

## PLAGUES 7 TO 10

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### **H**ail, Lightning, and Thunder: The 7<sup>th</sup> Plague

“*HaShem* said to Moshe, Stretch out your hand toward the sky and there will be hail throughout all Egypt. It will fall on man and animal and on all outdoor plants all over Egypt. Moshe pointed his staff at the sky and *HaShem* caused it to thunder and hail with lightning striking the ground. *HaShem* then made it hail on the land of Egypt. There was hail with lightning flashing among the hailstones. It was extremely heavy, unlike anything Egypt had experienced since it became a nation. Throughout all of Egypt, the hail killed every man and animals in the outdoors. The hail destroyed all the outdoor plants and smashed every tree in the fields. Only in Goshen, where *B’nei Israel* lived, there was no hail” (Shemos 9:22-26).

Any precipitation, let alone hailstones, would be most unusual in Egypt. In most areas, Egypt receives on average 1 inch of precipitation per year, or about 0.1 inches of precipitation (rain, sleet, snow, or hail) per month. No precipitation occurs in July and August; December is the wettest month, when 0.3 inches of precipitation fall in 2 days [1]. According to Rav Samson Raphael Hirsch, this plague was a complete shock to the Egyptians and demonstrated a total revolution in cosmic conditions in Egypt [2].

Lightning, thunder, hail, and rain originate in clouds. Lightning is an electrostatic discharge (or, a spark) which is accompanied by thunder. From the initial discharge of atmospheric electricity, a lightning bolt can travel at speeds approaching 140,000 mph, reaching temperatures of 54,000°F. Lightning rapidly heats the air in its immediate vicinity, causing the heated air to expand and subsequently to produce a supersonic shock wave. This shock wave decays to an acoustic wave that is heard as thunder. As the sound waves propagate along the length of the lightning’s path, sounds originate at varying distances to generate a rumbling or rolling effect. Light travels at 186,282 miles/second and the speed of sound, in dry air, approximates one mile in five seconds. Thus, initially lightning is seen, followed by the sound of thunder. These background facts will be needed later to understand a question presented by the Malbim. Upon seeing lightning one recites the blessing “Who makes the work of creation,” and upon hear-

ing thunder, one recites the blessing, “for His strength and His power fill the universe.” A lightning strike at a very close distance is accompanied by the smell of ozone. Lightning within thunderstorms produces gaseous nitrogen oxides which react with other atmospheric chemicals and, in the presence of sunlight, produce ozone. Ozone, a strong oxidizing agent, if present in significant amounts, is a lung irritant [3]. In this plague, the lightning and thunder caused psychological distress to the Egyptians, whereas ozone, a respiratory irritant, caused physiological pathology.

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To emphasize that the seventh plague was not a natural phenomenon, but rather was orchestrated by *HaShem*, Moshe drew a line on a wall. He told Pharaoh that the next day, when the sun reached that mark, at that exact time, the plague would start (Rashi, Shemos 9:18). The Malbim, noting a potential scientific problem, concluded that there were two distinct types of hailstones and thunder. Lightning, thunder, and hail all originate within clouds and for these three phenomena to simultaneously commence exactly when Moshe indicated would be a scientific impossibility. Lightning originating in the clouds could appear on Earth at exactly the time indicated by the sun reaching the mark on the wall. However, thunder travels slower and additional time was needed for hail to form in the clouds and to be deposited on Earth. These time delays for the commencement of the plague would be interpreted by the Egyptians as indications that they were natural occurrences, and not a plague directed by *HaShem*. The Malbim therefore suggested that at time zero (i.e., when the sun reached the mark), *HaShem* created special types of thunder and hailstone that traveled exceedingly fast to coincide with the lightning, thereby confirming the time schedule established by Moshe. The Malbim compared the speed of these initial hailstones to bullets

leaving a rifle, thereby explaining their lethality (*i.e.*, “the hail killed every man and animal in the outdoors”). Thereafter, subsequent hailstones and thunder proceeded according to the laws of nature.

