ostrich to be a product of cross-breeding between a fowl and a camel, or a distinct creature separate from all other fowls (Aharoni 1925:69–70). Aristotle was one of the first sages in the classical era to refer to the unclear status of the ostrich in the animal world and to the difficulty of its clear classification. His understanding of the complexities involved undoubtedly had a weighty impact on sages in future generations.

Aristotle, the ancient Greek philosopher (384–322 BC), stresses that some of the ostrich's organs are the parts of a bird, others those of a quadruped. For instance, the ostrich

has feathers like a fowl, but unlike fowl, its feathers are hairy (in its head and the neck), that seems to be why it cannot fly. Also, like a bird and unlike a quadruped, it has cloven hoofs and not toes (that as we know today is wrong). The reason is that the ostrich has size of a large quadruped and not of a common bird. The ostrich therefore is heavier than normal birds, so it needs the sort of feet larger quadrupeds have to support themselves with, namely hoofs (Partibus Animalim [=Parts of Animals, PA]) (Aristotle, 1937, IV, 13 697b 13–26).

According to Aristotle, the ambiguous position of the ostrich determines its eyelashes that are like quadrupeds. In general, it is only quadruped animals that have a hairy body that have eyelashes. Because birds have features instead of hair, they are therefore excluded from having eyelashes. However, the ostrich has features both like a bird and like a quadruped: its lower parts are covered in feathers like birds and its upper parts are covered in hair like a quadruped (PA II, 14 658a 14–15). According to Aristotle's understanding, unlike other birds, the ostrich is incapable of flying (Figure 1) and spends all its time on land. Therefore, it has some of the features of a land animal, such as cloven hoofs (for detail, see Johansen 1997:166–168). Interestingly, the association the ancients found between the ostrich and the camel is reflected in various languages, for example, in its Latin name *Struthio camelus*. Notably, Septuaginta in Leviticus (The Septuagint Bible 1954) 11:16 (στρουθὸν) and the Vulgate in the *Book of Lamentations* (The Vulgate Bible 2010) 4:3 (*struthio*) mention the Greek and Latin name of the ostrich, with no mention of the camel.

The Arab writer al-Jāhiz (الجاحظ), who lived and operated in the city of Basra in the 9th century AD (d. 869), states in his great zoological composition *Kitab al-Hayawan* (كتاب الحيوان 'Book of the Animals') that in Persian the name of the ostrich is *shetur morg* (شتر مرغ), that is, camel-fowl, but he expresses reservations in this regard and adds:



Source: The Medieval Bestiary, n.d., *The ostrich lays its eggs on the ground. In right, it makes an attempt to fly, though it cannot*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>

FIGURE 1: Left: The ostrich lays its eggs on the ground. Right: It makes an attempt to fly, though it cannot.

And we have not found this name to indicate that the *na'ama* is the product of a camel and a fowl, rather once the masses recognized its resemblance to these two similar things – they named it for them. (al-Jāhiz 1955:143)

In other words, he attributes the cross-breeding of the two creatures to a popular view, but as a scholar he presents a dissenting critical scientific approach. The name *shetur morg* was also mentioned in the 14th century in the Persian translation of the Bible by R. Yosef, son of R. Moshe, who identifies the fowl-camel with the ostrich mentioned in Deuteronomy 14:15 (Bacher 1896:215; Piper 1972:154; Steingass 1970:734).

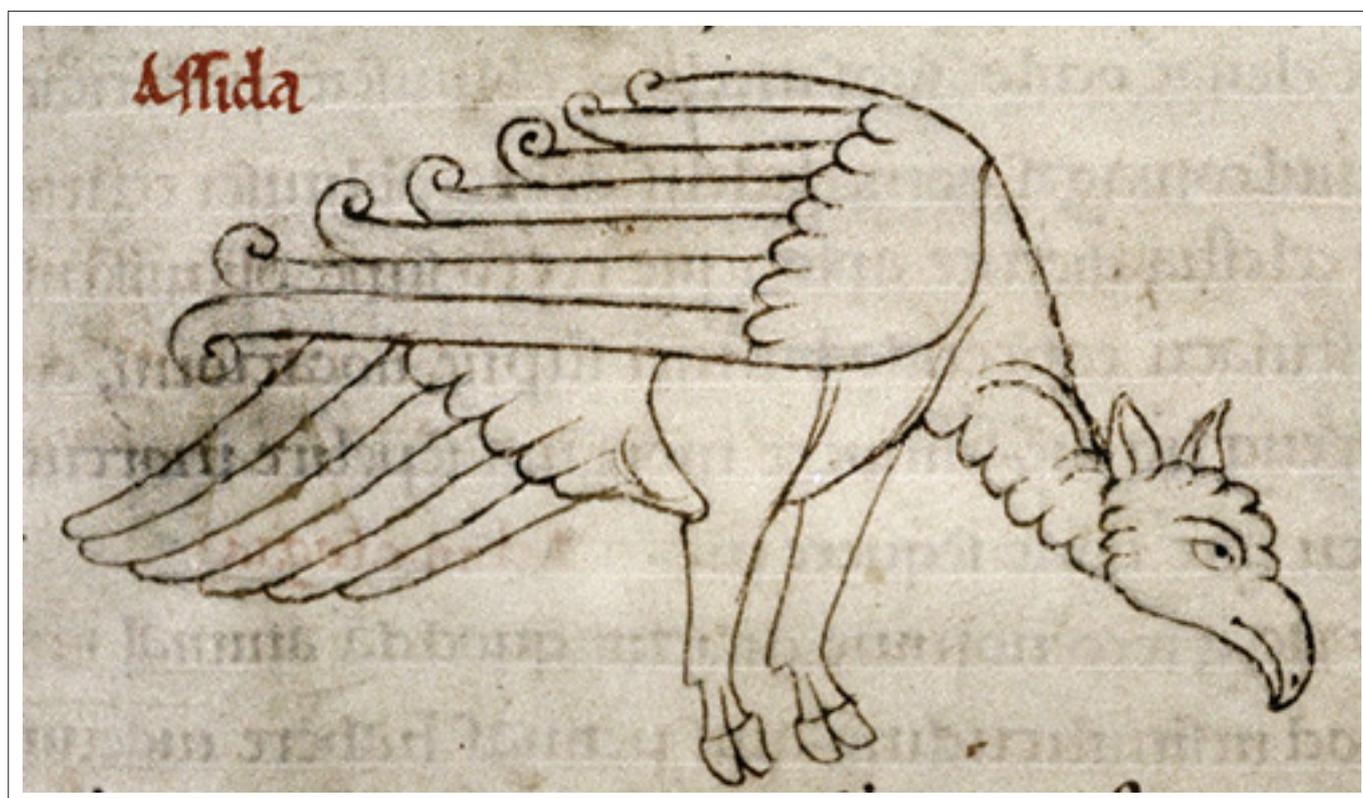
The description of the ostrich as a creature with body parts that resemble those of the fowl, the camel, and beasts in general appears in the book *Eshkol Hakofer* by Karaite sage Yehuda ben Eliahu Hadassi who lived in Constantinople in the 12th century. In this compilation, one chapter is dedicated to descriptions of the Creator's wisdom and of the wonderful world he created. In paragraph 42, Hadassi (1836) reviews the unusual qualities of various animals, and among other things, he refers to the ostrich:

