



# The Overthrow of the Cities of the Plain

The Book of Genesis portrays the age of the patriarchs as a time of great upheavals in nature in which the geology of the Jordan Valley underwent some drastic changes. The focus of these events was in the place now occupied by the Dead Sea. The Dead Sea, according to the Genesis account, was not yet in existence in the days of Abraham. In its place there was a fertile plain, known as the plain of Sittim, with five populous cities: Sodom, Gomorrah, Admah, Zeboiim, and Zoar. When Lot arrived in the region he “lifted up his eyes, and beheld all the plain of Jordan, that it was well-watered everywhere . . . even as the garden of the Lord, like the land of Egypt.” [\(1\)](#)

The nineteenth chapter of the Book of Genesis tells of a catastrophe in which these cities were overwhelmed, overturned, and swallowed by the earth:

The sun was risen upon the earth when . . . the Lord rained upon Sodom and upon Gomorrah brimstone and fire from the Lord out of heaven; And he overthrew those cities, and all the plain, and all the inhabitants of the cities, and that which grew upon the ground. . . .

And Abraham got up early in the morning to the place where he stood before the Lord; And he looked toward Sodom and Gomorrah, and toward all the land of the plain, and beheld, and, lo, the smoke of the country went up as the smoke of a furnace. [\(2\)](#)

The description of this upheaval has always aroused wonder: “There is clearly something unnatural or extraordinary that is recorded,” one commentator wrote. [\(3\)](#)

The great rift of the Jordan and the Dead Sea bear witness to a tremendous upheaval. “With the end of the Tertiary period, in an event of extreme violence . . . the entire Syrian land, from its south end to its north end, was torn apart and the ground in between sank into the depths.” So wrote Professor M. Blanckenhorn, the explorer of the region of the Dead Sea. [\(4\)](#) In his later work he advanced the age of the rift to the pluvial, or the beginning of the first glacial age. The origin of the Dead Sea occurred “in a great mountain movement, with collapse and dislocation, that took place at the beginning of the pluvial, in the first glacial period. . . . In these titanic events conditions were created for the existence of an inner sea.” [\(5\)](#)

A period of dryness followed the first glacial, or pluvial period. In a new pluvial period, the second glacial epoch, the lake reached its greatest dimensions: the Dead Sea spread to the northern side of the present Sea of Galilee, engulfing it together with the Jordan Valley between. At the time, as fossil snails show, the water was not yet saline.

The rift in which the Lake of Galilee, the Jordan, and the Dead Sea lie is the deepest depression on any continent. The surface of the Dead Sea is close to 400 meters below the level of the Mediterranean, and its deepest bottom is some 320 meters lower still. The shore falls steeply from the

Judean mountains on the west; on the eastern side of the rift rise the Moabite mountains. The walls of the chasm show sharp broken strata that remained horizontal, which proves that the breaking down was instantaneous.<sup>(6)</sup> The force which caused this slide movement must have been stupendous. The ground of the rift around the Dead Sea is covered with coagulated lava masses, taking the form of an immense herd of giant elephants with rough skin. These lava eruptions from fissures are ascribed to the second interglacial period.<sup>(7)</sup> To the south end of the Dead Sea towers a big cliff of salt called Jebel Usdum (Mount of Sodom). “It is absolutely impossible that the salt sediment of a sea should precipitate in such a form.”<sup>(8)</sup> “Only the rupture of the ground could create this site, singular in the entire world.”<sup>(9)</sup>

The destruction of Sodom and Gomorrah took place in historical times, according to my scheme in a catastrophe which caused also the end of the Old Kingdom in Egypt. The geologists refer the upheaval which tore Syria in two to the end of the Tertiary period—long before human history began.

Now the question is legitimate: how old is the Dead Sea?

## References

1. Genesis 13:10. Tacitus wrote that the plain was “fruitful and supported great and populous cities.” (*Histories* V. 7). According to Strabo (*Geography* XVI. 2. 44) there were “thirteen inhabited cities in that region of which Sodom was the metropolis.”
2. Genesis 19: 23-25, 27-28.
3. J. Penrose Harland, “Sodom and Gomorrah,” *The Biblical Archaeologist Reader* (New York, 1961), p. 61.
4. M. Blanckenhorn, “Entstehung und Geschichte des Todten Meeres,” *Zeitschrift des Deutschen Palaestina-Vereins*, 19 (1896), p. 16.
5. Idem, *Naturwissenschaftliche Studien am Todten Meer und im tal* (Berlin, 1912); cf. R. Freund *et al.*, “The Shear along the Dead Sea Rift,” *Philosophical Transactions of the Royal Society of London, A*, Vol. 267 (1970), pp. 107-130.
6. Blanckenhorn, “Entstehung und Geschichte des Todten Meeres,” p. 26.
7. *Ibid.*, pp. 41-42.
8. *Ibid.*, p. 34.
9. *Ibid.*, p. 35.





# The Age of the Dead Sea

There is a way of calculating the age of the Dead Sea. This interior lake contains concentrated solutions of salts. These salts flow into the sea with the waters of its tributaries. Thermal springs bring salt to the Sea of Galilee, and the Jordan carries them to the Dead Sea, which has no outlet. From the surface of the Dead Sea, in the deep hot rift, the water evaporates, leaving the salts behind. By calculating the amount of salts in the sea and the amount that reaches it annually by way of the Jordan and other streams, as well as from thermal springs on its shores, the approximate age of the Dead Sea can be determined. Such an attempt was partially made. The magnesium salts in the Jordan served as a basis for the calculation. It was reckoned that the present annual rate of influx of magnesium in the water of the Jordan alone, when related to the concentration of magnesium in the Dead Sea, should give a figure of approximately 50,000 years as the age of the sea.<sup>(1)</sup> The author of this estimate admitted that even this figure is probably too high; the salinity of the Jordan must have decreased with time, for the thermal sources carry more salt when they are young and their temperature is high.

In the above calculation, it was estimated that the Jordan carries six million tons of water daily to the Dead Sea and that it deposits 181 million tons of magnesium annually. However, on an average day more than double that amount evaporates from the Dead Sea,<sup>(2)</sup> and its surface does not fall, other sources must be making up the difference.

The rivers Zerka (Callirhoe) and Arnon, which flow into the sea from the east, carry salt solutions from many springs. The shores of the Dead Sea abound in highly concentrated thermal springs which contain rich amounts of magnesium. These sources flow directly into the sea, bringing a richer influx of magnesium than the Jordan.<sup>(3)</sup> In addition there are, on the shores of the Dead Sea, abundant vestiges of thermal springs with rich sediments of salts that are inactive at present.<sup>(4)</sup> It is highly probable, too, that there are submarine sources in the Dead Sea which may provide magnesium, but they are indeterminable.<sup>(5)</sup>

When these factors are taken into consideration the age of the Dead Sea, computed on the basis of its magnesium content, must be drastically reduced.

A computation that takes, as its basis, the amount of sodium in the Jordan points to a recent date for the origin of the Dead Sea. The proportion of sodium to magnesium in the water of the Jordan is about 4:1; in the Dead Sea it is 1:2.<sup>(6)</sup> If the Jordan were the only source of the sodium for the Dead Sea the age of the Dead Sea would be only about 6,000 years. But the thermal sources on the western, eastern, and southern shores contain sodium too; so may the submarine sources, which cannot be evaluated. It is likely, therefore, that the sea has existed for only about four thousand years. When again the fact is taken into account that the thermal sources are usually more concentrated when they first break out and when they are at a higher temperature, it may well be asked why the age of this sea should not be reduced still more. It is probable that deeper levels of water have a greater salt concentration.<sup>(7)</sup>

Fifty thousand years as the age of the Dead Sea was an unexpectedly low estimate: the rift in which the Dead Sea is situated is considered to be the result of a catastrophe at the beginning of the first glacial period.<sup>(8)</sup> Now a simple reckoning shows that the saline sea with the Jordan has not existed longer than five thousand years.