A variety of opinions describe the nature of the hailstones (Shemos 9:24). Perhaps, the best known is that mentioned by Rashi. These hailstones consisted of an intermingling of ice and fire, demonstrating a miracle within a miracle; the water of the ice did not extinguish the fire and the fire did not evaporate the water. Some hailstones were transparent with the flame flickering within, whereas other hailstones were coated by fire; the hailstones were huge and deadly [4-6]; [Bamidbar Rabbah 12; Malbim]. S’forno suggested that the forceful thrust of the hail carried an enflamed air, perhaps, referring to the generation of an intense heat of friction. Rav Avigdor Miller [7, 8] postulated that the hailstones were actually “hot pellets of solid stone.” Falling from great heights, the red hot stones acquired an accelerated velocity so that each stone became a deadly missile to destroy whatever it struck. Ibn Ezra, as interpreted by Rav Aryeh Kaplan in Me’am Loez [5] and probably based on Berachos 54a, presented a unique approach and suggested that the flaming hailstones may have been part of a meteor shower. Meteor showers consist of a collection of particles, composed of ice and rock, are the remnants of comets that once passed through the inner solar system. The rocks vary in size, from dust to a small boulder. When these meteoroids enter the Earth’s atmosphere, the ensuing friction with the air causes them to heat up and glow. Under normal conditions, most meteoroids burn up completely in the atmosphere but occasionally some persist to hit the Earth [10, 11].

Eventually, Pharaoh breaks under the pressure of the plague and summons Moshe to terminate it. “Pharaoh sent word and summoned Moshe and Aaron. He said to them, “This time I am guilty! *HaShem* is Just! It is I and my people who are in the wrong! Pray to *Hashem*. There has been enough of *HaShem*’s thunder and hail. I will let you leave. You will not be delayed again” (Shemos 9:27-28). Interestingly, Pharaoh’s initial complaint was not to terminate the hail and lightning which were lethal to the people and which devastated the Egyptian economy (*i.e.*, the destruction of cattle and crops), but rather to halt the thunder. Because the lightning strikes came in close succession [12], there was no sound modulation as in normal thunder, rather each clap of thunder exploded with the same deafening noise. The thunder was a plague unto itself, with the extraordinary noises a fearsome experience [7, 8]. Excessive noise adversely affects human physiology and psychology. In response to noise pollution, the levels of adrenaline and cortisol, the so-called stress hormones, are elevated, with a concomitant increase in blood pressure and heart rate and a

decrease in the immune system’s ability to fight infection. People exposed to noise pollution get angry easily, are anxious, more depressed, and are less likely to help others [9]. Rav Miller [7] stated that .... “the noise of booming thunder and crackling lightning were terrifying, a ringing in the ears beset each person” (*i.e.*, tinnitus).

This plague also destroyed the Egyptian agricultural economy: “The flax and the barley were smashed, for the barley was nearly ripe and the flax was in its stalk. And the wheat and the spelt were not smashed, for they are late in ripening” (Shemos 9:31-32). Both the flax and barley, ready for harvesting, were devastated, whereas the wheat and spelt, immature and thus soft and flexible, were able to withstand the crushing hail (Rashi). As worshippers of the lamb, Egyptians avoided the use of wool, but rather used flax to manufacture linen [7]; Egyptian linen was of particular high quality (Mishlei 7:16). Barley was food for the cattle and horses (Pesachim 3b). The Egyptian economy was, therefore, in ruin. This plague, as described in Tehillim (78:47; 105:32), made note of huge hailstones that destroyed Egyptian grape vines and tress, the fig tree in particular. Hail killed the cattle and fiery bolts of lightning devastated the flocks (Tehillim 78:48). The sparing of the wheat and spelt provided some hope of survival to the Egyptian populace. However, these crops would serve as food for the locusts (Plague #8).

In the early 19<sup>th</sup> century, a papyrus, discovered in Egypt, and written by Ipuwer, an Egyptian, apparently was an eye witness account of the ten plagues and the resultant exodus of *B’nei Yisrael* from Egypt. Known as the Admonitions of Ipuwer, portions of the papyrus parallel the events noted in Shemos. Regarding the 7<sup>th</sup> plague the following are mentioned: (a) “Forsooth, gates, columns, and walls are consumed by fire. The sky is in confusion. It almost destroyed all mankind” (parallel: Shemos 9:23, 24); (b) “lower Egypt weeps. The entire palace is without revenues. To it belong wheat and barley, geese and fish”; (c) “Trees are ruined. No fruits, no vegetables are to be found. Grain has perished everywhere. The land is desolated”; and (d) “Forsooth, that has perished which was yesterday seen. The land is left over to its weariness like the cutting of flax” (parallel *posukim*: Shemos 9: 25, 31, 32) [13, 14].