As the ostrich that has four feet like a camel. And also wings, stand and observe the wonders that God created in your world. Its wings are like the wings of fowls and its body and head and breast are like those of beasts, and its eggs are like the eggs of fowls. (p. 24)

According to Hadassi, the ostrich is an example of the complexity and wonderment aroused by God's creations, as

the qualities of different animals are evident in a single animal. It is not impossible that Hadassi, who was a Karaite Jew and was not subject to the thinking and views of rabbinical literature (the oral law), presents the approach that was customary in the general world without citing the view of rabbinical sources whereby the ostrich is clearly a fowl.

Similar to those who preceded him, Hadassi too describes the ostrich as a hybrid creature that combines the qualities of three creatures – fowl, beast and mainly the camel. On the one hand, the ostrich has feathers, wings and eggs similar to fowls, and on the other hand, it has legs similar to a camel, and a head and breast similar to a beast. The similarities stated by Hadassi are not clear, and an effort should be made to decipher them. He claims that the ostrich has four 'legs' like a camel, but as we know the ostrich is no different than other bird species (*Aves*) that are distinguished by having two legs (the front legs became wings and two legs are sufficient for alighting and landing). In my opinion, he means the toes. As evident from various medieval drawings (compared with Aristotle's words above), the ostrich was described as having hooves like a camel, that is, two toe-hooves (see Figures 2 and 3), such that in each of its front or back legs it has a total of four toes. The body of the ostrich is large and ungainly like that of a beast, as Aristotle says, but the anatomical reason for attributing 'breasts' to the ostrich, similar to beasts, is unclear. Mammals indeed have udders, and the ostrich, as perceived by the ancients, resembles four-legged creatures, but it is not clear what exactly Hadassi recognises as an udder. At present, I have found no support for this in medieval art either.



Source: The Medieval Bestiary, n.d., *The ostrich has hooved feet and ears*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>

FIGURE 2: The ostrich has hooved feet and ears.



Source: The Medieval Bestiary, n.d., *The ostrich has hooved feet and ears*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>

FIGURE 3: The ostrich with hooves and ears.

The prevalent medieval views on the irregular features of the ostrich appear in several versions of medieval Arab *adab* (أدب) literature and zoology books (the *adab* literature is secular literature on a range of topics aimed at presenting wide general knowledge necessary for educated people). One of the major sources dealing with this is the encyclopaedic compilation by Faḍl Allāh al-'Umārī (فضل الله العمري), a geographer and historian who lived and operated in Damascus in the 14th century (1301–1349). Similar to Hadasi, al-'Umārī too claims that this is a creature comprised of a fowl, camel and beast, but he attributes its body parts to the animals mentioned previously. Al-'Umārī (1988–1989) writes:

The ostrich is an animal comprised of flying creatures and camels. It took its neck from the beast, its ankles and hooves from the camel, and its beak, wings, and feathers from the fowls. (pp. XX–XXII, 48–49)

Al-'Umārī indicates the similarity between the two thickened toes of the ostrich and the camel's hooves, comprised of two toes connected by a pillow-like connecting tissue. The similarity between the neck of the ostrich and that of a beast may stem from the fact that, unlike other fowls where the neck is covered in feathers, most of the ostrich's neck and head are covered in withered, sparse features that resemble hair (Paz 1990:34, and compare to Aristotle's words, above).

Beyond Aristotle's explanations, a wider realistic explanation must be offered, which is that the ancients identified in the ostrich several qualities in which it is more similar to mammals than to fowls. Firstly, I shall state that according to modern scientific systematics, the *Struthioniformes* is an independent family that includes only the ostrich species, which has unique qualities compared to other fowls. In many respects, this family is one of the most primitive groups of fowls presently living; however, there is no doubt that from an evolutionary standpoint members of this group developed from flying birds (Paz 1990:33). According to zoologists Israel Aharoni and Uzi Paz, several irregular qualities of the ostrich may be indicated which distinguish it from other fowls:

1. **Flight:** The basic quality characteristic of birds is the ability to fly. Although the ostrich has wings and features, typical of birds, it is not capable of flying. Scientifically, the ostrich's inability to fly is manifested in several anatomical features such as a flat sternum with no keel (or carina, *Crista sterni*), the anchor to which a bird's flight muscles are attached; a different bone and muscle structure than that of other birds; and small wing plumes (the wing and tail plumes lost their original usage and became decorative feathers). Additionally, the ostrich is a large heavy bird (about 150 kg), and its motion is limited to running (Paz 1990:33–35).
2. **Sternal callus:** The stomach of the ostrich ends in a *callus* formed as a result of the constant friction between its skin and the ground while resting, similar to that boasted by the camel. In both cases, this callus helps them handle the hot ground in desert areas, particularly in the summer (Aharoni 1925:70).
3. **Vocal organ:** In most fowls, the vocal organ is at the base of the trachea, but in the ostrich it is absent (Aharoni 1925:70).
4. **Secretion of urine through the cloaca:** In most birds, the cloaca is an opening that serves the three tracts: digestive, urinary and reproductive, and the secretions of the three tracts are emitted through this opening. But while all fowls currently living secrete bird droppings (a mixture of urine and faeces), the ostrich secretes urine separately from its faeces (Paz 1990:35).
5. **The male sex organ:** The ostrich is one of the few bird species in which the male has a sex organ resembling that of mammals, as do geese, unlike other birds which, as stated, have a cloaca (Aharoni 1925:70; Paz 1990:35).

