

GOD'S FIRE

Moses and the Management of Exodus

by

Alfred de Grazia

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To Stephanie Neuman

**"It takes a chaos
within oneself to give
birth to a shooting star."***

*(Nietzsche)

FOREWORD

The Judaic, Christian, and Islamic religions go back to the Exodus from Egypt of the Hebrews under the leadership of Moses. They center upon this event and upon Moses. Ernst Sellin, a distinguished German authority on the Old Testament, once declared, "The ultimate and most important question for the investigation of Israelitic-Judaic religion must inevitably be: 'Who was Moses?'"[1] Despite his own reply and notwithstanding the hundreds of works on Moses that are catalogued by the Library of Congress, the question has remained unanswered.

I have found no book that deals adequately with the psychology of Moses, and therefore have portrayed fully the workings of his mind. No study has properly embraced Moses in his two great capacities as a manager and scientist, and so I have reconstructed these his qualities as well. Furthermore, the Exodus and Wanderings, those operations that Moses directed, are generally misunderstood, both in their particulars as Jewish history and in their representation of what was happening throughout the world in those days.

Part of the 3000-year misunderstanding stems from the strange environment in which Moses lived and worked. The Exodus was not a stroll through the desert by some truant slaves. The Exodus occurred in an extraordinary setting of great atmospheric and physical turbulence, a catastrophic world. Unless we comprehend precisely the natural and social upheavals of those days, we cannot grasp Moses. Nor can we fathom the religion of Moses. I have introduced in every chapter new methods of viewing the environment of the Exodus. Meteorology and electricity are joined to chronology, archaeology and biblical study, and all of these with psychology, sociology and political analysis.

I have some confidence in this multidisciplinary approach, and I hope that others will capture from its results some of the exhilaration that I experienced in its conception and elaboration. The very first chapter tells how a comet passed by and the plagues struck. The second chapter describes the failed negotiations between Moses and the Pharaoh, and the subsequent pursuit and escape. Each subsequent chapter picks up a critical part of the story - to explain it, to add evidence, and to place it naturally, coherently and sympathetically into the general scheme. In the end, the reader will perhaps have derived the same conclusions as I have from the *Old Testament* account of the most human of all experiences, the birth and establishment of a great god.

Alfred de Grazia

Washington Square
New York City
21 June 1983

Notes (Foreword)

1. Ernst Sellin, *Mose und seine Bedeutung für die Israelitisch-Jüdische Religionsgeschichte* (1922).

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CHAPTER ONE

PLAGUES AND COMETS

Disbelief in the *Book of Exodus*, for the modern educated person, begins with the fantastic story of the infant Moses' survival and salvation in the bulrushes of the Nile, advances through Moses' encounter with the Burning Bush whence speaks Yahweh, ascends rapidly with the plagues of Egypt that follow his threats as Yahweh's messenger, and reaches a climax in the parting of the waters to let the Israelites escape and the closing of the waters upon the Egyptians.

Thereafter the incredulous reader can only sigh as one after another lesser miracle occurs - water from tapping a rock with a wand, manna from heaven, tablets engraved by Yahweh, a little Ark with a bench on which Yahweh perches when he pleases, and a tent in which he dwells. Overall is the panorama of the people wandering in the desert, observed closely by this same Yahweh, who calls them his chosen people, despite their giving every indication of not behaving as chosen people should, and indeed not wanting to behave as his chosen ones.

I doubt that we can make sense out of these or other events of the Exodus if we insist upon examining them as separate and distinct bits. If it were only a question of a man being addressed by a bush, we might reach into the mental asylums and locate thousands of hallucinators. And if it were only an earthquake that was shaking down the houses of Egypt, we could assert that hundreds of earthquakes occur annually. Of slave rebellions, there are a great many in history. Of stubborn pharaohs, how very many world leaders are stubborn. And so on, until every event is identified with its own kind, but the kinds do not mesh together.

There is, in every episode of this whole history, a mysterious factor "X", something that is common to all of the behavior and events. Rather than let a realization of this factor "X" dawn upon us gradually, I think that we may identify it now. It is not Yahweh, the God of Moses, at least not conventionally Himself. It is an uncomfortable idea at first, but it lends shape and meaning to all the parts. Let us call it only a hypothesis at the start, a large supposition, leaving it to the reader, as events progress and one's thoughts progress with them, to decide in the end whether the supposition helps pull the pieces of the story together, and furthermore whether it is the probable all-embracing influence that lends a very special character to those days and years.

COMETS AND ANGELS

Beginning with the famous plagues of Egypt, occurring just as Moses confronts the Pharaoh and beginning shortly before the day of the Exodus proper, we search for the common factor, "X". What were these plagues? A legendary account gives us a convenient summary of them.

Thus did God proceed against the Egyptians. First he cut off their water supply by turning their rivers into blood. They refused to let the Israelites go, and He sent the noisy, croaking frogs into their entrails. They refused to let the Israelites go, and He brought lice against them, which pierced their flesh like darts. They refused to let the Israelites go, and He sent barbarian legions against them, mixed hordes of wild beasts [1]. They refused to let the Israelites go, and he brought slaughter upon them, a very grievous pestilence. They refused to let the Israelites go, and He poured out naphtha over them, burning blains. They refused to let the Israelites go, and He caused His projectiles, the hail, to descend upon them. They refused to let the Israelites go, and He placed scaling-ladders against the walls for the locusts, which climbed them like men of war. They refused to let the Israelites go, and He cast them into dungeon darkness. They refused to let the Israelites go, and He slew their magnates, their first born sons [2].