### Locusts: The 8<sup>th</sup> Plague

“Moshe raised his hand over Egypt and all that day and night, *HaShem* made an east wind blow over the land. When morning came, the east wind was carrying the locusts. The locusts invaded Egypt, settling on all Egyptian territory. It was very severe. Never before had there been such a locust plague and never again would the like be seen. The locusts covered the entire surface of

the land, making the ground black. They ate all the plants on the ground and all the fruit on the trees, whatever had been spared by the hail. Nothing green remained on the trees and plants throughout Egypt” (Shemos 10:13-15).

Locust swarms are relatively common in Africa. Rav Kaplan [11] noted that the east wind often blew across the desert from Arabia carrying locusts. If so, how did Pharaoh distinguish this specific insect invasion which was orchestrated by *HaShem* from that of a natural occurrence? Although locust swarms utilize wind to aid in their flight, mostly they travel and are active during the daytime, with their flight migration beginning in the late morning; usually, locusts do not fly at night [15]. The *pasuk*, however, noted something unusual, in that the wind carried the locusts by day and *also* by night.

The locusts, or *arba* of the 8<sup>th</sup> plague, were of the species, *Sbistocerca gregaria* (the desert locust) [16, 17]. The desert locust in Africa is a fully gregarious consumer, causing extensive devastation to pasture lands and to crops, and particularly known for its long range of migration. The largest recorded locust swarm is reported to have covered 400 sq mi, comprising approximately 40 billion insects [17]. The locust invasion constituting the 8<sup>th</sup> plague was particularly severe; “never before had there been such a locust plague and never again would the like be seen.” Yet, another severe locust swarm was noted in Yoel (2:1-11), but in that case, *Eretz Yisrael* was the target of the locust invasion. The locust swarm that invaded Egypt consisted only of one species, the *arba*, whereas the swarm that invaded *Eretz Yisrael* consisted of 4 species of locust, *arba*, *gozzum*, *yellek*, and *chasil* (Rashi in Yoel, 2:2; Shemos 10:14). Yet, in Tehillim (78:46), mention is made of the ten plagues and *chasil*, not *arba*, was noted in the 8<sup>th</sup> plague. Perhaps, Rashi meant that the swarm in Egypt consisted *predominantly* of one species, the *arba*, with *arba* referring both to a single species of locust as well as to the generic name for locusts (the Hebrew root of *arba* is *rov*, or many) [18]. Ramban (Shemos 10:14), disagreeing with Rashi’s interpretation, postulated that the difference between the locust swarm that invaded Egypt from the swarm that invaded *Eretz Yisrael* was not a function of the type of species of locust. Rather, the swarm that invaded Egypt was unique in that locusts normally descend upon an arid environment, not upon a moist, humid terrain as the basin of the Nile River. As proof, Ramban noted that the four years of the locust plague in Yoel coincided with a severe drought.

In the *pasukim*, both in Shemos and Yoel, mention was made of the accompanying economic destruction caused by the locust invasion. Locusts consume the equivalent of their own weight in a day. The desert locust may eat 1.5 grams of vegetation/day; de-

pending upon the actual number of locusts, a high density swarm covering an area of 1 km<sup>2</sup> potentially would consume between 0.8 to 10 tons vegetation/day. Most species of locust feed mainly on grasses and cereal crops, such as wheat, but they may also consume grapevines [19]. The ecologic consequences of a locust invasion plague are extremely devastating, as locusts feed not only upon leaves, but also upon flowers, fruits, seeds, tree bark, and shrub bark, and - due to their weight - break the trees upon which they settle *en masse* [17].

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As with most plagues, the locust invasion brought distinctive psychological distress upon the Egyptians. A locust swarm can be miles wide, blotting out the sun, and is accompanied by an irritating buzzing sound. In addition to chirping, locusts make a humming sound by rubbing their legs and wings against their body. In November 2004, a moderate locust swarm invaded Israel. An eyewitness gave this account: “It’s a little overwhelming when the sky becomes darkened, you hear a big buzz, and all of a sudden, there’s a shadow and you feel like an airplane is flying above you” [20]. In Yoel (2:2), the Malbim and the Radak described the locust swarm as appearing like clouds and thick fog, blocking the sun’s rays and darkening the day. The phrase “sounding like clanging chariots” (Yoel 2:5) characterized the nerve-wrecking, buzzing sound produced by the locust chirping and wing flapping.