## References

1. W. Irwin, "The Salts of the Dead Sea and River Jordan," *Geographical Journal* 61 (London, 1923), p. 434. [Yaacov K. Benter's 1961 publication arrived at a figure close to 12,000 years. See *Scientific American* Oct. 1983, p. 103.]
2. *Ibid.*, pp. 435-436; [cf. J. Neumann, "Tentative Energy and Water Balances for the Dead Sea," *Bulletin of the Research Council of Israel*, G, Vol. VII, nos 2-3 (1958); cf. also H. Haude, "Ueber Klimatische und menschliche Einwirkungen auf den Wasseraushalt des Toten Meeres in seiner Vergangenheit," *Zeitschrift des Deutschen Palaestina-Vereins*, 88 (1972), pp. 105-139.]
3. Blanckenhorn, "Entstehung und Geschichte des Todten Meeres," p. 29; cf. L. Lartet, *L'exploration geologique de la Mer Morte* (1874), p. 297.
4. R. Sachsse, "Beitraege zur chemischen Kenntniss der Mineralien, Gesteine und Gewaesser Palaestinas," *Zeitschrift des Deutschen Palaestina-Vereins*, 20 (1897), pp. 25ff., esp. p. 33; cf. H. St. J. Philby, "The Dead Sea to 'Aqaba," *The Geographical Journal*, LXVI (1925).
5. Irwin, "The Salts of the Dead Sea," *op. cit.*, p. 438.
6. *Ibid.*, p. 434. Cf. H. Boyko, *Salinity and Aridity* (The Hague, 1966), p. 15.
7. The figures for magnesium according to Terreil, quoted by Irwin (p. 431), are: At the surface of the sea, at the north shore, magnesium constitutes 13.20 percent of solid salt; 120 meters below the surface, five miles east of Kasel Fesaka, magnesium amounts to 16.80 percent of the solid residue; and 300 meters deep at the same point, 15.99 percent. From the account of Tacitus (*Histories* V. 6) it would appear that the Dead Sea was already saturated with salts nineteen centuries ago.
8. Blanckenhorn, *Naturwissenschaftliche Studien am Todten Meer*, p. 115.





# The Great Rift and the Jordan

The story of the violent changes that occurred in the Jordan Valley, the memory of which is connected with the time of the patriarchs and in which Sodom and Gomorrah were overturned, does not mention that the Valley of Sittim, where the cities were located, became an inner sea. Sulphur and brimstone fell from heaven, one of the best cultivated areas was overturned, fire from beneath and fire from above accomplished the desolation—all this is described; but not the appearance of a sea. However, when the Israelites under Moses and Joshua reached the area in their flight from Egypt, they found the lake there.<sup>(1)</sup> It seems to have appeared after a catastrophe later than the one that destroyed Sodom and Gomorrah.

But if there was no Dead Sea before the time of the Exodus, whither did the Jordan flow, assuming it was already in existence? The Jordan might not have existed at all, or it could have flowed into the open sea, the Mediterranean. It probably did not flow along the Rift over the Arabah into the Aqaba Gulf of the Red Sea, as no traces of marine life are found at the height of the watershed of Arabah. The barrier between the Dead Sea and the Aqaba Gulf is about 500 meters high. The watershed between the Jordan River and the Kishon River which flows into the Mediterranean, at Mount Gilboa, is 500 meters above the ocean level. The topographical shape of the region of the Beth Shan Valley, stretching from the Jordan towards the Esdraelon Valley, makes the flow of the Jordan into the Mediterranean a far more acceptable conjecture than a presumed flow of the Jordan over the slopes of the mountain of Hor into the Red Sea. Of course, it can be regarded as certain that the geography of the environs of the Red Sea and of the continents in general was quite different before and after the catastrophe that resulted in the formation of the Dead Sea.

The Great Rift, which begins in Syria between the Lebanon and Anti-Lebanon, runs along the Jordan Valley, the Dead Sea, the Arabah, the Aqaba gulf, the Red Sea, and continues through the continent of Africa as far as Zimbabwe, is generally regarded as the product of a grandiose revolution in the shell of the Earth: for many thousands of kilometers the Great Rift runs from Asia to Africa.

Prehistoric man witnessed the latest phases of widespread tectonic movements which convulsed East Africa and provoked great subsidences (of as much as 1500 feet or more) in the early Quarternary strata, whereby was occasioned the discharge of lava and erupted scoriae, modifying notably the courses of the rivers and the circumstances in which the lakes rose or fell in level, and even changing the outlines of these bodies of water.<sup>(2)</sup>

Changes in the watercourses and lakes took place along the entire length of the Rift. The deepest place in the Rift on land is the valley of the Jordan and the Dead Sea. It appears that the catastrophe which originated the Dead Sea, caused also the origin of the Great Rift.

Beyond the Red Sea, which stretches for several hundred kilometers and has not a single affluent river, the aquatic life of the African lakes and rivers belongs to the so-called Ethiopian zoogeographical region. According to Annandale “the explanation of the Ethiopian affinity of the fish fauna of the Jordan is that the Jordan formed at one time merely part of

a river system that ran down the Great Rift Valley. The Jordan was one branch of this huge river system, the chain of lakes in East Africa represents the other; and together they opened into the Indian Ocean.” (3)

Whatever the structural changes of the earth in the catastrophes before that which I describe here, there must have been some time when the Jordan streamed into the valley of Sittim (the name of the plain before the Dead Sea originated) and continued into the Mediterranean, most probably through the Jezreel Valley.

Legendary reminiscences from the patriarchal age indicate that the Jordan existed before the Dead Sea came into being. (4) It appears that the coming out of Paddan-aram to Canaan required the passage of a river. Today the way from Palestine to the north does not require the crossing of water. But if the Jordan did flow through the Esdraelon Valley into the Mediterranean, it had to flow in a direction opposite to the one in which it flows today.

Does there exist any reminiscence about the Jordan changing the direction of its flow?

It is not the story in the book of Joshua about the Jordan halting its flow—there it is told that the water was stopped at Adama, north of Jericho. (5) This indicates that the flow of the Jordan was already from north to south, as today. The existence of the Dead Sea is also mentioned at the time the Israelites approached Canaan, but it is described as recent: it is called “the sea of the plain.” (6)

The blocking of the Jordan River by falling slices of the banks happened a number of times. (7) The stoppage referred to in the book of Joshua is described as a temporary blocking of the Jordan River in a time of frequent earthquakes, and not as a reversal of the flow.

But there are, in Scripture, references to the reversal of the flow of the Jordan:

When Israel went out of Egypt. . . The sea saw and fled:  
Jordan was driven back. The mountains skipped like rams, the  
little hills like lambs. What ailed thee, o thou sea, that thou  
fleddest? thou Jordan that thou was driven back? Tremble,  
thou earth, at the presence of the Lord . . . Which turned the  
rock into a standing water, the flint into a fountain of waters. (8)

Here the reversal of the flow of the Jordan is associated in time not only with the Exodus and the catastrophe of the Sea of Passage, but also with the appearance of a new inner sea (“standing water”).

A river that changed the direction of its flow must have been regarded as a very remarkable phenomenon.

An inscription of Thutmose I reads: “Frontier northern, as far as that inverted water which goeth down in going up.” (9) In order to explain this passage it was supposed that the Egyptians could not imagine that a river flows otherwise than from south to north, as does the Nile, and they wondered at a river flowing in another direction. The Euphrates flows from the north-west to the south-east; the Orontes north to south for part of its course, afterwards turning west and emptying into the Mediterranean. The explanation is obviously inadequate. There are many rivers in the world and they flow in all directions. The river that reversed its direction is the Jordan.

Prior to the Exodus, the Jordan Valley was on a higher level than the Mediterranean Sea. With the rupture of the tectonic structure along the

river and the dropping of the Dead Sea chasm, many brooks in southern Palestine which had been flowing to the south must have changed their direction and started to flow towards Palestine, emptying into the southern shore of the Dead Sea. This occurrence served as a symbolic picture for the dispersed Children of Israel, who also will return to their homeland: “Turn again our captivity as the streams in the south.” [\(10\)](#)

The plain of Siddim became a sea. When Israel “wandered into the wilderness in a solitary way [the Lord turned] rivers into the wilderness, and the watersprings into dry ground; and fruitful land into barrenness; [but elsewhere he turned] the wilderness into standing water, and the dry ground into watersprings.” [\(11\)](#)

The opening of the Great Rift, or its further expansion, accompanied by the overturning of the plain and the origin of the Dead Sea, was a catastrophe that ended an era. In my understanding the end of the Early Bronze Age or the Old Kingdom in Egypt coincided with these events.