All of the incredible plagues (including related phenomena that go beyond the magic number of ten) would come from a near passage of an awful celestial body; and nothing but the passage of such a large celestial body could cause the incredible plagues.

Many ancient writers known to us, who had something to say of the period of Exodus, mentioned a great sky-connected disturbance of the world. Among them are such well-known figures as Eusebius, Pliny, Plutarch, Ovid, Seneca, Varro, and Augustine [3]. Further, every modern archaeologist and geologist whose investigations can be indisputably fixed in the period have reported serious physical upheavals [4]. I use this insistent form to express the generality of agreement; contemporary egotism, we realize, fears and hates to believe that ancient times might have witnessed natural behavior of a scope and intensity not experienced today.

In 1602, Abraham Rockenbach, a German Professor at Frankfurt University, published a "Treatise on Comets according to a New Method," there offering the following conclusion:

In the year of the world two thousand four hundred and fifty-three (1495 B.C.) - as many trustworthy authors, on the basis of many conjectures, have determined - a comet appeared which Pliny also mentioned in his second book. It was fiery, of irregular circular form, with a wrapped head; it was in the shape of a globe and was of terrible aspect. It is said that King Typhon ruled at that time in Egypt. (This king, assert reliable men, subjugated the kings of Egypt with the help of the giants.)[5] Certain (authorities) assert

that the comet was seen in Syria, Babylonia, India, in the sign of Capricorn, in the form of a disc, at the time when the children of Israel advanced from Egypt toward the Promised Land, led on their way by the pillar of cloud during the day and by the pillar of fire at night [6].

Yahweh, says the Bible, led the people out of Egypt "with his face." [7] The comet joined the people when they began their march and provided their posterity with a familiar image: "And the Lord [Yahweh] went before them by day in a pillar of cloud to lead them along the way, and by night in a pillar of fire to give them light, that they might travel by day and by night; the pillar of cloud by day and the pillar of fire by night did not depart from the people." [8] When not Yahweh, the comet was an angel of Yahweh. The comet's head is the Angel of the Lord, its coma the wings, its tail the trailing gown. A recent compendium of cometary photographs and drawings displays several such images. Reproduced here, as Figure 1, is one of them.



Figure 1. A Comet in Human Form (Click on the picture to get an enlarged view. *Caution: Image files are large.*)

Source: *Atlas of Cometary Forms*, J. Rahe *et al.*, NASA, Washington, D.C., Sp-198 (1969). Isodensitometer tracing of Greenwich photograph of Oct. 3, 1908, 30 min. exposure, Comet Morehouse 1908III.

A star with a rod is a cometary image. So we understand Balaam the Prophet when he says: "A star shall advance from Jacob, and a staff shall rise from Israel" that will destroy Moab, Suthites, Edom and Seir [9]. Commenting upon this verse, B. Gemser explains why the word "staff" or "rod" here should actually be read as "comet." The Hebrew word is *shevet* and for comet is *shavit*. Jacob is Israel, and "father" of the tribes of Israel out of Egypt [10].

A variety of cometary shapes with the names given them, such as "horn-star," "goats," "daggers," "serpents" etc. is offered by Pliny. He reports also "a shining comet (called Zeus' comet) whose silvery tresses glow so brightly that it is scarcely possible to look at it, and which displays within it a shape in the likeness of a man's countenance." [11]

Since Yahweh watched out for them as Israel passed out of Egypt, "on this same night... all the Israelites must keep a vigil for the Lord throughout their generations." [12] There was a physical presence in the sky, else they would have nothing to watch for. With the retirement of the original body, the anniversary merged with and strengthened the rites of spring, for the time was near the Spring equinox.

One more quotation can suffice here to suggest the cometary presence: "By a mighty hand and an outstretched arm, and by great terrors the Lord has snatched your nation from the midst of another. Out of heaven he let you hear his voice... and on Earth he let you see his great fire, and you heard his words out of the midst of the fire." [13]

The Bible dates the Exodus 480 years prior to the beginning of the construction of the Temple to Yahweh at Jerusalem, about 960 B.C., some twelve generations having passed. [14] This provides a date of 1440 B.C. for the Exodus, not too far from Rockenbach's date, allowing for calendarizing discrepancies. Cyril of Alexandria assigns both the great fire of Phaeton and the deluge of Deucalion to the sixty-seventh year of Moses; Kugler regards the idea as plausible. Velikovsky's reconstruction of Egyptian-Judaic chronology, partially supported by Bimson, permits the retention of the Biblical date, and we shall use it in this book. [15]

Whether we are or are not descended from that fraction of humanity whose story is told here or from that larger fraction - called Christian or Moslem - whose story has assimilated this particular story, our lives are spent under the lingering effects of the great comet. Our minds, religious attitudes, social institutions, wars, sex behavior, eating habits and even the sciences are pervaded by its influence. Human memories and consequently human histories have not yet fully recovered from the shocks of the event. We bury, distort, and sublimate the memories in many ways. [16]

The Bible itself is a case in point. There myth is cozy with history. And the combination has been fiercely, obsessively retained, as if a purely historical recollection would be unbearably painful. Although the second of the five *Books of Moses*, the *Exodus*, is the best account that we have of that year, its most ancient lines were written down under stressful circumstances; to these lines, perhaps of Moses himself, a full oral tradition was added in the course of several centuries. The materials were sometimes lost; they were copied, rewritten, amended, translated and retranslated, time and time again.