“Pharaoh hastily summoned Moshe and Aaron. ‘I have committed a crime,’ he said, ‘both to

G-d, your L-rd, and to you. Now forgive my offense just this one more time. Pray to G-d, your L-rd. Just take this death away from me!” (Shemos 10:16-17). What was Pharaoh’s rush, if the locusts had already devastated Egypt? Rav Zalman Sorotzkin [21] suggested that Pharaoh was concerned that if the locusts stayed beyond the 3 days of the plague, the female locust would deposit eggs into the soil. Eventually, these eggs would hatch and the offspring would again evoke destruction, albeit, at a later time.

Moshe left Pharaoh’s presence and prayed to *HaShem*. *HaShem* turned the wind around, transforming it into a very strong west

wind. It carried away the locusts and plunged them into the Red Sea. Not a single locust remained within all Egypt's borders" (Shemos 10:18-20). Rav Sorotzkin [21] questioned why a *very strong* wind was needed to carry off the locusts. He suggested that the locusts which invaded Egypt were small and scrawny and, thus, only a wind of moderate strength was required for their flight. However, the locusts that were carried away were fattened, and thus required a *very strong* wind to support this extra weight. Nevo [17] noted that one ton of locusts, consisting of approximately 500,000 locusts and which constitute only a small portion of an average swarm, consume as much food in one day as about 10 elephants, 25 camels, or 2,500 human beings.

A *midrash* described the initial attitude of the Egyptians towards the plague of locusts. "Once the locusts came, the Egyptians rejoiced and said, 'Let us gather them all and fill our barrels with them.' *HaShem* said, 'Wicked people, with the plague that I have brought against you, are you going to rejoice?' Immediately, *HaShem* brought upon them a western wind .... and none were left. What does it mean that none were left? Even those that were pickled with salt and sitting in their pots were blown away" (Midrash Rabba, Shemos 13:7). Rav Sorotzkin [21] postulated that the *very strong* west wind was needed to smash these canning jars and to carry away the pickled locusts. Although today's Jews may not have a specific craving for locusts, there are kosher species of locusts that, apparently, were eaten by Jews. "Every flying teeming creature that walks on four legs - it is an abomination to you. Only this may be you eat from among all the flying teeming creatures that walk on four legs: one that has jumping legs above its legs, with which to spring upon the earth. You may eat these from among them: the *arba* according to its kind ..." (Yayikra 11:20-22). Although the continuous tradition (*mesorah*) to distinguish kosher from non-kosher locusts has been lost from many Jewish communities, it was maintained by those communities originating from North Africa and Yemen and was subsequently recorded by Dr. Zohar Amar, head of the Department of Land of Israel Studies and Archeology, Bar Ilan University [22].

In November, 2004, a huge swarm of desert locust swept across the Sinai Desert and eventually settled in the Arava plains along the Jordan River. Dr. Zohar and his students traveled to the Arava and captured some *arba*. After removing the walking and jumping legs, wings, and head, the *arba* were fried and eaten. The students observed that fried *arba* tasted similar to French fries. However, Dr. Zohar explained that the taste of *arba* was dependent upon the food they consumed for their last meal [23].

### **Darkness: The 9<sup>th</sup> Plague**

Only three sentences in the Torah are allotted to the 9<sup>th</sup>

plague, darkness. "*HaShem* said to Moshe, 'Stretch forth your hand towards the heavens and there will be darkness upon the land of Egypt.' Moshe stretched his hand toward the heavens and there was darkness throughout the land of Egypt for a 3-day period. No man could see his brother nor could anyone rise from his place for a 3-day period; but for all *B'nei Yisrael* there was light in their dwellings" (Shemos 10:21-23).