## References

1. Joshua 3:16; Numbers 34:12; Deuteronomy 3:17.
2. H. Alimen, *The Prehistory of East Africa* (London, 1957), p. 194.
3. See R. Washbourn, “The Percy Sladen Expedition to Lake Huleh, 1935,” *Palestine Exploration Fund, Quarterly Statements*, (1936), p. 209.
4. Genesis 13:10, 11; cf. Genesis 14:3.
5. Joshua 3:16.
6. Joshua 12:3.
7. J. Garstang, *The Foundations of Bible History* (1931), p. 137; cf. *Worlds in Collision*, section “Jericho,” and my article “Jericho” in *KRONOS* II:4 (1977), pp. 64-69.
8. Psalm 114.
9. Breasted, *Ancient Records of Egypt*, Vol. III, par. 73.
10. Psalm 126:4.
11. Psalm 104:4, 33-35.





# The End of the Early Bronze Age

The Old Kingdom in Egypt, the period when the pyramids were built, a great and splendid age, came to its end in a natural disaster. “At the conclusion of the Sixth Dynasty . . . Egypt is suddenly blotted out from our sight as if some great catastrophe had overwhelmed it.”<sup>(1)</sup> The second city of Troy came to an end at the same time the Old Kingdom of Egypt fell; it was destroyed in a violent paroxysm of nature. The Early Bronze Age was simultaneously terminated in all the countries of the ancient East—a vast catastrophe spread ruin from Troy to the Valley of the Nile. This fact has been extensively documented by Claude F. A. Schaeffer, professor at College de France, excavator of Ras Shamra (Ugarit).

Schaeffer observed at Ras Shamra on the Syrian coast clear signs of great destruction that pointed to violent earthquakes and tidal waves, and other signs of a natural disaster. Among the greatest of these took place at the end of the Old Kingdom in Egypt. At the occasion of his visit to Troy, then under excavation by Carl Blegen, he became aware that Troy, too, had been repeatedly destroyed by natural catastrophes at the same times when Ras Shamra was destroyed. The distance from the Dardanelles near which the mound of Troy lies to Ras Shamra in Syria is about 600 miles on a straight line. In modern annals of seismology no earthquake is known to have occurred covering an area of such an extent. He then compared the findings of these two places with signs of earthquakes in numerous other localities of the ancient East. After painstaking work he came to the conclusion that more than once in historical times the entire region had been shaken by prodigious earthquakes. As to the destruction that ended the Early Bronze Age, Schaeffer wrote:

There is not for us the slightest doubt that the conflagration of Troy II corresponds to the catastrophe that made an end to the habitations of the Early Bronze Age of Alaca Huyuk, of Alisar, of Tarsus, of Tepe Hissar [in Asia Minor], and to the catastrophe that burned ancient Ugarit (II) in Syria, the city of Byblos that flourished under the Old Kingdom of Egypt, the contemporaneous cities of Palestine, and that was among the causes that terminated the Old Kingdom of Egypt.<sup>(2)</sup>

In the same catastrophe were destroyed the civilizations of Mesopotamia and Cyprus. What caused “the disappearance of so many cities and the upheaval of an entire civilization” ?<sup>(3)</sup> “It was an all-encompassing catastrophe. Ethnic migrations were, no doubt, the consequence of the manifestation of nature. The initial and real causes must be looked for in some cataclysm over which man had no control.”<sup>(4)</sup> Everywhere it was simultaneous and sudden.

The shortcoming in Schaeffer’s work was in not making the logical deduction that if catastrophes of such dimensions took place in historical times, there must be references to them in ancient literary sources. If a cataclysm terminated the Early Bronze Age, decimated the population, but left also survivors, then some memory of the events must have also found its way to be preserved in writing—if not by survivors, turned to vagrancy and having to take care for the first necessities of life, then by the descendants of the survivors.



In my scheme the end of the Early Bronze Age or Old Kingdom in Egypt is the time of the momentous events connected with the story of the patriarch Abraham, and described in the Book of Genesis as the overturning of the plain.<sup>(5)</sup> The cause of the catastrophe could not have been entirely unknown to the ancients. We must therefore become attentive also to other traditions connected with these events.

## References

1. G. A. Wainwright, *The Journal of Egyptian Archaeology* 16 (1930), p. 43.
2. Claude F. A. Schaeffer, *Stratigraphie comparee et chronologie de l'Asie Occidentale* (IIIe et IIe millennaires) (Oxford University Press, 1948), p. 225.
3. R. de Vaux, "Palestine in the Early Bronze Age," *The Cambridge Ancient History*, Third ed., vol. I, pt. 2 (1971), ch. xv, p. 236. [According to J. Mellaart ("The Catastrophe at the End of the Early Bronze Age 2 Period," *The Cambridge Ancient History* third ed. [1971], Vol. I, pt. 2, p. 406) in the period after the catastrophe the number of settlements "is reduced to a quarter of the number in the previous period." Jacques Courtois, reporting the results of a survey in the valley of the Orontes, writes of the "extreme density of habitation of the plain in the Bronze Age, and particularly in the Early Bronze Age." (*Syria*, 50 [1973], p. 99). In eastern Arabia "a sharp downturn in settlements and activity becomes apparent" after ca. 2000 B.C. (Michael Rice, "The States of Archaeology in Eastern Arabia and the Persian Gulf," *Asian Affairs*, 64 [1977], p. 143). According to Kathleen Kenyon, "The final end of the Early Bronze Age civilization came with catastrophic completeness . . . Jericho . . . was probably completely destroyed. . . . Every town in Palestine that has so far been investigated shows the same break. . . . All traces of the Early Bronze Age civilization disappeared." (*Archaeology in the Holy Land* [London, 1960], p. 134). According to Ernest Wright, "one of the most striking facts about the Early Bronze civilization is its destruction, one so violent that scarcely a vestige of it survived. We do not know when the event took place; we only know that there is not an Early Bronze Age city excavated or explored in all Palestine which does not have a gap in its occupation between Early Bronze Age III and the Middle Bronze Age. To date this gap, we know that it must be approximately contemporary with a similar period in Egypt called the 'First Intermediate Period' between dynasties VI and XI (ca. 22nd and 21st centuries B.C.)." ("The Archaeology of Palestine" in *The Bible and the Ancient Near East, Essays in Honor of William Foxwell Albright* [1961], p. 103).

The destruction can be traced also in Greece. "The destruction of the Early Helladic II town at Lerna in the eastern Peloponnese" is an example of "the widespread and violent destruction that occurred ca. 2300 B.C. in the Aegean and East Mediterranean" (Marija Gimbutas, "The Destruction of the Aegean and East Mediterranean Urban Civilization around 2300 B.C.," *Bronze Age Migrations in the Aegean*, ed. by R. A. Crossland and Ann Birchall [London, 1973], pp. 129f.) For Lerna, see also J. Caskey, "The Early Helladic Period in the Argolid," *Hesperia* 29 (1960), pp. 289-290. "The burning of the House of Tiles . . . was the end of an era at Lerna." The settlement "came to a violent end." Not only Lerna, but also "the tiled buildings at Tiryns and Asine were destroyed by fire."