A similar history befell the other *Books of Moses*. The basic document which we use was given its penultimate form some 2500 years ago and its study today depends largely upon this canonization plus some volumes of legends and commentaries of the Jews, some old writings that are based upon writings no longer extant, and many modern archaeological discoveries in Egypt and the "Lands of the Bible."

Further involved in the study of *Exodus* are the social sciences, such as the anthropology and psychology of religion, the history of science, and the sociology of organization, and even the natural sciences, especially geology, the atmospheric sciences and astronomy. All are usable at various stages of investigation. When the facts are few, and their reference, the *Exodus*, is still only a few pages long, then we must admit of every imaginable intellectual and scientific contrivance to extract from and add meaning to those few facts. Withal, the reader will be astonished when he comes to see how rich and unequivocal are the sources in the Bible itself for the main theses of this work.

Not to be passed over is an obvious fact of a stubborn significant type: the Jews have always claimed the inseparability of catastrophe from the foundation of their religion. Thus when the medieval publicist and commentator Judah Halevi argued the merits of Judaism over Islam and Christianity, he fixed its superiority upon its unique origins in divine revelation amidst catastrophe [17]. Despite their philosophical defense, both of these religions had to remain in effect branches of Judaism because they had to claim a part in Moses and the Exodus.

We return now to the Comet of that winter as it approaches ominously the Earth. It is on a stretched solar orbit, counterclockwise like the Earth, and of similar speed. It is producing a number of effects, although it is months away from its apparent target. When it finally closes in for a near pass at the globe, it gives rise to the famous plagues of Egypt. These effects could occur, since the comet was very large and radiant, so long as it was within a million miles of Earth, and would be heavily experienced on both its approach and recession.

Generality cannot be avoided here. We wish, as Aristotle phrased it once, to be as precise as the facts will allow. Data would be needed on a number of motions, speeds, volumes, densities, and charges in order to calculate the pattern, timing, and effects of the Earth-Comet encounter. Given ever more intensive research and repeated calculations, I think that the scenario could come much closer to the reality of the encounter.

Its mass may have been smaller than the Moon's or even larger than that of planet Venus, as Velikovsky thought. Part of the mass would be contained in the far reaching cometary tail or train. N. Bobromikov ascribes to several modern comets an original mass, taken together before explosion, of the Moon [18]. Astronomers are most reluctant to conjecture a comet of such size or greater, lacking an historical experience, and it is true that, at a close distance or in collision, a very much smaller body would do the same damage.[19]

The comet called by many "Typhon," brought "destructive, diseased and disorderly" changes with "abnormal seasons and

temperatures," wrote Plutarch [20]. We shall have more to say about it in the next chapter.

COSMIC PLAGUES

The fateful encounters between ex-Prince Moses and Pharaoh Thoum took place at the Egyptian capital city, of 'Itj-towy, near the Delta [21]. They occurred amidst cosmic and mundane turmoil. Moses had returned from exile abroad ahead of the events. After dealing with his followers, he felt secure enough of his backing and certain enough of the emergent unsettling natural forces to approach the king of Egypt as the chief spokesman for the Hebrews. Estimates of the period occupied by the plagues and the negotiations between Hebrews and Egyptians range from a few weeks to years. A tradition gives one year for the plagues. Pliny, writing in the first century A.D. reports that the briefest comet was visible seven days, the longest for 180 days (following Seneca).[22] A few weeks may be presumed necessary and sufficient. More would be inconsistent with the phenomena of a cometary encounter; less would not allow time for the goings to and fro, the shocks of experience, the communication of rumors and reports.

Early "Eloist" editors named four plagues: blood, hail, locusts, and darkness [23]. The number of plagues is an abstract of reality, a literary device for the editors of the Bible on the one hand (because they liked decimals) and a scientific abstraction for those who were and are trying to divide the turbulent natural unity into types of effects. The variation in the "number" of plagues is, in itself, an indication of an underlying complex and catastrophic reality.

Philo Judaeus, in his 2000-year-old *Life of Moses*, reaches close to reality in a seemingly naive comment that all four basic elements of the universe - earth, air, fire and water - were involved in the plagues of Exodus [24]. Legend points out that the plagues proceeding from air and fire were entrusted to Moses whereas the others were reserved for God with the solid parts assigned to Aaron [25]. There are ten listed here. To these ten, traditionally denominated as plagues, we may add two logically and causally connected phenomena, the serpent-rod contest between Aaron and the Pharaoh's magicians, which preceded the first plague, and the opening and closing of the sea waters that let the Israelites safely out of Egypt.

Moses had already gained experience with a lively, twisting rod at the instigation of his mentor, Yahweh. This was when he encountered Yahweh at the Burning Bush, of which more will be said later. (Yahweh will often be spoken of as if he existed; it is a convenience of reference to be clarified as the book moves on; care will be taken not to lead the reader astray by creating a special figure, distinct from Moses, who acts independently of Moses or freed from a priestly or editorial formula.)