To enhance the impact of the plague, the darkness commenced at about 9 A.M. after the sun already had arisen. Suddenly, all of Egypt was enveloped by darkness. As the Egyptians worshipped the sun as a god, this plague showed the futility of that belief [5]. According to Rav Miller this plague symbolized the darkness of ignorance in which the Egyptians and the "civilized" world lived. *Chazal* discussed the nature of this darkness, which was not the darkness of a typical night but, rather, it was a *tangible* darkness that could be felt and that did not support combustion, thereby making respiration difficult. Rav Miller suggested that this tangibility was due to heavy soot particulates that blackened the skies and made breathing extremely difficult, causing the death of many Egyptians [8]. The source of these particulates may have been from a volcanic eruption or from a bombardment of meteoric dust [7]. Torah Temimah (10:21) presented a novel approach and suggested that the palpability of the darkness was not due to an atmospheric phenomenon but rather to an ocular pathology, a physical blockage on the cornea, perhaps cataracts. Rav Hirsch [2] explained that the tangibility of darkness referred to the Egyptian reliance on their sense of touch, rather than on their eyesight, to differentiate between objects. Rashi noted that at night, the darkness intensified as compared to its effect during the daylight hours. Accordingly, the alternation of an intensified darkness (*i.e.*, night) with darkness (*i.e.*, day) allowed the Egyptians to calculate the passage of time.

Interestingly, this plague was lethal to those of *B'nei Yisrael* who had neither the intentions nor the desires to leave Egypt, to receive the Torah, and to enter into *Eretz Yisrael*. These Jews died during the plague of darkness. There are various estimates of the number of Jews who died; one thought is that 80% of the Jewish population (Rashi, Shemos 13:18), or 12 million people, died. During the initial three days of this plague the darkness was total in scope, so that the Egyptians were unable to see the Jews burying their dead.

During the next 3 days, the darkness intensified and prevented the Egyptians from movement - those sitting could not stand erect and those standing were unable to sit. Perhaps the Egyptians were paralyzed with fear. Rav Hirsch [2] explained that this plague was the most comprehensive of the plagues, in that



each individual was held or chained to the place he happened to be: fasting, without bathroom facilities, and isolated from others. The 10 plagues are mentioned in Tehillim (Psalm 105), but not in the proper sequence, as their description commences with the 9<sup>th</sup> plague. To explain this, Rav Feuer [16] noted that this plague was the most far-reaching of all the plagues. The preceding eight plagues affected only limited segments of the Egyptian population, whereas the plague of darkness enveloped each individual and every inch of the Egyptian empire. No one had control over himself or of his possessions, thus demonstrating *HaShem's* complete mastery over man and nature.

It was during this second period of paralyzing darkness that the Jews entered into the Egyptian homes, searching for the locations in which the Egyptians had hidden their valuables. Once located, however, these hidden treasures remained untouched. The lack of theft by *B'nei Yisrael* was most impressive to the Egyptians and earned *B'nei Yisrael* a reputation of honesty [19]. Knowledge of the locations of the treasures later enabled the Jews to request those hidden valuables, without the Egyptians denying their existence. Rav Elie Munk [6] noted that the positive impression of the Jews not stealing the hidden treasures was the factor that, at the time of the Jewish departure from Egypt, convinced the Egyptians to willingly give their treasures to *B'nei Yisrael*. This fulfilled *HaShem's* promise to Avraham, that his descendents would leave Egypt “with many riches” (Bereishis 15:14).

Although *B'nei Yisrael* could have escaped from Egypt during this plague, they did not. The Chasam Sofer explained that the Jews kept the promise of Yosef to Pharaoh, namely that the Jews would not leave Egypt without Pharaoh's permission. He further suggested that this oath of loyalty was required annually of all Pharaoh's servants.

The final portion of the Torah's description of the plague of darkness concludes with, “for all *B'nei Yisrael* there was light in their dwellings.” The commentaries extended this idea to explain that the light was not limited to Jewish dwellings but “traveled” with *B'nei Yisrael* and allowed them to discover the Egyptian hidden valuables (Shemos Rabbah 14:2). This idea was further developed in that the Jews had more illumination than usual, *i.e.*, even at night, there was light [5]. Using the terminology of today, *B'nei Yisrael* experienced night vision, or, the ability to see in low light conditions. An enlarged pupil relative to the rest of the eye is favorable for night vision. Soldiers who are issued night vision glasses are provided with atropine-containing eye drops to dilate their eyes [24]. Although *HaShem* did not distribute night vision glasses to *B'nei Yisrael*, causing dilation of their pupils would enhance vision in low illumination.