It is quite probable that the end of the Third Dynasty of Ur occurred at the same time. Thorkild Jacobsen wonders about "the reasons for

the dire catastrophes that befell the city of Ur in the reign of Ibbi-Suen, the sudden collapse of its great empire, and the later utter destruction of the city itself at the hands of barbarian invaders. . . . How an empire like that of the Third Dynasty of Ur . . . could so quickly collapse is really quite puzzling.” (“The Reign of Ibbi-Suen,” *The Journal of Cuneiform Studies* 7 (1953), p. 36. Although Jacobsen refers to the text known as “Lamentation over the Destruction of Ur,” he does not treat it seriously. Yet this poem provides specific information about the causes of the disaster. It speaks of a “storm’s cyclone-like destruction” (99), of a “storm that annihilates the land” (178), “in front of the storm fires burned; the people groan” (188). It tells of the sun being obscured: “In the land the bright sun rose not, like the evening star it shone” (191). It describes earthquakes that shook the land: “the destructive storm makes the land tremble and quake” (199). “In all the streets, where they were wont to promenade, dead bodies were lying about” (217). “Mothers and fathers who did not leave their houses were overcome by fire; the young lying on their mothers’ laps like fish were carried off by the waters” (228-229). The city, prostrated by the storm “which overwhelmed the living creatures of heaven and earth,” fell prey to hostile tribes and was looted. See S. N. Kramer, “Lamentation over the Destruction of Ur,” *Ancient Near Eastern Texts Relating to the Old Testament* (Princeton, 1950). Another lament, *Oh, Angry Sea*, transl. by R. Kutscher (Yale University Press, 1975), tells of the destruction of Ur, Larsa, Nippur, Sippar, Babylon and Isin by inundations sent by Enlil. I consider Enlil to be Jupiter.]

4. Schaeffer, *Stratigraphie comparee*, p. 537. In Alaca Huyuk there are unequivocal signs that an earthquake was responsible for the destruction (pp. 296f.). Cf. B. Bell, “The Dark Ages in Ancient History,” *American Journal of Archaeology* 75 (1971).
5. [The archaeological evidence uncovered in recent years strongly supports the conclusion that the cities of the plain flourished during the Early Bronze Age and that their destruction took place at the end of this period, more specifically at the end of EB III. See H. Shanks, “Have Sodom and Gomorrah Been Found?” *Biblical Archaeology Review* VI:5 (Sept./Oct. 1980), p. 28. Cf. D. Cardona, “Jupiter—God of Abraham (Part III),” *KRONOS* Vol. VIII.1 (1982), pp. 69ff.]





# Zedek

The time of the patriarch Abraham witnessed unusual behavior by the planet Jupiter. The fact that Jupiter displayed a burst of activity exactly in the time of Abraham must not appear a coincidence: it was in the times of great global catastrophes, when the world was threatened with destruction, that religious reformers gained prominence and contemporaries looked to a divine man for guidance.<sup>(1)</sup>

Zedek was the name of Jupiter, and we read that in the days of Abraham the planet underwent some visible changes. Rabbinical sources relate that when Abraham was on an expedition against Cherdlaomer, king of Elam, and his allied kings—who had captured and despoiled Sodom, and taken Abraham’s nephew Lot into captivity—the star Zedek illuminated the night, thereby ensuring the expedition’s success.<sup>(2)</sup>

“When he returned from his victory over Cherdlaomer and the kings who were allied with him,” the book of Genesis relates, “the king of Sodom came out to greet him. And Melchizedek, king of Salem, brought out bread and wine; he was priest of the Most High.”<sup>(3)</sup> Abraham ceded to Melchizedek the spoils of the war he had obtained in Syria from Cherdlaomer.

Ancient Salem was a holy place, and Palestine was a holy land from grey antiquity. Thus, in the documents of the Old Kingdom in Egypt, Palestine is named God’s Land (*Toneter*), or Divine (Holy) Land.<sup>(4)</sup> Abraham lived at the end of the Old Kingdom in Egypt; and documents from that time already refer to Palestine as God’s Land. But in early times, it was an astral god.

The meaning of the name Melchizedek is “Zedek is [My] King.” Zedek, as said, is the name of the planet Jupiter, remaining so in the astronomy of the Jews in later ages. In the Talmud Zedek refers to Jupiter.<sup>(5)</sup> Zedek also has the meaning of “righteousness” or “justice.” It is beyond the scope of this work to find which of the meanings—the name of the planet or a word in common usage—preceded and which followed. It is conceivable that this planet was worshipped in that remote time and that, in the days of the patriarch Abraham, the cult of Jupiter was prominent in the Salem of the high priest Melchizedek. Melchizedek, “priest of the most high,” was, it follows, a worshipper of Jupiter.<sup>(6)</sup>

## References

1. For example, the time of the great catastrophes of the Exodus saw Moses leading the Israelites from Egypt, to revelations and a covenant with God. And the time of the great upheavals of the eighth and seventh century before this era heard the voice of Isaiah. In later centuries, religious reformers found an especially large and responsive following when they announced the approach of the end of the world, or the beginning of the Kingdom of God on Earth. Numerous instances may be cited, but the best known became the foundation of the religion of a large part of the Old and New World.
2. Rabbi Berkjah, quoted in *Bereshit Rabba* XLIII.3, translated by A. Ravenna (Turin, 1978), p. 328.

3. Genesis 14:17-18. [Salem is considered to be the site of the later Jerusalem. Before Joshua's conquest of Jerusalem the king of that city bore the name Adonizedek, (Joshua 10:1,3), an indication of continuing Jupiter worship among the Jebusites.]
4. In *Ages in Chaos* I have brought extensive material for the identification of the Divine Land with Palestine.
5. Cf. W. M. Feldman, *Rabbinical Mathematics and Astronomy* (New York, 1931).
6. Melchizedek, the priest-king of ancient Salem, plays an important part in Christian catechism. [*The Epistle to the Hebrews* 5:6, 10; 6:20; 7:1ff. Cf. also F. Horton, *The Melchizedek Tradition* (Cambridge University Press, 1976).]





# The Change in Jupiter's Motion

In the Tractate Shabbat of the Babylonian Talmud it is said that in order to teach Abraham the futility and meaninglessness of astrology, the Lord let the planet Zedek, or Jupiter, change its rising point from west to east:

“Go forth (i.e. cease) thy planet-(gazing), for Israel is free from planetary influence. What is thy calculation? Because *Zedek* (Jupiter) stands in the West? I will turn it back and place it in the East.” And thus it is written, *Who hath raised up Zedek from the East? He hath summoned it for his sake* (sc. for the sake of Abraham).<sup>(1)</sup>

This statement of the rabbis contains some contradictory ideas. Nevertheless, it may preserve certain elements of ancient lore.

The Babylonians described Marduk, or Jupiter, as having an eastward motion, different from the other planets: “The earliest system from Babylon has, however, East and West reversed, and assigns to its chief god Marduk, as god of the planet Jupiter, a definite easterly direction; to Mercury, on the other hand, a westerly one.”<sup>(2)</sup>

“The Ra-mythology [of Egypt] is that which describes [Ra's ] course from west to east.”<sup>(3)</sup> Ra, rising in the west, was called “Harakhte, only god, king of the gods; he riseth in the west.”<sup>(4)</sup> However, some hymns were addressed to “Ra when he riseth in the Eastern part of heaven.”<sup>(5)</sup>

Egyptian lore also knew of a “Horus of the West” and a “Horus of the East.”<sup>(6)</sup> Horus was the planet Jupiter.

The expression found in Latin literature, *Jupiter Dianus*,<sup>(7)</sup> or two-faced, could be interpreted as denoting two motions of Jupiter, and eastward and a westward. This conforms to the same expression applied to the Sun where, as I endeavored to show, it denotes easterly and westerly movements of the luminary.<sup>(8)</sup>

The celestial mechanics of the implied reversal of Jupiter's apparent motion remains unsolved. Jupiter apparently changed the place of its rising points without a similar and simultaneous change by the Sun and all the planets and stars. It might seem that in order for Jupiter alone to be subject to a change, a reversal of orbital motion is required, an unlikely proposition from the point of view of celestial mechanics.

Earlier we asked in relation to Saturn's great prominence, was not the Earth at some early period a satellite of that planet?; and we may ask again, with the ascendance of Jupiter, was the Earth not in the domain of this successor to the celestial throne? Theoretically, if the Earth were revolving around Jupiter, a reversal of our planet's north and south geographical poles would cause Jupiter to appear to change the point of its rising.

## References

1. Shabbat 156b, I Epstein ed., (London, 1935). Cf. Isaiah 41:2. “Zedek also has the meaning of “righteousness” or “justice” and therefore

the sentence is often rendered incorrectly as: "Who raised up the righteous (man) from the east." Cf. Hommel, *JSOR* (1927).