Moses would not have gained access to the Pharaoh and his advisers if he were not already known and respected and if they had not been uneasy. Moses and Aaron would not have introduced their rod into the conference with Pharaoh unless they were convinced of its superiority. It was perhaps heavily magnetized; it would behave strangely in the presence of metal objects, whether on the robes of persons, or on furnishings, or perhaps unobtrusively carried by Moses and Aaron, who might have borne other magnetized or electrified objects as well [26]. A tendency to draw to one end of itself the rods of the Egyptian scientists, as they were cast down near it, would give rise to the story that it had swallowed them.

Moses was already quite aware of the enhanced electrical excitement of the Earth in anticipation of the comet, and might well have played upon static charges on gilded draperies or clothing to let Aaron's rod cling, and climb and spark. That Moses would have been able to produce a rod and perform such tricks better than the Egyptian scientists has to do with who Moses was. Again, we will defer this matter.

Now came the reddening and poisoning of all the waters. Both should indicate a heavy fall-out of some combination of radioactive red phosphorous, cinnabar, ammonia, sulphur, and ferrous oxides. Since the population was not reported dying in large numbers yet, the fall-out may be presumed to have not been heavily radioactive, except that one must decide whether the radiation disease soon to come was part of this fall, or of a later one.

Radiation came probably with the later plague of dust that caused sores and boils on all exposed animals and people, for this latter is so specific. But meanwhile there were other troubles. There were frogs, then lice or gnats, then beasts or flies. So far as troubles go, these are all of a kind, pests, all, they agitate and multiply and emerge into the human habitat in response to a warming of the earth, and enhanced electrical currents flowing through the earth, and an increase in the food supply occasioned by the death of water animals and organic life generally.

Their great numbers present no problem. An isolated, luminous cloud in a clear sky in Hutchinson, Minn. USA, dropped 50-100 insects of the non-luminous species hemiptera per square foot [27]. A Dutch woman, fleeing with her babies through the woods near her house from the explosions of the volcano Krakatoa, Java, in 1883, found herself covered with leeches when she halted. All kinds of animals were fleeing from above and below the ground [28]. So the dust crawled with vermin and swarms of flies were everywhere, proliferating on the dead fish and frogs. But, as yet, no great number of persons had succumbed to the evil conditions.

The water supply was the worst problem. Unlike fairy tale plots, there was here no neat progression from bad to worse, such as would be concocted to bring increasing pressure upon

the Pharaoh. For a poisoned water supply is worse than a plague of insects and frogs. It stank, of course, from the death of its organic life and a combination of the gases and putrefaction and perhaps the causes of its pollution, sulphur and phosphates.

Daiches thinks that he finds an inconsistency in the Bible between a verse that tells of all the water turning to blood and another that describes the Egyptians as digging round about the river Nile for water to drink [29]. In fact, the contradiction is a confirmation of what is said here: new wells bring in filtered, unreddened water. With invisible radioactivity (which he did not of course consider) a shelf of ground water could be contaminated, but would be unnoticeable at that time and for years afterwards, if at all, there being the vague word "leprosy" to cover the symptoms.

We wonder whether something could be made of the magicians predicting the plague of frogs but not that of lice. (A legend calls this "prediction" to our attention.) There is some ambiguity in Velikovsky's conjectures about vermin, since he wondered whether they might be underground productions or would descend with the train of the comet. If from below ground, the vermin, we guess, would have been predicted; if extra-terrestrial in origin, there would have been no precedent for the prediction.

It has become scientifically permissible recently to suppose plagues to descend from space via dust, comets, or meteorites, and the search for evidence of organic evolution on meteorites is an acceptable scientific issue [30]. I doubt that the comet had to inject the atmosphere with vermin in order to explain them; there have been ample cases of local fall-outs of fast-breeding and erupting insects. An Italian observer of the Neapolitan earthquake of 1805 had much to say of unusual animal behavior, of which I quote a few lines.

Rabbits and moles were seen to leave their holes; birds rose, as if scared, from the places on which they had alighted; and fish left the bottom of the sea and approached the shores, where at some places great numbers of them were taken. Even ants and reptiles abandoned, in clear daylight, their subterranean holes in great disorder, many hours before the shocks were felt. Large flights of locusts were seen creeping though the streets of Naples toward the sea the night before the earthquake. Winged ants took refuge during the darkness in the rooms of the houses [31].

A legend calls "the fourth plague"... "a mixed horde of wild animals, lions, bears, wolves and panthers, and so many birds of prey of different kinds that the light of the sun and the moon was darkened as they circled through the air." [32] In great natural disasters - earthquakes, floods, volcanism - the beasts, both wild and domestic, are driven by their psychological and physiological needs to invade the haunts of humans. If the Bible does not include this, one must conjecture it; it is a logical

event, not exaggerated in the startled eyes of the people experiencing it.



Figure 2. Pestilence, locusts, fire and hail are shown to obdurate pharaoh. then comes the slaughter of the first born (which the Hebrews avoided by marking their door with sheep's blood). Finally the Hebrews are bidden to leave Egypt. (Click on the picture to get an enlarged view. *Caution: Image files are large*)

Source: reproduced with the permission of the trustees of the Pierpont Morgan Library, New York

But perhaps we are leaping ahead of ourselves, for other things happened before the Egyptian earthquake, to wit, electrical fires running along the ground, a plague of boils and sores, and a hail of burning naphtha and meteoritic stones. After these came a plague of locusts (we presume these to be belated arrivals from outside the centers of population, awakened from dormancy by electrical and thermal currents in the ground), then afterwards only came the earthquake.