Rabbi Mordechai Friedman [25] posed an interesting question - if we assume that the severity of the plagues increased as they approached *makkos bechoros* (killing of the first born), what was so terrible about the plague of darkness? On the contrary, according to the above-cited *midrash*, the Jews, rather than the Egyptians, died during this plague. He presented various explanations and the one of most interest centered on psychological warfare. In the later 3 days of the plague, the Egyptians were in a type of paralyzing confinement, unable to move, eat, use bathroom facilities, or defend themselves. In the absence of the ability to see, their other senses became sharpened and the Egyptians keenly heard the Jews prowling through their homes and clearly heard the sounds of animals and other creatures, yet they were paralyzed. The Egyptians realized that the tide had turned in favor of *B'nei Yisrael*. Rav Eliyashiv (cited by Rav Lebel Katz in *Ohel Aryeh*, vol. 2) noted that now the Egyptians called out for assistance from the Jews (*i.e.*, role reversal, the “masters” were subservient to the slaves).

There may be many similarities between the plague of darkness and military torture techniques used to obtain information from prisoners. In describing the plague of darkness the Midrash Tanchuma (Parshas Bo, 4) noted that the Egyptians felt as if they were imprisoned in jail. And, Egyptian prisons, apparently, were darkened (as noted in Bereishis Midrash Rabba (89), Yosef spent two years in *darkness* in prison). Left in the dark and in solitary confinement results in sensory deprivation; this technique was used in Guantanamo Bay as an interrogation strategy for terrorists. Arabs also utilized this mode of punishment on their captives. Brian Keenan spent four years as a hostage in Lebanon, of which 7 or 8 months were in darkness. “The nothingness, that was extremely hard. Because the question in your head is how long am I going to get through the next ten minutes? Or, months later, how am I going to get through the next day? Is there enough left in my head?” He continued, “I remember one occasion waking up and having to squeeze my face and my chest and thinking to myself, ‘Am I still alive?’” Hallucinations are common to those in solitary confinement and in the dark. As noted by psychologist Dr. Robbins, “In the dark room there is nothing to focus on. In the absence of information the human brain carries on working and processing information, even if there is no information to process and after a while it starts to create that information itself.” In a 48-hour experiment in which volunteers agreed to be shut inside a cell in a nuclear bunker, hallucinations were common and included seeing mosquitoes and fighter planes buzzing in the head, seeing little cars, snakes, and zebras, and visualizing a pile of thousands of oyster shells [26].

The 9<sup>th</sup> plague was noted in the Ipuwer Papyrus [13] and in the apocryphal book, The Wisdom of Solomon [27], in which many more sentences are devoted to this plague than the three sentences in *Shemos*. Below are some passages from the Wisdom of Solomon:

*For when lawless people thought to oppress a holy people, they, prisoners of darkness and captives of a long night, lay imprisoned under their roofs, fugitives from the eternal providence.*

*For when they thought to escape from their secret sins under a dark veil of forgetfulness, they were scattered, being terribly astonished and terrified by phantoms.*

*For the cranny that held them did not protect them from fear, but terrifying noises rang out around them, and gloomy phantoms with grim faces appeared.*

*And no force of fire was able to light, nor did the brilliant flames of the stars avail to illuminate that horrible night.*

*But there appeared upon them only a self-kindled flame full of fear, but, terrified when the sight was no longer visible, they supposed worse those they saw.*

The Wisdom of Solomon continues, with many of the descriptions paralleling the experiences of the volunteers who participated in the above-noted 48-hour experiment of solitary confinement.

### Death of the First Born: The 10<sup>th</sup> Plague

*Hashem's* total involvement in orchestrating the simultaneous death of all the firstborn is succinctly stated (Shemos 12:12). “And I will pass through the land of Egypt on this night” - I and

not a ministering angel; “and I will strike every firstborn in the land of Egypt, from man to animal” - I and not a fiery angel; “and against all the gods of Egypt I will execute judgments” - I and not a messenger; “I, *Hashem*” - I and no other (Passover Haggadah). As such, there is little else to add, as this specific plague was executed by *Hashem* alone, without employing the various biological, chemical, and physical forces of nature, which, for the other plagues, functioned as His avenging army.