2. H. Winckler, *Die Babylonische Geisteskultur* second ed. (Leipzig, 1919), p. 72.
3. L. Frobenius, *Das Zeitalter des Sonnengottes* (Berlin, 1904), p. 170.
4. J. Breasted, *Ancient Records of Egypt*, III. 18. Cf. E. Meyer, *Zeitschrift fuer Aegyptische Sprache* (1877), pp. 148ff
5. E.g., E. A. W. Budge ed., *The Egyptian Book of the Dead* (London, 1899), chapter XV (Papyrus Ani), p. 246.
6. S. Mercer, *Horus, The Royal God of Egypt* Grafton, Mass., 1942), pp. 48, 117.
7. Frazer, *Ovid's Fasti* (London, 1931), note to p. 388.
8. Cf. the ancient view, referred to by Macrobius (*Saturnalia* VIII) that the two faces of Janus symbolize the god's power over the two gates of the sky ("*et ideo geminum, quasi utriusque januae coelistis potentem*").





# The Worship of Jupiter

“From Zeus let us begin; him do we mortals never leave unnamed; full of Zeus are all the streets and all the marketplaces of men; full is the sea and the heavens thereof . . . He it was who first set up the signs in heaven . . . Wherefore him do we men ever worship first and last.” [\(1\)](#)

In these words Aratus (fl. -310) pictured the place the planet-god Jupiter occupied in the thoughts of men. Nobody today in the streets and marketplaces mentions the planet Jupiter.

St. Augustine, seven centuries after Aratus, asked:

But since they call Jupiter king of all, who will not laugh to see his star so far surpassed in brilliancy by the star of Venus? . . . They answer that it only appears so because it is higher up and much farther away from the earth. If, therefore, its greater dignity has deserved a higher place, why is Saturn higher in the heavens than Jupiter?[\(2\)](#)

Marduk, the great god of the Babylonians, was the planet Jupiter;[\(3\)](#) so was Amon of the Egyptians;[\(4\)](#) Zeus of the Greeks was the same planet; Jupiter of the Romans, as the name shows, was again the same planet. Why was this planet chosen as the most exalted deity? In Greece it was called “all-highest, mighty Zeus,” [\(5\)](#) in Rome “Jupiter Optimus, Maximus” ;[\(6\)](#) in Babylon it was known as “the greatest of the stars” [\(7\)](#); as Ahuramazda it was called by Darius “the greatest of the gods” [\(8\)](#); In India Shiva was described as “the great ruler” and considered the mightiest of all the gods[\(9\)](#); he was said to be “as brilliant as the sun.” [\(10\)](#) Everywhere Jupiter was regarded as the greatest deity, greater than the sun, moon, and other planets.[\(11\)](#)

Homer makes Zeus say that all the other gods together could not pull him down, but he could pull them along with the Earth.[\(12\)](#) “That is how far I overwhelm you all, both gods and men.” Commenting on this passage, Eustathius wrote that according to some ancient authorities Homer meant the orbits of the planets from which Jupiter could drive the rest of them, but they could not drive it.[\(13\)](#) This sentence of Homer is close to the truth. Jupiter is greater and more powerful than Saturn, its rival, together with Mars, Earth, Venus, and Mercury. Jupiter is more than a thousand times greater than the Earth or Venus in volume, and six thousand times greater than Mercury.[\(14\)](#) But it appears that one could not guess this from observation with the naked eye. Even through a very powerful telescope Jupiter looks like an inch-large flat disc, surrounded by its four larger satellites.[\(15\)](#)

The ancients knew something unknown to the moderns when they asserted that Jupiter can overpower all other planets, the Earth included.[\(16\)](#)

## References

1. Aratus, *Phenomena*, transl. by G. R. Mair (London, 1955).
2. *The City of God*, VII. 15, transl. by M. Dods (Edinburgh, 1872).

3. Bartel L. van der Waerden, *Science Awakening*, vol. II (Leyden, 1974), p. 59; cf. P. Jensen, *Die Kosmologie der Babylonier* (Strassburg, 1890), pp. 131, 134. [Marduk was called “the great lord of the gods” and also “the Enlil of the gods.” See L. Legrain, *Royal Inscriptions and Fragments from Nippur and Babylon*, (Philadelphia, 1926), p. 38.]
4. [Herodotus II. 41; Diodorus Siculus I. 13. 2; Plutarch, *De Iside et Osiride*, IX;] *Amen*, used at the end of a prayer in Hebrew and in European languages that borrowed it from Hebrew, was the name of the Egyptian deity Jupiter. It is part of the names of many Egyptian kings—Amenhotep, Tutankhamen; of the same root is *amen*—“to believe.” It is beyond the scope of this work to find which of the words—as the name of the deity or as a word in vocabulary, precede, and which is derived.
5. *The Iliad* VIII. 22. [In Book II of the *Iliad* (lines 410f.) Agamemnon addresses the god thus: “Zeus, most glorious, most great . . . that dwellest in the heaven.” Plato wrote: “Zeus, the mighty lord, holding the reigns of a winged chariot, leads the way in heaven, ordering all and taking care of all.” (*Phaedrus* 246e, transl. by B. Jowett [1871]). The stellar aspect of Zeus is discussed by A. B. Cook, *Zeus, A Study in Ancient Religion* (Cambridge, 1914), pp. 751, 760.]
6. [“Optimus Maximus Caelus Aeternus Jupiter” was the planet’s appellative in its official cult. Cf. Cumont, *Astrology and Religion Among the Greeks and Romans*, p. 115. Seneca called Jupiter “exalted ruler of the sky, who sittest in majesty upon the throne of heaven.” Vergil termed him “the mightiest of all gods” *The Aeneid* 20, 243.]
7. Jensen, *Die Kosmologie der Babylonier*, p. 117. [Cf. Lehmann in *Zeitschrift fuer Assyriologie* II. 214ff. and M. Jastrow in *ibid.*, 353f.]
8. Herzfeld, *Altpersische Inschriften*, no. 6, quoted in A. T. Olmstead, *The History of the Persian Empire* (Chicago, 19xx), p. 255. [In the *Bundahis* (transl. by E. West, *The Sacred Books of the East*, Vol. V [1880], pt. I, p. ), the planet Jupiter is called Ahuramazda. Also in the inscriptions uncovered by Th. Goell at Nemrud Dagh, Oromazdes (Ahuramazda) is equated with Zeus. Dio Chrysostom wrote that the Persian Magi considered Zeus “as being the perfect and original driver of the most perfect chariot. For the chariot of Helios, they claim, is relatively recent when compared with that of Zeus” (“The Thirty-sixth Discourse,” transl. by J. W. Cohoon [London, 19xx].)].
9. [For the identification of Shiva with Jupiter, see *Lippincott’s Universal Pronouncing Dictionary of Biography and Mythology*, ed. by J. Thomas, 4th edition (xxxx), p. 2203. Cf. F. Wilford, “On Egypt, etc. from the Ancient Books of the Hindus,” *Asiatick Researches* III (Calcutta, 1799), p. 382: “. . . Many of the Hindus acknowledge that Siva, or the God Jupiter shines in that planet [Jupiter] . . .” *The Skanda Purana* also tells of a special relationship between Brihaspati, the astronomical designation for the planet Jupiter, and Shiva.]
10. J. Dowson, “*A Classical Dictionary of Hindu Mythology*,” seventh ed., (London, 1950), p. 296.
11. [The Incas of Peru regarded the planet Jupiter as “the guardian and ruler of the empire.” See the seventeenth-century chronicle *De las costumbres antiguas de los naturales del Piru*, published in 1879. Cf. Jan Sammer, “The Cosmology of Tawantinsuyu,” KRONOS.]



12. *The Iliad* VIII. 18-26.
13. *Commentarii ad Homeri Iliadem* 695. 5 (Leipzig, 1828), Vol. II, p. 184: "Others believe the golden chain to refer to the orbits of the planets . . . for when the planets come together on those orbits, many are the changes that universally arise."
14. Jupiter has about 70 percent of the mass of the solar system not contained in the Sun.
15. [Jupiter's four Galilean moons may have been known to the ancients. Marduk was said to be accompanied by four dogs. Cf. Jensen, *Die Kosmologie der Babylonier*, p. 131: "Die vier Hunden des Marduk. 'Mein Herr mit den Hunden.'" In Egyptian mythology Horus, or Jupiter, was often associated with his four sons. Cf. S. Mercer, *Horus, the Royal God of Egypt*, (1942).]
16. [A similar idea is expressed in *Enuma Elish*. Marduk, or the planet Jupiter, threatens to "alter the ways of the gods"—"I will change their paths." (Tablet VI). In Tablet VII it is said of Marduk: "For the stars of heaven he upheld the paths, he shepherded all the gods like sheep." (L. W. King, *The Seven Tablets of Creation* [London, 1902]). Cf. F.-X. Kugler, *Sternkunde und Sterndienst in Babel*, Vol. I (1907), p. 7.]