The plague of boils and sores on flocks and people came in connection with a fall of hot ash, as from a furnace. Moses, it is said, casts a handful of furnace ashes into the air before the Pharaoh to demonstrate his point (reminding one of some of the more popular college instructors of elementary physics and chemistry). Sure enough, shortly after his announcement, the ash fell and plague or infection spread. One wishes the Bible supplied more dates. If the ash were radioactive, within a few days sores would appear. The ashes "produced leprosy upon the skins of the Egyptians, and blains of a peculiar kind, soft within and dry on top." [33] The boils were burning blains and blisters [34]. Centuries later, Solomon reminds Yahweh of "the people... which thou didst bring out of Egypt, from the midst of the iron furnace." [35]

Fine dust was falling, but quick death was contained in the fall of *barad* (the Hebrew word for "meteorites"). This hailstorm not only inflicted a heavy death toll upon people and animals - it fell in heaps - but carried fire with it. Fire can fall with stones when a volcano is vigorously erupting near at hand. Volcanoes

were erupting everywhere but seemingly not near at hand. Fires running on the ground were probably electrical. They were probably running up the taller buildings of the government and of the official class, and, too, the pyramids. People were burned in the palace, even the King's son, according to legend. The indications of a mixed fire and stone downpour are logically associated with a cosmic fall-out from a cometary tail [36]. The fires were of naphtha (hydrocarbons) and simultaneously electrical.

A fire rested in the hailstones as the burning wick swims in the oil of a lamp. The Egyptians were smitten either by the hail or by the fire. In one case as the other their flesh was seared, and the bodies of the many that were slain by the hail were consumed by the fire. The hailstones heaped themselves up like a wall, so that the carcasses of the slain beasts could not be removed [37].

The legend tells how the Pharaoh, in refusing permission to the Israelites to go, following the hailstorm and fire, declared that his god Baal-Zephon would block them, and that truly the Israelites were in desperate straits when they came before the sanctuary of Baal-Zephon [38]. This may have been when they discovered their passage blocked by the rushing tidal waters. Possibly the Pharaoh saw in Baal-Zephon the celestial source of the hail and fire.

Hordes of locusts emerged prematurely from the ground and were blown in from other parts by furious winds, which just as quickly swept them away. "I will bring locusts into your country and they shall cover the face of the lands." Thus speaks Yahweh, implying a foreign terrestrial invasion [39]. But why did the locusts then quickly move on, after what must have been a brief respite and repast? Probably the heavy winds as explained drove them on; but also they might have been impelled by the sense of worse things to come.

The darkness that came next was unearthly, says the legend; it came from hell and it could be felt. The winds blew out the fires or else the density of the dark swallowed up the fires that could be lit. The winds were carrying in the dense clouds of dust from everywhere, obscuring all natural light. Local, and even world-wide obscuration from natural disasters is not unknown in recent times, sometimes with long-lasting effects as with Krakatoa. But this was only the beginning of a dimmed world destined to endure for many years.

The profound darkness lasted for seven days, or perhaps nine. It became worse: people moved about for the first three days. It was still dark, on the seventh (ninth?) day, when the Egyptian army launched its pursuit of the Hebrews, who had been on the road for three days from the morning after the slaughter of the first-born of Egypt by Yahweh [40]. Did this earthshaking event occur in full darkness, then? If so, how could Moses find his way to the Pharaoh's palace for the final permission to leave? I am inclined to think that the great upheaval had come before the full darkness, and that Moses met with the Pharaoh

for the last time amidst the gathering gloom. Then it was that he received permission for the Hebrews to depart with all their worldly possessions.

A strong implication rests in Moses' words to the Pharaoh on being refused as the darkness of the third day continued to grow. Pharaoh says angrily: "...Never see my face again; for in the day you see my face you shall die." Replies Moses: "As you say. I will not see your face again." [41] The next and last meeting in the middle of the night after the passover and smiting of the first-born would have been in even greater darkness, and Moses' face would be obscured.

Many terrible things happened in the gloom. Although the Bible says that "all the people of Israel had light where they dwelt," [42] some of the Hebrews lived in dark zones, according to legend. The great light of the comet did not break through the clouds until the night before they departed. According to legend, "the infliction of darkness served another purpose. Among the Israelites there were many wicked men, who refused to leave Egypt, and god determined to put them out of the way. But that the Egyptians might not say they had succumbed to the plague like themselves, God slew them under cover of the darkness, and in the darkness they were buried by their fellow-Israelites, and the Egyptians knew nothing of what had happened. But the number of these wicked men had been very great, and the children of Israel spared to leave Egypt were but a small fraction of the original Israelitish population." [43]

A legend has the Pharaoh complaining: "Thou didst say yesterday, 'All the first-born in the land of Egypt will die.' but now as many as nine-tenth of the inhabitants have perished." [44]

What are the facts of the first-born, we must ask? Gressmann tried to solve the riddle anthropologically. Yahweh wanted the Hebrews to go out to the desert to sacrifice their first-born to him. The Pharaoh was frustrating this appetite of the god and hence Yahweh turned upon him to kill his first-born. This story, says Gressmann, can be composed from the most ancient sources of the Old Testament [45].