We do not know whether the ancients were familiar with the features mentioned, but these features certainly reinforce their understanding of this fowl as one that is strange and unusual.

The irregular food of the ostrich: Metal and glass

The ostrich consumes mainly weeds and its food changes according to its location and to the season of the year. Aside from plants, the ostrich eats different invertebrates that it catches, as well as injured birds and mammals that it chases

on the ground (Paz 1990:35). The ostrich is mainly vegetarian and its long intestines (12–14 m.), typical of grass-eaters (herbivore), help it digest its food. But at times, it will swallow stones and other hard objects that help it grind the food in its gizzard. These objects are swallowed by the ostrich from its very first days and they might reach a weight of some 650 g (Sherer 1990:300).

The food of the ostrich in early Rabbinic literature

This quality was a source of wonder for the ancients, who counted it among the ostrich's features, generating a widespread view that such objects are its main source of sustenance (see below). The ostrich's need for this food was mentioned in various incidents in the halakhic and midrashic literature. The Tosefta discusses the question of whether it is permissible to carry objects that are not human implements or foods on the Sabbath. The Tosefta, which is a source generated in the Land of Israel in the time of the Tannaim, determines that, fundamentally, foods eaten by animals may be carried as they are necessary in order to feed the farm animals. It says:

The squill [= *Drimia maritima*, syn. *Urginea maritima*] may be carried, as it is eaten by the deer, and mustard [= *Sinapis* sp.], as it is eaten by the doves. Raban Shimon ben Gamliel says: pieces of glass may be carried as they are eaten by the *na'amiyot* (=ostrich). (Lieberman 1955:Sabbath 14:8, 67, and compare Bellorini, Hoade & Bagatti. 1949: 232)

Hence, Raban Shimon ben Gamliel permitted carrying pieces of glass on the Sabbath although these are remnants of utensils that have lost their original usage, because they may be used to feed the ostrich. The Amoraim stated, in the context of this law, that *na'amiyot* are common, unlike elephants that are not common, that is, the law applies only in a place where the type of food discussed may be eaten by local animals (Babylonian Talmud 128a and compare to Jerusalem Talmud, *ibid.* 17c).

Undoubtedly, the Tosefta reflects historical circumstances in which ostriches lived in the Land of Israel. A subspecies of ostrich (*Struthio camelus syriacus*) smaller in size than the African ostrich existed in the past in the Negev and the Sinai, in Jordan and in the Syrian Desert, and its local existence in ancient times is evident from many archaeological testimonies (Amar 2003). As stated, according to Jewish law, the ostrich cannot be eaten and thus it must be assumed that the ostrich was bred in Jewish households mainly to prepare tools and decorations from its eggs and feathers and perhaps as pets, as known from later sources (Amar 2003:35).

Unusual components in the food of the ostrich are also mentioned in midreshei aggadah that offer a new expansive interpretation of biblical stories. On the order given to Noah: 'You are to take any kind of food that is to be eaten' (Gn 6:21), the Land of Israel-based Amora R. Aba bar Kahana, a well-known third-generation master of aggadah and exegesis, said: 'He took with him vines for the elephants, squills for the

deer, glass for the *na'amiyot*' (Gn Rabbah 31:14, Theodor & Albeck 1903:287). In other words, Noah equipped the ark with suitable food for all the animals and even prepared glass for the ostrich. This source indicates that glass was the ostrich's main food, and this is of course not true. The fact that the ostrich favours hard objects is evident from the story of R. Raba and R. Chuna (Huna) bar Hiyya, two Amoraim of the third generation, who were sitting together when suddenly an ostrich appeared and snatched R. Chuna's phylacteries, but R. Aba hunted the ostrich and managed to retrieve them (Jerusalem Talmud, Moed Katan 3:7, 83b). Nevertheless, the text does not clearly indicate where the story occurred.

The Midrash also offers a new narrative for the execution of Agag the Amalekite by Samuel. R. Aba bar Kahana, mentioned above, was familiar with the ostrich's food preferences, and he further relates that the ostrich was also fed another unusual food – human flesh:

And Samuel put Agag to death before the Lord at Gilgal (I Sm 15:33). What did he do to him? [...] he cut up his flesh and fed the *na'amiyot* [...] He choosed him a bitter death. (Buber 1899:139; Mandelbaum 1962:45; Yalkut Shimoni 1909:658)

This is undoubtedly a very unusual type of food that probably does not reflect normal reality in the ancient world. As stated above, the ostrich also eats meat, and it is not inevitable that when in captivity it was fed carcasses, but not human flesh, unless in times of war and bloody disputes between rival ethnic groups. In the case described, which reflects a radical situation, Samuel appears to have chosen to feed Agag's flesh

to ostriches in revenge for the extensive bloodshed he caused (compare: 1 Sm 15:33). This cruel and extreme punishment may also have been occasioned by his affiliation with Amalek, an ancient nation whose memory the Israelites were ordered to obliterate (Dt 25:19).

The food of the ostrich in medieval and modern sources

The view that the ostrich feeds on metal and glass, and according to some testimonies this is a major component of its food, persevered into the middle ages and early modern times. This belief is documented in Arab zoological literature and in general art, as well as in Jewish sources. Arab historian and geographer al-'Umari describes the ability of the ostrich to eat and digest food that is inedible in a way that is beyond logic. Al-'Umari (1988–1989) writes:

It [=the ostrich] eats pebbles and sand and dissolves them until they become like water, as the dog melts the bones in its stomach [...], it also eats coals and they do not harm it. (pp. XX–XXII, 48–49)

The bowels of the ostrich have such high digestive abilities that coarse materials are transformed into a soft fluid.