# Jupiter of the Thunderbolt

Nobody who observes a thunderstorm would arrive at the conclusion that the planet Jupiter sends the lightning. Therefore it is singular that peoples of antiquity pictured the planet-god Jupiter as wielding a thunderbolt—this is equally true of the Roman Jupiter, the Greek Zeus, and the Babylonian Marduk.

Pliny wrote:

It is not generally known what has been discovered by men who are the most eminent for their learning, in consequence of their assiduous observations of the heavens, that the fires which fall upon the earth, and receive the name of thunderbolts (*fulminum nomen habeant*) proceed from the three superior stars (*siderum*), but principally from the one which is situated in the middle . . . and hence it is commonly said, the thunderbolts are darted by Jupiter.<sup>(1)</sup>

Pliny knew the origin of lightning in the friction of clouds—he wrote that “by the dashing of two clouds, the lightning may flash out.”<sup>(2)</sup> He did not confuse lightning with the thunderbolt that is discharged by the planets. He makes a distinction between “earthly bolts, not from stars,” and “the bolts from the stars.”<sup>(3)</sup> Pliny knew that the Earth is one of the planets: “Human beings are distributed all around the earth and stand with their feet pointing towards each other . . . Another marvel, that the earth herself hangs suspended and does not fall and carry us with it.”

The planet-god Jupiter was frequently shown with a thunderbolt in his hand. The electrical discharge coming from Jupiter is described in many ancient texts. In the Orphic Hymn to Jupiter the Thunderer, he is described as he “who shak’st with fiery light the World.” “From thee proceeds th’etherial lightning’s blaze, flashing around intolerable rays.” “Horrid, untamed, thou rollest thy flames along. Rapid, etherial bolt, descending fire, the earth . . . trembles.”<sup>(4)</sup> The earth does not quake when struck by regular lightnings. The bolt of Jupiter falls from the azure sky, not veiled by clouds.

The electrical discharge from a planet is described very clearly by Pliny: “heavenly fire is spit forth by the planet as a crackling charcoal flies from a burning log.”<sup>(5)</sup> “It is accompanied by a very great disturbance of the air,” produced “by the birth-pangs, so to speak, of the planet in travail.”

Also Seneca discerns between “the lesser bolts” which seek “houses and undeserving homes” and the bolts of the planet Jupiter “by which the threefold mass of mountains fell.”<sup>(6)</sup>

In the Babylonian epic, the *Enuma Elish*, it is told how Marduk, or the planet Jupiter, “raised the thunderbolt, his mighty weapon. He mounted the chariot, the storm unequalled for terror. . . . With overpowering brightness his head was crowned.” He is also described as the planet-god “at whose battle heaven quaked, at whose wrath the Deep is troubled . . . in the bright firmament his course is supreme . . . with the evil wind his weapons blaze forth, with his flame steep mountains are destroyed. . . .”<sup>(7)</sup> A hymn to

Marduk tells that “by his warfare the heaven resounds; before his anger the deep is shaken; before his sharp weapon the gods draw back.” [\(8\)](#)

The Egyptian pharaoh Seti described Amon as “a circling star which scatters its seed in fire . . . like a flame of fire . . . irresistible in heaven and in earth.” [\(9\)](#)

Brihaspati, or the planet Jupiter in Hindu astronomy, is invoked in the Rig Veda as one who “in destroying enemies cleaves apart their cities . . . . Brihaspati strikes the enemy with his thunderbolts.” [\(10\)](#) Shiva is called “wielder of the thunderbolt.” [\(11\)](#)

In *Worlds in Collision* the overpowering of one planet by another in conjunctions was quoted from the Hindu astronomical books; the electrical power which manifests itself in conjunctions is called *bala*. Jupiter as the strongest planet is a *balin*. [\(12\)](#)

## References

1. Pliny, *Natural History*, transl. by J. Bostock and H. Riley (London, 1865), Book. Ii, ch. 18.
2. *Ibid.*, ch. 43.
3. *Ibid.*, II. 53.
4. *The Mystical Hymns of Orpheus*, transl. by Th. Taylor (London, 1846). [In the Iliad Homer calls Zeus “Lord of the bright lightning” ; “even he [the ocean] hath fear of the lightning of great Zeus whenso it crashes from heaven.” (XX. 197f.) Hesiod recounts a battle among the planetary gods in which Zeus took an active part: “From heaven and from Olympus he came forthwith, hurling his lightning: the bolts flew thick and fast . . . whirling an awesome flame . . . It seemed as if Earth and wide Heaven above came together; for such a mighty crash would have arisen if Earth were being hurled to ruin and Heaven from on high were hurling her down.” It was in this battle the Zeus is said to have made use of his thunderbolts for the first time.]
5. *Natural History*, II. 18.
6. Seneca, *Thyestes*, transl. by F. J. Miller (1917), lines 1077ff.
7. King, *The Seven Tablets of Creation*, IV. 45f, 58.
8. Jastrow, *Die Religion Babylonien und Assyrien*, Ch. XVII, p. 495. Jupiter was also known in Babylonia as Dapinu, “he of the dreadful glow” (Jensen, *Die Kosmologie der Babylonier*; p. 129). Marduk’s “word” causes “shuddering below” (Langdon, *Tammuz and Ishtar*, p. 112). Cf. idem, *Sumerian and Babylonian Psalms*, p. 41: “The word of Marduk is a flood which tears away the dikes.”
9. J. Breasted, *Ancient Records of Egypt* (Chicago, 1906), Vol. III, par. 117. The worship of Amon, as the planet Jupiter was called in the Theban cult, became supreme with the Eighteenth Dynasty. Cf. G. A. Wainwright, “The Relationship of Amon to Zeus and his Connection with Meteorites,” *The Journal of Egyptian Archaeology*, 16 (1930), pp. 35-38.
10. *Rig-Veda*, Mandala VI. 73, transl. by H. Grassmann, pt. I (Leipzig, 1876).

11. Dowson, *A Classical Dictionary of Hindu Mythology*, p. 296.

12. *Surya Siddhanta*, ch. VII (transl. by Burgess).

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# Where a Planetary Bolt Struck the Ground

We recognize in the change in Jupiter's motion the cause of great catastrophes in the solar system which affected also the Earth in the age of the patriarchs, or at the close of the Old Kingdom. In that period Jupiter became the supreme deity, having removed Saturn from its orbit. Classical historians, speaking of the destruction of the Cities of the Plain, told of "fire from the sky." Tacitus narrated that the catastrophe of Sodom and Gomorrah was caused by a thunderbolt—the plain was "consumed by lightning"—and he added: "Personally I am quite prepared to grant that once-famous cities may have been burnt by fire from heaven." [\(1\)](#) Also Josephus asserted that the cities had been "consumed by thunderbolts." [\(2\)](#) Philo wrote that "lightnings poured out of heaven," [\(3\)](#) destroying the cities.

Since the time of Abraham was the period of Jupiter's domination that followed Saturn's and preceded that of Venus, we are led to the surmise that the thunderbolts which destroyed the plain with its cities originated from Jupiter, or from a magnetosphere or ionosphere overcharged by the nearby presence of the giant planet. Even today discharges leap between Jupiter and Io, one of its satellites. The charging of the Earth's atmosphere in the presence of Jupiter's huge magnetosphere prepared the way for a discharge: a planetary bolt struck the ground in the Valley of Sittim.