Velikovsky sought to solve the riddle linguistically. Thus, Yahweh decrees that he shall kill the first-born of all of Egypt, from the Pharaoh to the maidservant, not excepting the cattle. Moses passes the word along; Pharaoh again refuses; the event occurs as predicted; the Pharaoh accedes to the departure from Egypt. Velikovsky finds a link between the almost indistinguishable Hebrew words, "first-born" and "well-born," and explains that the latter was intended, and that the earthquake was especially severe on the Egyptian upper classes who lived in stone houses, whereas the Hebrews and others, less smitten, lived in mud or thatch houses. This ignores the fate of the other "first-born" of maids, prisoners, and cattle - "I will smite all the first-born in the land of Egypt both man and beast" [46] - and is doubtful, given the history of earthquakes,

which strike crowded quarters of the poors and let the rich flee to their courtyards.

It may be more logical to give partial exemption to the people of Goshen from all the plagues simply because of the erratic nature of the disasters. Enough truth may rest in this geophysical separation to justify a later tale of a special dispensation for being Hebrew. So far as concerns the first-born, Moses had already proclaimed to the Pharaoh:

Thus says the Lord, Israel is my first-born son, and I say to you, 'Let my son go that he may serve me'; if you refuse to let him go, behold, I will slay your first-born son [47].

The analogy is clear: Israel is first-born son, i.e. the chosen ones, to Yahweh; Egypt is first-born, the chosen ones, to the divine Pharaoh. Let mine go, else I will kill yours. Afterwards, references to first-born are to be interpreted in the light of this analogy.

Further, if the Pharaoh's first-born son happens to have been killed, there will have arisen a general rumor to the effect that the "cream of Egypt was destroyed." Hereditary elites are notoriously self-centered.

The lintels of Hebrew houses were marked with sheep's blood to inform Yahweh not to destroy his people dwelling within, particularly the first-born. Many Arabs continue this custom. Yahweh would "pass over" them. Prof. Beer finds in the word "*passah*" the original meaning "Jumping of the ram." Several images now occur: the original spring sacrifices, the identification of Yahweh with the ram of Egyptian Thoth (Hermes) and thus a clue to Moses' religious origins, the passing over of the god in a cometary form, the awesome destruction of most homes and buildings by violent earthquake, and the passover into the desert from Egypt.

Moses and his Hebrew cohorts knew beforehand much of what happened, and understood the interconnections, and therefore the succession, of many of the events. The Egyptian leaders knew, too, although perhaps not so clearly as Moses, but they had to stay put. They had no "promised land" towards which to flee.

THE DESTRUCTION OF EGYPT

An immense gravitational-electric strain interrupted the Earth's rotation. Earthquakes faulted the ground and fires broke out, mingling with the electrical fires. In many areas most houses were shattered. The pyramids stood the strains well. They were an excellent solution in stone for shock-proof structures. They must have been ablaze with Saint-Elmo's fire with great eyes of the gods alight at their peaks, The eye at the peak of the pyramid is of this age. (Thanks to the Masonic order, it may be found today on the American dollar bill.)

Now the Earth prepared to tilt, in order to decelerate less. A tilt of the axis wreaks less strain upon it than a sudden slowdown of rotation or revolution [48]. An oblique approach of the comet would also have contributed to the choice of the tilt over the abrupt slowdown, since its electrical-gravitational pull was at a sharp angle to the rotation.

Whether it actually tilted is a highly debatable question, to which we address only a few remarks in this book. We say here merely that the strain to tilt must have occurred and had consequences. The question is not beyond the capabilities of geophysics to resolve. A research team would obtain a set of measurements showing the angles of stress of disturbed monuments and geological features; it would postulate several chronological settings; it would calculate a number of possible movements of the crust resulting from combinations of decelerating and tilting forces; and significant statistical correlations would be computed.

Tidal waves swept the coastal areas, and whenever the land was flat, raged inland for many miles. If the Delta area of Goshen was spared some of the disaster until some of the Hebrews had left, it was a miracle, perhaps related to the preventive measures that Moses and the leaders ordered. But Goshen may have been overturned as the Hebrews were crossing the Sea of Passage; a Jewish legend says that the cities they had built for the Pharaoh collapsed.

Here again is what happened, told, now, from the Egyptian viewpoint. It is taken from the papyrus of Ipuwer, an Egyptian writing shortly after the Exodus [49]. Velikovsky located it in its true historical context, and independent sources have fixed the same time for it [50].

*Forsooth, great and small say: I wish I might die....
Would that there might be an end of men, no conception,
no birth!
He who places his brother in the ground is everywhere,
There is not a house where there was not one dead.*

*The children of princes are dashed against the wall;
The children of princes are cast out in the streets.
It is groaning that is throughout the land, mingled with
lamentations.*

*O that the earth would cease from noise, and tumult be no
more!
Years of noise. There is no end to noise
The land turns round as does a potter's wheel.*

*The towns are destroyed. Upper Egypt has become dry.
All is ruin.
The land is not light*

*Gates, columns and walls are consumed by fire
The fire has mounted up on high.*

*Plague is throughout the land. Blood is everywhere.
 The river is blood. Men shrink from tasting and thirst
 after water.
 Hair has fallen out for everybody.
 Women are barren; none can conceive.
 Trees are destroyed. No fruit nor herbs are found.
 Grain has perished on every side.
 Cattle are left to stray.*