Al-'Umari compares the digestive capacity of the ostrich to the ability of the dog's stomach to digest bones, and this comparison as well may be an inseparable part of the folkloristic approach that, because of its hybrid nature, the ostrich has an array of unique qualities characteristic of other animals. Interestingly in several drawings, albeit from a European source, the ostrich is described as having ears (Figures 2–4), although birds have no auricle. It is not



Source: The Medieval Bestiary, n.d., An ostrich with head looks like a dog or another animal, placing its egg on the sand, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>

FIGURE 4: An ostrich with head looks like a dog or another animal, placing its egg on the sand.

impossible that adding an auricle, as well as a thick beak that resembles a nose, may have transformed the ostrich into a creature that looks like a dog (see Figure 4).

Al-'Umari goes even further to the extent of saying that the ostrich is capable of eating live coals 'and they do not harm it'. What is the rationale of these reports and why would an ostrich eat 'coals'? It is to be assumed that this has to do with its 'attraction' to 'shiny' objects (metal, glass, Figures 5 and 6),

as well as to live coals that are orange-red in colour, but this phenomenon is clearly not borne out by reality.

Jewish sources in the middle ages and in modern times mention the unusual food of the ostrich in several contexts not mentioned in rabbinical times, for example, with regard to whether it can be eaten under Jewish standards. As stated above, the sages identified the ostrich with the *bat ya'ana* mentioned in the biblical list of impure birds



Source: The Medieval Bestiary, n.d., *The ostrich eats an iron horseshoe while ignoring its egg behind it, which is being warmed by the sun*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
FIGURE 5: The ostrich eats an iron horseshoe while ignoring its egg behind it, which is being warmed by the sun.



Source: The Medieval Bestiary, n.d., *The ostrich has a strong stomach so it can eat iron horseshoes and nails*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
FIGURE 6: The ostrich has a strong stomach so it can eat iron horseshoes and nails.

(Lv 11:16; Dt 14:15; Hullin 64b). Some halakhic sages tried to explain the prohibition against eating the flesh of the ostrich by citing practical reasons. The book *Moshav Zekenim* on the Bible is an anonymous compilation from the school of the Ba'alei Hatosafot, a large group of sages who lived in France and Germany in the 12th–14th centuries (Nevo 1987:587–593). In this book, which comprises discussions following Rashi's commentaries on the Bible, the Ba'alei Hatosafot claim that ostrich meat is not permissible (*non-kosher*) as it is tough and unfit for human consumption. They write: 'The ostrich [*ya'ana*] itself is forbidden because the ostrich eats iron and when it is grown [*it*] is as tough as iron, and it is not eaten' (Sassoon 1959:284). A close interpretation is brought by R. Moshe Sofer (Hatam Sofer 1772–1832) several centuries later, and he may well have been affected by the ancient Ashkenazi source. He writes: 'Because the ostrich is a bird that eats stones and iron and its flesh is as hard as copper and it cannot be eaten in any way' (Sofer 1971:siman 70).

Several medieval sages, for instance, the Maimonides (R. Moses ben Maimon, Rambam, 1138–1204), tried to explain the prohibition against eating impure animals by citing health reasons, for example, the prohibition against eating pigs was explained as having medical and hygiene foundations because pigs are dirty (Kaphach 1972:652; for detail, see Levinger 1996). Similarly, these sages suggest that the prohibition against eating ostrich meat should be explained by practical reasons and they even cite these reasons. The ostrich feeds on tough substance, and therefore, its flesh becomes tough and it is not fit for human consumption. They may have meant that it is also unhealthy as it may be hard to digest, but this is not said explicitly.

According to Ba'alei Hatosafot, the larger the ostrich, the tougher its meat and then it is indeed inedible. It is not clear from whence they derived this information, and in any case, it is obviously unfounded as there is no essential connection between the type of food consumed and the toughness of the animal's flesh and muscles. Moreover, if ostrich meat is inedible, then it would assumedly not be necessary to have a religious prohibition in order to prevent its consumption, and in addition, the Scriptures do not distinguish between large and small ostriches. Interestingly, medieval sages who objected to perceiving eating prohibitions as stemming from health reasons made a similar claim, saying that the Torah is not a medical book and therefore did not forbid the eating of harmful or inedible foods, such as poisonous mushrooms or snake venom (see, e.g., Abarbanel 1979:Shemini, 65; Arama 1868:sha'ar 60, 41a).

The belief that the ostrich can digest tough substances in its stomach and even use them for the body's needs further appears also in the writings of physician R. Raphael Mordechai Malki, who lived and operated in Jerusalem in the 17th century (died 1702). In his compilation *Ma'amarim Be'refuah* ('Articles in Medicine'), he writes:

[God] created some creatures that digest the inanimate and it is transformed in their stomach into food, and this is the ostrich that eats glass and iron and digests the iron in its bowels. (Malki 1985:162)

Although Malki lived in the Land of Israel, it appears that he was informed by rumour and was not personally familiar with the world of the ostrich. It is to be assumed that, similar to other sages, he received the mistaken folklorist understanding that the ostrich is capable of digesting metal and glass, although these substances are clearly secreted with the body's waste. Notably, a considerable proportion of ostrich deaths, mainly in the first stages of their life, result from swallowing foreign objects (Amar 2003:40).

The ostrich's gaze causes the eggs to hatch: Miraculous powers of sight

Job 39:14–15 speaks of a bird called *knafrenanim* that abandons its eggs: 'For she abandons her eggs to the earth and warms them in the dust'. According to the simple meaning of the verse, the bird, that is probably the ostrich (on its identification see below), does not sit on its eggs and they absorb the warmth of the ground (Aharoni 2001:211; Feliks 1992:183; Shonry 1979:339). On the biblical concept, the warmth of the ground hatches the eggs as reflected in medieval figurative art (see Figure 5).

Medieval literature includes another common belief that the ostrich is gifted with miraculous powers of sight and it can use these powers to hatch the eggs by staring at them. Nile Green maintains that by the second century BCE, early Jewish observations (Job 39:14–15) on the maternal habits of the ostrich were reinforced by the widespread belief that the ostrich hatches its eggs by staring at them intently rather than by brooding. Because of the prestige of the biblical Scriptures, these associations of the ostrich were to have a long-standing influence on the uses to which its by-products were put in a Christian context (Green 2006:34).