For a long time I thought that the destruction of Sodom and Gomorrah and other cities of the Plain resulted from an interplanetary discharge caused by Jupiter: classical historians speaking of this event told of "fire from the sky." The period was that of Jupiter's era of domination that followed that of Saturn and preceded that of Venus; and reference to the king and high priest Malki-zedek ("My King is Zedek," Zedek being the usual name of the planet Jupiter), in the days of the patriarch Abraham and of the destruction of Sodom and Gomorrah, seem to support my interpretation of the agent of the catastrophe. This very catastrophe caused the origin of the Dead Sea and also of the entire African Rift that extends from north of the River Jordan all the way through two thirds of the length of Africa. But, reading in 1960 of a reference to Professor Agrest, a Russian astronomer who thought that an atomic explosion had taken place, I saw some alluring points in it. If, as Prof. Agrest seems to assume, the three angels were extraterrestrial beings that followed Abraham from Mamre to Sodom and placed a time device in Sodom, the warning to Lot and his family to leave the place and not to turn their faces to the city they soon would flee, finds some parallels in the atomic age.

The observers of the first atomic explosion at Alamogordo, New Mexico were told, as was Lot and his family, not to look at the fission, but the wife of Lot looked; she may have been blinded—in the legend she turned into a pillar of salt.

At Alamogordo the observers were impressed, actually overwhelmed, by the tremendous light effect, even with their eyes closed. Next rose a pillar of smoke as if from a furnace (Genesis XIX: 28): Abraham "looked toward Sodom and Gomorrah, and towards all the land of the plain, and beheld, and, lo, the smoke of the country went up as the smoke of the furnace."

If the time of the event is asked to be determined, I would strongly question the implication that extraterrestrial visitors came to Earth as late as the end of the Old Kingdom of Egypt, for this is the time to which the age of the Patriarch Abraham belongs—and on this I would expand somewhere else.

Yet we are left with my original idea that goes back to the early forties—that the agent of the destruction was a bolt from Jupiter, or from the magnetosphere or ionosphere, overcharged by the nearby presence of the giant planet.

### References

1. *Histories* V. 7, transl. by K. Wellesley (London, 1964).
2. *The Jewish War* IV. 480.
3. *Moses* II.53ff.





# The Origin of Nitrate Deposits

The Dead Sea, for many centuries proclaimed to be dead and capable of yielding nothing, is today one of the greatest reservoirs of natural nitrate under exploitation in the world, competing with the deposits of Chile.

The deposits of nitrate in Chile are found in a narrow strip over 1400 miles in length, in the great desert in the northern part of the country. The origin of the nitrates is a problem that has not been solved.

This is a moot question on which no two geologists agree . . . One [theory] is that in prehistoric times the entire nitrate zone was a part of the Pacific Ocean, and that through volcanic disturbances that portion of the sea was cut off and the water evaporated by a very slow process. Fish skeletons found in the caliche furnish good proof of this assertion, as does the fact that the Pacific coast is rising gradually. This theory is, however, contradicted by the fact that no bromine exists there—a substance naturally looked for in deposits thus formed.”

Another theory attributes the origin of the *caliche* to an electrical process. A passage of an electric spark through the moist air produces a combination of nitrogen and oxygen resulting in nitric acid. Electrical storms—a frequent occurrence in the Andes—may have acted in this way and formed great quantities of nitric acid. . . . [\(1\)](#)

But thunderstorms occur in many other places all over the world, near and far from the sea, and yet there are no deposits of nitrates in these places.

“A later theory maintains that the deposits are an accumulation of land drainage brought down through ages from the highlands along the coast.” But how was it formed in the highlands of Chile? “Others explain the formation as the work of microbes, or as the result of the action of volcanoes discharging through their craters ammonia-charged steam there condensed.” But deposits of nitrates are not formed in other volcanic regions.

No explanation satisfied the chemists and geologists, and therefore new ideas were constantly launched. In the laboratory a very efficient method of building oxides of nitrates is applied: “passing air through a powerful electric arc, in which the nitrogen and oxygen of the air combine chemically to form oxides of nitrogen.” [\(2\)](#)

Nature is a great laboratory too. The Dead Sea region was the scene of an interplanetary electrical discharge when a powerful electrical spark leaped down from above or sprang up from the earth.

A similar event created the Chilean deposits of nitrates, and the recollections of the Incas of Peru preserved the memory of this grandiose discharge. “Fire came down from heaven and destroyed a great part of the people, while those who were taking to flight were turned into stones.” [\(3\)](#)

## References

1. Enrique Cuevas, transl. in P. G. Beery, *Stuff, The Story of Materials in the Service of Man* (1930), p. 41.

2. *Ibid.*, p. 43.
3. Christoval de Molina, *An Account of the Fables and Rites of the Yncas*, transl. and ed. by C. R. Markham (London, 1873). The chronicle is dated 1574. The event it refers to is said to have occurred “in Pucara, which is forty leagues from the city of Cuzco on the Collao road.







# The Transmutation of Oxygen into Sulphur

In the building of saltpeter, or potassium nitrate, the nitrogen of the air took a major part. How was the oxygen of the atmosphere affected by the interplanetary discharges?

It has been observed since ancient times that lightnings are attended by an odor of sulphur. In the twelfth book of the *Odyssey*, Homer says:

“Zeus thundered and hurled his bolt upon the ship, and she quivered from stem to stern, smitten by the bolt of Zeus, and was filled with sulphurous smoke.” [\(1\)](#)

Again, in the *Iliad*: “When beneath the blast of father Zeus an oak falleth uprooted, and a dread reek of brimstone ariseth therefrom,—then verily courage no longer possesseth him that looketh thereon. . .” [\(2\)](#)

And: “[Zeus] thundered horribly and let loose the shimmering lightning and dashed it to the ground in front of the horses of Diomedes, and a ghastly blaze of flaming sulphur shot up, and the horses, terrified, both cringed away against the chariot.” [\(3\)](#)

The same observation is put into a scientific prose by Pliny: “Lightning and thunder are attended with a strong smell of sulphur, and the light produced by them is of a sulphurous complexion.” [\(4\)](#) The second part of Pliny’s sentence is also correct: pioneer work on electrical discharges in modern times was produced using globes of sulphur in rotation. Sulphur is one of the best insulators and static electricity, when accumulated on it, discharges in electrical sparks toward objects brought close to it.

Electrical discharges produced without the help of sulphur are also accompanied by the smell of it. This odor was referred to by Benjamin Franklin who, comparing lightning and electricity, wrote to the Royal Society in London that both phenomena are attended by a sulphurous smell. This he mentioned among twelve other properties which suggested that lightning is an electrical discharge. No importance was attributed by him or by anyone else since to this sulphurous smell. The smell of ozone is different from the smell of vaporized sulphur or sulphurous compounds, [\(5\)](#) and the supposition that the ancients were unable to distinguish between the two disregards the fact that besides the smell of ozone a sulphurous smell follows an electric discharge. [\(6\)](#)

This suggests to me that sulphur is actually produced from the air by the passage of an electrical discharge. The quantity of sulphur must be detectable in a careful laboratory experiment.

Quite possibly the detection of sulphur produced by a strong electrical discharge, by means other than smell, has already been fulfilled. A very strong discharge of electricity passing through the air formed solid sulphur. The bolt of electricity that fell upon the plain of the Pentapolis was of a magnitude sufficient to cause a transmutation of elements on a great scale. It rained “brimstone and fire from the Lord out of heaven.” The overturned plain became full of sulphurous deposits—“the whole land thereof is brimstone, and salt [probably potash], and burning” [\(7\)](#)—and when later in

another great upheaval the plain became covered by the Dead Sea, sulphurous springs continued to flow into the valley of the Jordan and into the Dead Sea from submerged strata and from the springs on the shores.

At the end of the eighth century and the beginning of the seventh century before the present era, when every fifteen years Mars was approaching dangerously close to the Earth, Isaiah prophesied “the day of the Lord’s vengeance,” in which day “the streams [of Idumea] shall be turned into pitch, and the dust thereof into brimstone, and the land thereof shall become burning pitch.” [\(8\)](#) A curse upon man and his land was that “brimstone shall be scattered upon his habitation.” [\(9\)](#) “Upon the wicked he shall rain pitch, fire and brimstone, and a horrible tempest.” [\(10\)](#) This eschatological vision was alive with Ezekiel in the days of the Babylonian Exile. He spoke about “an overflowing rain, and great hailstones [meteorites], fire and brimstone.” [\(11\)](#)

These stories of sulphur raining from the sky and the fearful expectations built upon them could be taken as fictions of an imaginative mind, were not the smell of sulphur an indication of its presence in the air following the passage of a discharge, and were not also the presence of sulphur deposits around the Dead Sea, thrust in deep below the ocean level, a substantiation of the story of the cataclysm.