*The laws of the judgement-hall are cast forth.
 The storehouse of the king is the common property of
 everyone.
 Behold no craftsmen work.
 A man strikes his brother.
 One uses violence against another.
 If three men journey upon a road, they are found to
 be two men; the greater number slay the less.
 Noble ladies go hungry. She who looked at her face in
 water is possessor of a mirror.
 Serfs become lords of serfs.*

*The Desert is throughout the land
 A foreign tribe from abroad has come to Egypt
 There are none found to stand and protect themselves
 Enemies enter into the temples - weep.
 Woe is me because of the misery of this time.*

We note here, in addition to the other plague evidence of the Bible, complete social breakdown of a type never observable in modern disasters, even at Hiroshima (where outside help came); prolonged chaos, for Ipuwer has experienced weeks and months of it; a foreign desert tribe has taken over the country and its temples; death is everywhere; wobbling of the Earth, possibly the tilting axis slowly coming to rest; fires mounting to the sky, consuming stone; radiation disease (falling hair, women barren); all Upper Egypt affected as well as Lower Egypt. Ipuwer mentions the baffling death of his Pharaoh, but much more detail is supplied, again from the Egyptian side, particularly as to the manner of death of King Thoum. This is from the inscribed stone of el-Arish [51]:

The land was in great affliction... It was great upheaval in the residence... Nobody left the palace during nine days, and during these nine days of upheaval there was such a tempest that neither the men nor the gods could see the faces of their next.... His majesty... went to battle against the companions of Apopi [fierce god of darkness]. His majesty [the culprits] finds on this place called Pi-Kharoti. Now even the majesty of Ra-Harmachis fought with the evil-doers in this pool, the Place of the Whirlpool, the evil-doers prevailed not over his majesty. His majesty leapt into the so-called Place of the Whirlpool.

The el-Arish inscription reports that the King's son led a search party that heard "all that happened... the combats of the King Thourn" and that the prince was badly burned and his

companions killed by a "blast." "The children of Apopi... fell upon Egypt at the fall of darkness. They conquered only to destroy." The prince fled the land in the face of the invading Hyksos. Later "the air cooled off, and the countries dried."

Notes (Chapter 1: Plagues and Comets)

1. Generally this plague is said to be of flies, not of beasts as in this rabbinical tradition. I also here prefer the reading of "lice" to "mosquitoes," as some writers say.
2. Louis Ginzberg, *Legends of the Jews*, Philadelphia, 1909, vol. II, 3423. (Hereafter this is cited as e.g. II G 3423.)
3. These and others are collected and quoted in Velikovsky's *Worlds in Collision* (New York: Doubleday, 1950). Additional sources will be cited below.
4. For example, Claude Schaeffer, *Stratigraphie Comparée et Chronologie de l'Asie Occidentale* (London: Oxford U. Press, 1948), and Dorothy B. Vitaliano, *Legends of the Earth: Their Geologic Origins*, (Indiana University Press, 1973), 179-271. The reader's attention is called also to a book by two British Astronomers, V. Clube and W. Napier, *Cosmic Serpent*, who assign a comet to the Exodus days. See appendix below, section 1.
5. These giants are of certain tribes, well distinguished by Bimson (see below, 1977), of very large stature, who were never numerous or organized well enough to become a major nation, and were finally extinguished; Goliath, fighting with the Philistines and killed by David's slingshot, was one of the last such types.
6. John J. Bimson, "Rockenbach's *De Cometis*' and the Identity of Typhon," *I Society for Interdisciplinary Studies Review* (hereafter cited as *SISR*), 4 (Spring 1977), 9-10. F.H. Baker, 189 *Living Age* (1891) 818-23, gives Halepo (Da Aleppo, Halep) credit in connecting the comet with the Exodus and the destruction of the Egyptian army.
7. *Deut.* 4:37, Unless noted, Biblical citations are to the *Oxford Bible, Revised Standard Version*. Annotated. Martin Buber's transliteration (155) in his *Moses*.
8. *Ex.* 13:1.
9. *Num.* 24:17. To the Biblical scholar, Hyam Maccoby. I owe the suggestion that Suthites may be read "Se'thites" ("wicked people") and the embracing phrase may mean in effect "the whole human race."
10. Quoted by Z. Rix to the author in an unpublished manuscript "King Shepherds or Moloch Sheperds?" 2, 1976; Gemser, "Der Stern aus Jacob," 45 *Zeitsch. für Alttestament. Wissen.* (1925) 301 ff; and also quoting W. Staerk, "Die Jüdisch Gemeinde des neuen Bundes in Damascus," in 27 *Beitr. Zur Förederung christ. Theo.* 65 (1922).
11. *Natural History*, II, ch. XXII, 89-91.