To the best of my knowledge, the first Jewish source to mention the ostrich's power of sight is R. Gershom Ben Shlomo (France, 13th century) in his book *Sha'ar Hashamayim* [The Gate of Heaven], which encompasses a great deal of information about nature and medicine. He writes concisely: 'It is said about [*the ostrich*] that it gathers its eggs with its gaze' (Ben Shlomo 1876:31). There may be about 40 eggs laid by different females in the hollow that holds the ostrich nest and in the close vicinity (see Figure 7). Some of the eggs are laid in the hollow, and others may be scattered around. According to Ben Shlomo, the ostrich gathers scattered eggs with its mere gaze, although this is evidently achieved by rolling them with its beak.

With regard to Job 39:14–15, the Kabbalist R. Yosef ben Shalom Ashkenazi (also known as R. Yosef Ha'aroch), a 14th century Sephardic sage, claims that the *knafrenanim* gazes at the eggs and warms them without touching them, whereby the chicks hatch (see Anonymous 1806:9d). Ashkenazi does



Source: Porter, J.L., 1823–1889, *Through Samaria to Galilee and the Jordan*, Thomas Nelson, London

FIGURE 7: Couple of ostriches. Many eggs are outside the nest and it seems that they were abandoned.

not identify the bird, but later sources attributed this quality to the ostrich. Biblical zoologists note that the name *knaf renanim* seems appropriate for the male ostrich, which flaps its striking wings during courtship (Aharoni 1933: 202–204; Feliks 1992:353–355).

The ostrich's gift of vision was also recorded in the writings of R. Isaac Luria (the ARI), recorded by his student R. Haim Vital (1543–1620) after his death. Vital (1961) writes:

We find some power of eyesight as evident in the natural sense of sight, such as the ostrich egg from which the chick emerges as a result of observation, with no need to sit on the eggs and warm them like other birds, proving that eyesight has real power. (p. 103)

As R. Luria sees it, the ostrich's gaze indicates that the sense of sight is not passive, rather capable of influence, action and inception, and he illustrates this through the Kabbalistic practice recommending that one imagine G-d's name in the mind's eye and then observe it.

R. Mordechai Hacoen (Aleppo and Land of Israel, 17th century), a disciple of R. Israel di Curiel and a 'cub' of R. Isaac Luria (the ARI), mentions the connection between the ostrich's power of sight and the custom of suspending eggs in the synagogue, in association with the city of Safed where he lived and operated. Hacoen (1884) writes:

The *na'ama* [=the ostrich] lays eggs and places them in an elevated place and looks at them from afar and is not distracted, and its gaze is productive as it causes the chicks to hatch, and if some animal comes and it stops [looking at the eggs] it kills it, as the eggs become strange [no chicks will form in them] and for this reason it is customary to hang them in the synagogue, for the essence of prayer that it should be accepted and fruitful is *kavanah* [concentration in prayer] and that there should be nothing blocking one from G-d who is in heaven. (p. 40)

According to Mordechai Hacohen, the ostrich places its eggs in an elevated place so that it can concentrate on them and cause them to hatch. It gazes at them unceasingly and distracting its attention from the eggs, even for a short time, might stop the chicks from developing. For this reason, any animal that distracts the ostrich from gazing may be attacked and even killed by the ostrich. Hacohen compares the ostrich and its focus on the eggs for the purpose of producing chicks – to prayer in the synagogue. Prayers are meant to have an effect and to fulfil their purpose just as gazing produces chicks. For this reason, the worshipper must concentrate on his prayers and avoid distraction. Distractions during prayer are like producing 'strange eggs', that is, eggs that will not develop into chicks.

The ostrich's powers of sight: Jewish and non-Jewish sources

The belief concerning the ostrich and its nesting habits originated from popular medieval knowledge and tales that exist in bestiaries (Becker 1994:221–223; Daniel & Stevans 1903:II, 670). Some versions of the Physiologus, an early Christian text compiled around the 2nd century AD and a popular read in the Middle Ages, repeated the older notion that ostrich eggs were hatched through the power of the mother's gaze (Green 2006:34). According to another version of the Physiologus, the ostrich deposits its eggs after it sees stars, called the Pleiades (Virgilia). When these appear, it digs a hole in the earth, and there it deposits the eggs and covers them with sand (see Figure 8). Then, it gets up, instantly forgets all about them, and never returns:

When the time comes for it to lay some eggs, the ostrich raises its eyes to heaven and looks to see whether those stars which are called the Pleiades are visible. Nor will it lay until the Pleiades appear. When, however, it perceives that constellation, round about the month of June, it digs a hole in the earth, and there it deposits the eggs and covers them with sand. Then it gets up, instantly forgets all about them, and never comes back any more. A certain clemency and mildness of the atmosphere is noticeable in June, and so the sand, being warmed by the hot weather, incubates the eggs and hatches out the young. Now if the ostrich knows its times and seasons, and, disregarding earthly things, cleaves to the heavenly ones – even unto the forgetting of its own offspring – how much the more should you, O Man, strive after the reward of the starry calling, on account of which god was made man that he might enlighten you from the powers of darkness and place you with the chiefs of his people in the glorious of the heavens. (White 2002:121–122)

There is no doubt that the concept cited by the Physiologus was reinforced by Job 39:14–15 on the bird called *knafr renanim*

that abandons its eggs. However, according to Physiologus' version, the ostrich looks at the star and not at the eggs as claimed by late Jewish sources. The fact of the matter is that the ostrich lays its eggs in a hollow that the male makes using its toes. For reasons of camouflage, the black male sits on the eggs at night and the brown female during the daytime. There is no evidence that gazing at the eggs produces chicks, as these emerge in a process of incubation lasting 47–49 days, similar to that of other birds (Paz 1990:35).

Another early source that mentions the concept of the ostrich gazing at the eggs is the Arabic version of the book *al-Jawharat al-Nafisa* (*The Precious Pearl*) by the Syrian Orthodox Christian, Saint John of Damascus (also called Ibn Saba, 676–749 AD). Ibn Saba mentions this belief with regard to the custom of suspending ostrich eggs in churches, in terms of the concentration required of the ostrich in order to hatch its eggs. According to Ibn Saba, if the ostrich falters for a moment and does not look at them, it will cause the chick to weaken and die before hatching (Ibn Saba 1922:753–755). As shown below, the custom of suspending eggs was also adopted in synagogues and is based on the belief in the ostrich's miraculous powers of sight.