When this plague was related to Pharaoh, Moshe's wording was: “So said *Hashem*, ‘At approximately midnight I shall go in the midst of Egypt. Every firstborn in the land of Egypt shall die, from the firstborn of Pharaoh who sits on his throne to the firstborn of the slave woman who is behind the millstone and all the firstborn of the animal’” (Shemos 11: 4,5). Rashi noted that the phrase “approximately midnight” was used rather than “at midnight,” as should the Egyptian astrologers err in calculating midnight, they would then accuse Moshe of lying as the plague did not commence exactly at the time foretold by Moshe. Another thought is the phrase “approximately midnight” took into account the different geographically regions in Egypt. Being a rather large country, the exact point of midnight in one region of Egypt slightly differed from that in a more distant region, Later in the *parsha* this plague is restated as a declarative statement, “It was at midnight and *Hashem* struck every firstborn in the land of Egypt, from the firstborn of Pharaoh sitting on this throne to the firstborn of the captive who was in the dungeon, and every firstborn animal” (Shemos 12:29). ■

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## REFERENCES

1. Egypt Climate Information. <http://www.climatetemp.info/egypt/>. (retrieved 2011).
2. Hirsch, S.R. (1989). The Pentateuch, vol. 2, Shemos. Judaica Press, Ltd., Gateshead, England.
3. Wikipedia. Lightning. (retrieved 2011).
4. Deutsch, J. (1998). Let My Nation Go. Feldheim Publ., NY, NY.
5. Kaplan, A. (1978). Me'Am Loez, The Torah Anthology, vol. 3, Exodus. Moznaim Publ. Corp., NY, NY.
6. Munk, E. (1993). The Call of the Torah, vol. 2, Shemos, Mesorah Publ. Ltd., Brooklyn, NY.
7. Miller, A. (1991). A Nation is Born, Shemos. Gross Brothers Printing, Brooklyn, NY.
8. Miller, A. (1992). Narrate to Your Son. Yeshiva Gedolah Bais Yisroel, Brooklyn, NY.
9. Weiss, R. (2007). Noise pollution takes toll on health and happiness. The Washington Post, June 5th.
10. Harper, D. and Stockman, L.M. (2011). SkyEye. Meteor Shower. <http://www.obliquity.com/skyeye/misc/meteor.html> (retrieved, July 3, 2011).
11. Wikipedia. Meteor shower. (retrieved 2011).
12. Kaplan, A. (1981). The Living Torah. Moznaim Publ. Corp., NY, NY.
13. Ohr Samayach. The ten plagues – live from Egypt, <http://ohr.edu/yhiy/article.php/838>. (retrieved 2011).
14. Wikipedia. Ipuwer \_Papyrus. (retrieved 2011).
15. Cohen, A. (2004). Everything you always wanted to know about locusts, HaAretz (Nov. 22<sup>nd</sup>).

16. Feliks, Y., 1988, Plants and Animals of the Mishna, Morial Offset, Co., Brooklyn, NY.
17. Nevo, D. (1996). The desert locust, *Schistocerca gregaria*, and its control in the Land of Israel and the Near East in antiquity, with some reflections on its appearance in Israel and in modern times. *Phytoparasitica* 24:7-32.
18. Feuer, A.C. (1985). Tehillim, vol. 2. Mesorah Publ. Ltd., Brooklyn, NY.
19. Wikipedia. Locusts. (retrieved, 2011).
20. Berman D. (2004). Not all migration to Israel is a good thing. HaAretz (Dec. 5<sup>th</sup>).
21. Sorotzkin, Z. (1993), Insights in the Torah, vol. 2, Shemos, Mesorah Publ., Ltd., Brooklyn, NY.
22. Amar, Z. (2002-2003). The eating of locusts in Jewish tradition after the Talmudic period. *Torah U-Madda J.* 11:186-202.
23. Cohen, A. (2004). Second wave of locusts advance to southern Dead Sea. HaAretz.com (Nov. 21<sup>st</sup>).
24. Wikipedia. Night vision. (retrieved 2011).
25. Friedman, M. (retrieved 2011). What's so bad about the plague of darkness?  
[www.tzemachdovid.org/Vsamachta/Pesach01/darkness.shtml](http://www.tzemachdovid.org/Vsamachta/Pesach01/darkness.shtml)
26. Jones, H. (2008). BBC News, Alone in the dark.  
[http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk\\_news/magazine/7199769.stm](http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/magazine/7199769.stm)
27. Cheon, S. (1997). The Exodus Story in the Wisdom of Solomon. Sheffield Academic Press, Sheffield, England.

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