12. *Ex.* 12:42b (Douay tr.)
13. *Deut.* 4:34-6.
14. 1 *Kg* 6:1.
15. *Ages in Chaos* (1952); *Peoples of the Sea* (1977); *Ramses II and His Time* (1978); John J. Bimson, *Reading the Exodus and Conquest*, Sheffield, 1978; Donovan Courville, *The Exodus Problem and Its Ramifications*, Loma Linda: Calif., 1971, 2v.
16. N.-A. Boulanger, *L'Antiquité Devoilée par ses Usages*, 4 v., Amsterdam, 1766, was the first major scientific writer on the social effects of cometary encounters. More recently, see Nahum Ravel, ed. *From past to Prophecy*, Bronfman Centre, Montreal, 1975; Earl Milton, *Velikovsky and Cultural Amnesia*, Lethbridge U. Press, 1978; A. de Grazia, ed., *The Velikovsky Affair*, 3rd ed., London; Sphere Books, 1979.
17. *The Kuzari* (ca 1140 A. D.), intro. by H. Slonimsky, New York: Schocken Books.
18. "Comets," in Lynch, ed., *Astrophysics*, New York: McGraw-Hill, 1951)
19. A.O. Kelly and F. Dacheille, *Target : Earth, The Role of Large Meteors in Earth Science*, Carlsbad, Calif., 1953.
20. "Of Eating of Flesh," in *Morals*, quoted by Velikovsky in *W. in C.*, p. 12; cf. 85ff:
21. Thoum is a name of the Pharaoh of the Exodus as reconstructed by Velikovsky (see *Ages in Chaos*, New York; Doubleday, 1952, p. 40). I do not support the theory that Ramses II or other famed kings, were the Exodus pharaoh. J. Bimson, "Israel in Egypt, "IV *SISR* 2 (1979), 15, identifies the place, not far from Memphis.
22. *Natural History*, II, ch. XXII, 90, Rackham trans., 1938.
23. Hugo Gressmann, *Mose and Seine Zeit*, Göttingen, 1913, pp. 97-108.
24. I. p. 96 He was of the generation of Jesus.
25. II G 341.
26. The royal courts and public were excited by the revival of electricity at the hands of early eighteenth century European and American scientists. One experimenter (Wall) fashioned a kind of cane of amber, which could collect and hold charges, would give cracking sounds and "infinite flashes of light," and puff and explode. It would attract to itself smoke and then give it off "like a small cloud."(Joseph Priestley, I *History and*

Present State of Electricity, with Original Experiments, London, 1767, 12-4.)

27. John Zeleny, "Rumbling Clouds and Luminous Clouds," *75 Science*, (15 Jan. 1932), 80-1.

28. Rupert Furneaux, *Krakatoa*, Englewood Cliffs: Prentice Hall, 1964, 69,74.

29. David Daiches, *Moses*, New York; Praeger, 1975, 60; *Ex.* 14:24.

30. Fred Hoyle and Chandra Wickramasinghe, "Does Epidemic Disease come from Space?" *New Scientist*, Nov. 11, 1977.

31. H.V. Gill, 63 *Nineteenth Century* (Jan. 1908), 144-150, in W. Corliss, comp., *Earthquake Phenomena*, G2-151 (GOE-030).

32. II G 352-3. Significant, in view of our later discussion of the origins of the Israelites, is the added statement that the plague of beasts came "as a punishment for desiring to force the seed of Abraham to amalgamate with the other nations." This may refer to a considerable assimilation of the Hebrew, Egyptian, and other peoples during the sojourn in Egypt.

33. II G. 354.

34. II G 354. The air-exploding Tunguska meteor of 1908, apart from knocking down some eighty million trees, radiated the surviving trees, caused vegetables to increase in size, and induced mysterious scabs among the reindeer of the region in that year. (Vera Rich, "The 70-Year-Old Mystery of Siberia's Big Bang," *274 Nature* (1978), 207).

35. I *Kings* 8:51, as derived from the pen of the second Deuteronomist again much later.

36. I. Donnelly, *Ragnarök*, New York, Appleton, 1883, ch. 2.

37. II G 356.

38. II G 358.

39. *Ex.* 10:4.

40. II G 359.

41. *Ex.* 10:28-29.

42. *Ex.* 10:23.

43. II G 345; see also 14.

44. II G 369.

45. *Mose und Seine Zeit*, 103.
46. *Ex.* 12:12.
47. *Ex.* 4:22ff.
48. I. Michelson, IV *Pensée* n°2 (1974) 20, 18, estimates a force of 10^{24} ergs is required for a 180° (North to South) reversal of the geographical poles; and to bring the Earth to a stop 10^{36} , a trillion times more. We are speaking of incomparably smaller changes in rotational velocity. More recently, Warlow has shown that "to turn the Earth upside-down, with all the attendant havoc such an action can produce,... a mere three-hundreth of the Earth's rotational energy will suffice - and that is only borrowed for half a day." "Geomagnetic reversals?" *J. Physics*, Oct. 1978 repr. in III. *S.I.S.R.* 4 (1979); cf. IV *S.I.S.R.* 2-3 (1979-1980) 8ff.
49. *The Admonitions of an Egyptian Sage from a Hieratic Papyrus in Leiden*, Alan H. Gardiner, trans., Leipzig, 1909; Velikovsky, *W. in C.*, p. 18-24; L. Greenberg, "The Papyrus Ipuwer," III *Pensée* (Winter 1973), p.36-7; anon., "A Concordance of Disaster," I *Kronos* 2 (1975), 16-22.
50. J. Van Seters, 50 *J. Egypt Arch.* (1964), 13; W.F. Albright, 179 *Bull. Amer. Sch. Orient. Res.* (1965), 41-2. Malcolm Lowery, "Dating the 'Admonitions': Advance Report" II *S.I.S.R.* 3 (1977-8), 54-7, gives the most useful lines of Ipuwer's Lament, and affirms that "the *Admonitions* offer us an eye-witness report of the events at the end of the M. K." (57).
51. See Velikovsky, *A. in C.*, 39-45.

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