Ascribing to the ostrich the power to hatch eggs by mere sight may be connected to several of its unique qualities, that is, its good eyesight and relatively large eyes. In addition, the ostrich is known for its good hearing as well as its considerable height that lets it survey the area for any dangers to itself and its young. Moreover, when sitting on the eggs in the nest, the male or female also watches over the rest of the eggs scattered nearby.

In Arab sources, for example, in the illustrations included in al-Jāhiz compilation (Figure 9) and in al-'Umari's encyclopaedic work, there is no sign of the view that incubation is achieved by looking at the eggs rather than by sitting on them and warming them as do other birds. Al-'Umari (1988–1989) wrote:

And when the ostrich lays its eggs it buries them in the ground. And it usually lays 20 eggs or more. It buries one third of the eggs and sits on two thirds. And if the chicks hatch, then the ostrich breaks the rest of the eggs and uses them to feed the chicks. And when the chicks grow stronger the ostrich extracts those that it buried in the ground and breaks them and leaves them on the ground so that flies, mosquitos, ants, and insects will be attracted to them and then it eats these so that it can raise the chicks with them [...]. The Arabs say: 'This man is more stupid than the ostrich', because when it leaves its eggs and sees other eggs then it sits on those and neglects its own. (pp. XX–XXII, 48–49)

According to al-'Umari, the ostrich sits on a large part of the eggs and buries the rest in the ground. Burying all the eggs in the ground to warm them as part of their abandonment, leaving them uncared for, was described above and is also documented in ancient drawings (see Figures 4, 8). Burying eggs is not known to us but sitting only on some of them is well known. Several females lay eggs in the nest (a total of about 40 eggs), but it is only possible to sit on 12–14 eggs, so



Source: The Medieval Bestiary, n.d., *The ostrich lays its eggs on the ground when it sees the star the Pleiades rising. It covers them with sand, then leaves them to hatch on their own, warmed by the sun*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>

FIGURE 8: The ostrich lays its eggs on the ground when it sees the star the Pleiades rising. It covers them with sand, then leaves them to hatch on their own, warmed by the sun.

some remain as they are and do not hatch (Paz 1990:35). According to al-'Umari, a third of the eggs are left in order to generate a reserve of food from an animal source (a similar feature of producing mosquitos and flies for consumption was attributed to the crow. See Buber 1885:Ekev, 17). The neglecting of eggs by the ostrich is also proposed by al-'Umari, but he attributes this to cases in which the ostrich sees eggs in another nest and then abandons its own and sits on the others. To a certain degree, not sitting on some of the eggs so that they will serve as a food reserve is also a type of abandonment.

It is possible that Arab sources describe sitting on the eggs versus European sources that attribute the hatching to gazing

at them, because the ostrich was common in desert areas under Arab control, while in Europe, where the ostrich did not live, conceptions were based on rumours or on popular unfounded beliefs. Nonetheless, as we have also seen in Arab sources, unsupported data abounded.

Discussion and conclusion

The size, strange body shape and behaviour of the ostrich aroused the imagination of the ancients, and therefore beginning from the classical era until recent generations, various legends and beliefs were attached to it. The historical continuity and the preservation of these legends over many



Source: Wikimedia, n.d., *Kitāb al-Hayawān*, كتاب الحيوان, viewed n.d., from https://commons.wikimedia.org/wiki/File:Al-Jahiz_-_pages_from_Kitaab_al_Hayawaan_4.jpg

FIGURE 9: The ostrich is incubating the eggs. The painter knew the look of the ostrich and described properly the way of hatching.

generations indicate that the ostrich was considered an exotic animal that aroused amazement and a great deal of interest, which is why some of the sources brought it as an example of wonderment at God's works and unique creations.

Unfounded folkloristic views were common in places far from its natural habitat, for example, in European countries, as well as in regions where it was indigenous, for instance, in the Land of Israel or in Islamic countries. Moreover, it is to be assumed that some of these legends were initiated in countries where the ostrich was common but once they were conveyed to more distant areas they were expanded and exaggerated (see below concerning the food of the ostrich). In several Jewish Ashkenazi sources, an attempt was made to explain the laws of forbidden foods, that is, the prohibition against eating the ostrich, by citing these rumours, and some even added that the fact that it feeds on tough substances renders its flesh tough and inedible.

At first, the ancients deliberated on the basic question – what is the definition of the ostrich and how should it be classified within the animal world? Aristotle, who was one of the first to discern the 'strangeness' of the ostrich, perceived it as a cross between a bird (biped) and a four-legged creature. Throughout the historical eras, many scholars suggested that it has a hybrid nature and is a cross between a bird and a camel. The association between the ostrich and the camel was perceived by the ancients was based on their similarity, for instance, their long legs, leg form, relatively long neck and

common habitat in desert areas. The view that the ostrich has certain qualities resembling the camel spreads in many areas of the ancient world and was evident in the written literature and even in art. It is interesting, however, that ancient Jewish sources did not share this folkloristic claim rather decided unequivocally that the ostrich is a 'fowl for any matter'. This outlook was the basis for various laws, for example, with regard to *kilayim* [the prohibition against use of hybrid forms].

In this aspect, Jewish writings undoubtedly reflected an advanced and sometimes independent conception, one that was ahead of its time, as only with the development of modern zoological science was the ostrich defined as a bird, although because of its unique features it was classified as belonging to a separate family that comprises only one species. At the same time, it is notable that in Jewish literature of an interpretative and aggadic nature, which does not remain within the rational limits, it is possible to find folkloristic information that was common among the masses, for example, the mystic belief that the ostrich does not sit on its eggs like other birds rather looks at them and their gaze helps the chicks develop.

The irregular treatment of its eggs or chicks by the ostrich was variably described in historical sources, Jewish and non-Jewish, and many of them share a description of the ostrich as a creature that abandons and neglects its offspring. This outlook originates from the Scriptures, and because the Bible is a theological book with a large impact on the monotheistic

faiths, it shaped the popular conception of the ostrich as a cruel animal. Interestingly, other biblical stories shaped attitudes towards and symbolism of other animals as well; for instance, the treacherous image of the crow and the loyalty of the dove following the story of Noah and the ark (Ferguson 1954:24; Ginnzberg 1913:I, 38–39, 163, 166).

Several Christian sources depict the ostrich as burying its eggs in the earth and abandoning them. In contrast, in Jewish sources, it indeed does not sit on them, but it does gaze at them to make the chicks develop. The impression is that in Jewish sources, the ostrich underwent a process of sublimation. The claim that the ostrich gazes at the eggs rather than completely abandoning them softened its cruel image to a certain degree and it was described as involved and as influencing their process of development 'from a distance'. According to this outlook, which affected the formation and shaping of the custom of suspending eggs in synagogues, the ostrich has an unusual power of sight that facilitates the development of the chicks. As we saw in Muslim zoological sources and even in illustrations, the ostrich is portrayed as sitting on its eggs and helping their development, but there it is also described as abandoning the nest when it notices other nests.

Another belief that is indeed partially based on reality has to do with the food of the ostrich. Ostriches are vegetarian but sometimes they swallow hard objects. The ancients were familiar with this phenomenon but interpreted it exaggeratedly. For instance, in ancient sources, the ostrich is described as eating glass (a substance that is not nutritious but helps digestion of its food), while later sources also state that this is its main food and that it is even capable of easily digesting glass. Moreover, some even went so far as to claim that the ostrich eats hot coals. In the midrashic literature and the Jewish commentaries, this quality of eating unusual food was described in different contexts, for example, Noah's efforts to stock glass in the ark for the ostriches or the compensation to carry glass on the Sabbath because it is the food of the ostrich. As stated, in Jewish medieval sources, this knowledge was used once again in order to justify the prohibition against eating ostrich meat as part of biblical dietary laws.

The general impression formed from the study is that the Jews were aware of legends that existed among the nations, and even used them in their study halls for halakhic discussions and to enrich their spiritual world. With regard to the food of the ostrich and the belief in its special sight-related qualities, we see a similarity to beliefs that had spread throughout the general world; however, on the question of whether the ostrich should be defined as a bird or a hybrid creature, Jewish sources displayed an independent view that contrasted with those customary elsewhere.

Acknowledgements

Competing interests

The author declares that he has no financial or personal relationships which may have inappropriately influenced him in writing this article.

References

- Abarbanel, D.I., 1979, *Commentary on the Torah*, Hotza'at Sefarim Bene Arbael, Jerusalem.
- Agius, D.A., 2005, 'Leave your homeland in search of prosperity: The Ostrich egg in a Burial Site at Quseir al-Qadim in the Mamluk Period', in U. Vermeulen & J. van Steenberghe (eds.), *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras IV: Proceedings of the 9th and 10th International Colloquium Organized at the Katholieke Universiteit Leuven in May 2000 and May 2001* [Orientalia Lovaniensia Analecta 140], pp. 357–382, Peeters Publishers, Leuven-Dudley.
- Aharoni, I., 1925, 'Some summaries of my lectures', *The Manuscripts of the Hebrew University in Jerusalem*, 2, 69–70.
- Aharoni, I., 1933, *Torat Haḥay* [Zoology], Kohelet Publication, Jerusalem. [Heb.]
- Aharoni, I., 2001, *The memories of a Hebrew Zoologist*, Ariel Publication, Jerusalem. [Heb.]
- Albeck, H., 1952, *Mishnah*, Ḥanoch Albeck Edition, Mossad Bialik and Dvir, Jerusalem and Tel Aviv.
- Al-Jāhīz, 1955, *Abū 'Uthman 'Amr ibn Baḥr al-Kinānī al-Baḥrī al-Jāhīz, Kitāb al-Hayawān*, 'Abd al-Salām Muhammad Ḥārūn, Beirut. [Arabic]
- Al-'Umari, 1988–1989, 'Ibn Fadl Allah al-'Umari', in F. Sezgin (ed.), *Masḍik al-Abṣar fi al-Mamluk wa-l-Amsar* [Pathways of vision in the realms of the metropolises], pp. 48–49, Institute for the history of Arabic-Islamic Science, Frankfurt am Main. [Arabic]
- Amar, Z., 2003, 'The Ostrich in Jewish Sources', *Al Atar* 12, 29–46. [Heb.]
- Anonymous, 1806, *Sefer Yetzira* [with commentary attributed to the *Raved*], Yehekel and Simcha Zimel, Hrodna.
- Arama, I., 1868, *Akedat Itzḥaq*, Dfus Abraham Joseph, Lvov.
- Aristotle, 1937, *Partibus Animalim* [Parts of animals], A.L. Peck & E.S. Forster (transl.) Loeb Classical Library 323, Harvard University Press, Cambridge, MA.
- Babylonian Talmud*, 1882, Vilna edition, Reem, Vilna.
- Bacher, W., 1896, 'Ein hebräisch-persisches Wörterbuch aus dem 15. Jahrhundert', *Zeitschrift für die Alttestamentliche Wissenschaft (Z.A.W)* 16, 201–241.
- Becker, U., 1994, *The continuum encyclopedia of symbols*, transl. L.W. Garmer, Continuum, New York.
- Bellorini, T., Hoade, E. & Bagatti, B. (transl. & eds.), 1949, *Fra Francesco Suriano, Treatise on the Holy Land*, Franciscan Press, Jerusalem.
- Ben Shlomo, G., 1876, *Sha'ar Hashamayim*, Yitzchak Goldman Press, Warsaw.
- Bodenheimer, S.F., 1957, *Animals in biblical lands*, vol. II, Mossad Bialik, Jerusalem. [Heb.]
- Buber, S., 1885, *Midrash Tanḥuma*, vol. II (Exodus and Deuteronomy), Solomon Buber, Vilna.
- Buber, S., 1899, *Ekha Rabbah*, Solomon Buber, Vilna.
- Daniel, C.L. & Stevan, C.M., 1903, *Encyclopædia of superstitions, Folklore, and the Occult sciences of the world: A comprehensive library of human belief and practice in the mysteries of life*, J.H. Yewdale & Sons Company, Chicago, IL.
- Feliks, Y., 1992, *Nature and land in the bible, chapters in biblical ecology*, Reuven Mass, Jerusalem. [Heb.]
- Ferguson, G.W., 1954, *Signs & symbols in Christian art*, Oxford University Press, Oxford.
- Garfinkel, J., 2001, 'Neolithic Ashqelon', in A. Sasson, Z. Safrai & N. Sagiv (eds.), *Ashkelon: A city on the seashore*, pp. 39–56, Ashkelon Academic College, Tel Aviv. [Heb.]
- Ginnzberg, L., 1913, *The legends of the Jews: Vol. I: Bible times and characters from the creation to Jacob*, Jewish Publication Society of America, Philadelphia, PA.
- Green, N., 2006, 'Ostrich eggs and peacock feathers: Sacred objects as cultural exchange between Christianity and Islam', *Al-Masaq* 18(1), 27–66. <https://doi.org/10.1080/0950311050022328>
- Hacohen, M., 1884, *Sifte Cohen on the Pentateuch*, Part II, Isaac Goldman Press, Warsaw.
- Hadassi, J., 1836, *Eshkol ha-kofer*, Dfus Mordechai Trishkin, Gozlv.
- Ibn Saba, Y.B.A.Z., 1922, 'La Perle précieuse: Traitant des sciences ecclésiastiques', transl. J. Pe'rier, *Patrologia Orientalis* 16, 753–755.
- Jerusalem Talmud*, 1523, Venice edition, Venice.
- Johansen, T.K., 1997, *Aristotle on the sense-organs*, Cambridge University Press, Cambridge.
- Kaphach, J., 1972, *The guide for the perplexed (Moreh Ha-Nevukhim)*, Mossad Ha-Rav Kook, Jerusalem. [Heb.]
- Levinger, J., 1996, "'Maimonides" guide of the perplexed on forbidden food in the light of his own medical opinion', in J.L. Kraemer (ed.), *Perspectives on Maimonides: Philosophical and historical studies*, pp. 195–208, Littman Library of Jewish Civilization, London.
- Lewis, J., 1822, *Travels in Syria and the Holy Land*, John Murray, London.
- Lieberman, S., 1955, *Tosefta*, Jewish Theological Seminary, New York.
- Malki, R.M., 1985, *Medical works of Rabbi Rafael Mordecai Malki*, M. Benayahu (ed.), Yad ha-Rav Nissim, Jerusalem.
- Mandelbaum, B., 1962, *Pesikta de-Rav Kahana*, Jewish Theological Seminary of America, New York.

- Nevo, Y., 1987, 'The ways of the commentary of "Moshav Zekenim" on the Torah', *Sinai* 100, 587–593. [Heb.]
- Paz, U., 1990, 'Struthioniformes', in A. Alon (ed.), *Plants and animals of the land of Israel: An illustrated encyclopedia*, pp. 33–35, Ministry of Defense, Tel Aviv. [Heb.]
- Piper, H., 1972, *The Torah in Jewish Persian translation*, Yad Itzhaq ben Zvi and the Hebrew University, Jerusalem. [Heb.]
- Porter, J.L., 1823–1889, *Through Samaria to Galilee and the Jordan*, Thomas Nelson, London.
- Sassoon, D. (ed.), 1959, *Moshav Zekenim on the Torah*, Henig, London.
- Septuaginta, 1931–1986, *Vetus Testamentum Graecum auctoritate Societatis Litterarum Gottingensis editum*, Vandenhoeck & Ruprecht, Gottingen.
- Sherer, S., 1990, 'Breeding of ostriches', *Ha-Sade* 70, 300–301.
- Shonry, Y., 1979, 'And warmeth them in dust (Job 39:14)', in D. Noy & I. Ben Ami (eds.), *Folklore research enter studies*, vol. I, pp. 338–339, Magnes Publication, Jerusalem. [Heb.]
- Sofer, M., (Schreiber), 1971, *Responsa Hatam Sofer*, Yore Dea, Kedem, Jerusalem.
- Steingass, F., 1970, *A comprehensive Persian-English dictionary*, Librairie Du Liban, Riad Solh Square, Beirut.
- Theodor, J. & Albeck, H., 1903, *Genesis Rabbah*, Itzkowski, Berlin.
- The Medieval Bestiary, n.d., *An ostrich with head looks like a dog or another animal, placing its egg on the sand*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
- The Medieval Bestiary, n.d., *The ostrich eats an iron horseshoe while ignoring its egg behind it, which is being warmed by the sun*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
- The Medieval Bestiary, n.d., *The ostrich has a strong stomach so it can eat iron horseshoes and nails.*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
- The Medieval Bestiary, n.d., *The ostrich has hooved feet and ears*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
- The Medieval Bestiary, n.d., *The ostrich lays its eggs on the ground. In right, it makes an attempt to fly, though it cannot*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
- The Medieval Bestiary, n.d., *The ostrich lays its eggs on the ground when it sees the star the Pleiades rising. It covers them with sand, then leaves them to hatch on their own, warmed by the sun*, viewed n.d., from <http://bestiary.ca/beasts/beastgallery238.htm#>
- The Septuagint Bible: The oldest version of the Old Testament*, English translation, 1954, transl. C. Thomson, Falcon's Wing Pr., Indian Hills, CO.
- The Vulgate Bible: Douay-Rheims translation*, 2010, E. Swift (ed.), Dumbarton Oaks Medieval Library, Harvard University Press, Cambridge, MA.
- Vital, H., 1961, *Etz Haim*, vol. I, Publication of R. Isaac Luria's Writings, Jerusalem.
- White, T.H. (transl.), 2002, *The book of beasts: Being a translation from a Latin bestiary of the twelfth century*, Parallel Press, University of Wisconsin-Madison Libraries, Madison, WI.
- Wikimedia, n.d., *Kitāb al-Hayawān*, كتاب الحيوان, viewed n.d., from https://commons.wikimedia.org/wiki/File:Al-Jahiz_-_pages_from_Kitaab_al_Hayawaan_4.jpg
- Yalkut Shimoni* (attributed to R. Simeon of Frankfurt), 1909, Reem, Vilna.
- Zippor, M., 2003, *Peshiteta on Leviticus*, Simor, Jerusalem. [Heb.]
- Zuckerman, M.S., 1937, *Tosefta*, Bamberger and Wahrmann, Jerusalem.