Is the atomic source of sulphur generated by a discharge in oxygen, or does the nitrogen of the air participate also in the building of sulphur? It seems more probable that two atoms of oxygen are smashed into one atom of sulphur. If the atomic weight of sulphur obtained by electrical discharge will be found to be more than 32 (that of sulphur is 32.06) it might be due to the presence of some atoms of oxygen of the atomic weight 17. This heavy oxygen is the product of a nitrogen atom transmuted by the bombardment of alpha particles. [\(12\)](#) We must reckon with the possibility that a proton from broken atoms of oxygen or ozone or nitrogen enters the new combination, or that electrons which cause the perturbation are able by themselves to change the atomic weight of the elements. [\(13\)](#)

## References

1. *The Odyssey*, XII.
2. *The Iliad*, XIV.
3. *Ibid.*, VIII. 133-136, transl. by R. Lattimore (Chicago, 1951).
4. *Natural History* 35.50, transl. by Bostock and Riley.
5. Elemental sulphur is odorless.
6. W. J. Humphreys, *Ways of the Weather* (London, 1942), p. 243.
7. Deuteronomy 29:23.
8. Isaiah 34:9.
9. Job 18:15.
10. Psalm 11:6.
11. Ezekiel 38:22.
12. Rutherford:  $N^{14} + He^4 = O^{17} + \text{proton}^1$ .

13. In the late 1940s I asked Dr. A. V. Grosse whether it would be possible to create, by a strong discharge, an atom of sulphur from two atoms of oxygen. His answer was that, as soon as there would be developed cyclotrons capable of releasing two billion electron-volts of energy, sulphur could be made from oxygen. [Cf. also the comments of Frederic B. Jueneman in *KRONOS* VI.4 (1981), pp. 53-56.]





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# Jupiter, Gold, and the Birth of Athene

Pindar, speaking of the island of Rhodes, says that Zeus “rained down on the city with golden flakes of snow” at the time Athene was born from Zeus’ head, “shouting with a far-ringing cry, and all Heaven and Mother Earth shuddered before her.” [\(1\)](#) Homer also says that “upon them [the people of Rhodes] wondrous wealth was shed by the son of Cronus.” Strabo, after quoting Homer, adds that other writers “say that gold rained on the island the time when Athena was born from the head of Zeus, as Pindar states.” [\(2\)](#)

Gold-bearing gravel—with ingots in it—originated from outside of the Earth and, if we should look upon the Greek legend of Zeus and the golden rain in Rhodes as containing revealing elements, then the ingots came from Jupiter. [\(3\)](#) It could be meteoric gold, and as to the origin the ancients could err; but the event happened in human memory, actually during the Early Bronze Age, or at its end. [\(4\)](#)

In 1866 a human skull was unearthed in the interior of Bald Mountain near Altaville, in Calaveras County, California. The skull of Bald Mountain was reported to have been found in the shaft of a gold mine, in a layer of auriferous (gold-bearing) gravel, beneath four layers of lava, each separated from the other by four layers of gravel. The skull did not differ in structure or dimensions from the skull of modern man; however, it was fossilized. [\(5\)](#) In the gold-bearing gravel of Calaveras were also unearthed fossilized bones of the mammoth, the great mastodon, the tapir, horse, hippopotamus, rhinoceros and camel, all extinct animals in pre-Columbian America. But geologically the layer in which it was found belongs to the Tertiary, and therefore a great embarrassment was in store for the geologists and evolutionists. They divide the strata according to the fossils found in them and hold that in the Tertiary there could have been no human beings, for it is an age before the advent of man. But we have seen in the case of the Dead Sea that the great upheavals ascribed to the end of the Tertiary took place at a much later time, actually in the time of the Patriarchs, which is the end of the Early Bronze Age period. The auriferous gravels of California and of the Ural Mountains had their origin at this same time.

The rain of gold on Rhodes is assigned by Pindar to the time when Athene was born from the head of Zeus. The expulsion of the protoplanet Venus from the body of Jupiter followed, by decades or by centuries, the contact of Saturn and Jupiter, and the fantasy of the peoples regarded Venus as a child of Jupiter, conceived to him by Saturn.

The ancient Persians called Venus Tishtrya, “a magnificent and glorious star which Ahura Mazda [i.e., Jupiter] has established as master and overseer of all the stars.” [\(6\)](#) Plutarch described the events in the following terms: “Then Horomazes [Ahura Mazda], having magnified himself to three times his size, removed himself as far from the sun as the sun is distant from the earth . . . and one star, *seirios* [i.e., Tishtrya, or Venus] he established above all others as a guardian and watcher.” [\(7\)](#)

References

1. Pindar, *The Seventh Olympian Ode*, transl. by L. R. Farnell (London, 1930), p. 35.
2. Strabo, *Geography*,
3. [On another occasion Zeus is said to have come to Danae, the mother of Perseus, in the form of a shower of golden rain. See Hyginus, *Fabulae* 63; Apollodorus, *The Library* II. 4. 1; Horace, *Odes*, III. 16. 1. Cf. L. Radermacher, "Danae und der goldene Regen," *Archiv fuer Religionswissenschaft* 25 (1927), pp. 216ff. Cf. Pindar's twelfth Pythian and seventh Isthmian odes. A fragment of a lost play of Sophocles (1026) designates Zeus as "*chrysomorphos*"—having the form of gold. Rains of gold are reported also in the Chinese chronicles. See Abel Remusat, *Catalogue des bolides et des aerolithes observees a la Chine et dans les pays voisins* (1819), p. 6. The Scythians are said by Herodotos (IV. ) to have venerated certain golden objects which they believed had fallen from the heavens in early times. In the sacred texts of the Hindus it is said that "gold belongs to Brihaspati." Brihaspati is the planet Jupiter. *The Maitrayani Samhita* I. 18. 6. Cf. S. Bhattacharji, *The Indian Cosmogony* (Cambridge, 1970), p. 318.]

4. [It is a remarkable fact that gold appears only in very recent geological formations. Sir Roderick Impey Murchison dedicated chapter XVII of his geological opus *Siluria* to this phenomenon: "On the Original Formation of Gold and Its Subsequent Distribution in Debris over Parts of the Earth's Surface." He argued, on the basis of his field observations in northern Russia, that gold is of *recent* origin:

Whatever may have been the date when the rock was first rendered auriferous [gold-bearing], the date of this great superficial distribution of gold is clearly indicated. For it contains in many places the same remains of extinct fossil quadrupeds that are found in the coarse drift-gravel of Western Europe. The elephas primogenius, or Mammoth, bos aurochs, rhinoceros tochorrhinus, with gigantic stags, and many other species, including large carnivores, were unquestionably before that period of destruction the denizens of Europe and Siberia.

The period of the distribution of gold in the late Pleistocene strata was that of the mass extinctions of the great quadrupeds at the end of the last ice age. next Murchison tried to determine the time when the rocks were first "impregnated with gold." He wrote:

Now, it would seem as if these rocks, in the Ural, have been chiefly impregnated with gold, in a comparatively recent period. In the first place, the western flank of the Ural chain offers strong evidence that this golden transfusion had not been effected in this region when the Permian deposits were completed.

No sign of gold was found in these older strata.

Nowhere does it [the Permian debris] contain visible traces of gold or platinum. Had these metals then existed in the Ural mountains, in the quantities which now prevail, many remnants of them must have been washed down together with the other rocks and minerals and have formed part of the old Permian conglomerates. On the other hand, when the much more modern debacles, that destroyed the great animals, and heaped up the piles

of gravel above described, proceeded from this chain, then the debris became largely auriferous. It is manifest therefore that the principal impregnation of the rocks with gold—i.e., when the lumps and strings of it were formed—took place in the intervening time.

Sometime between the Permian and the last ice age some event resulted in the infusion of the rocks with gold. Murchison tried to fix the time more precisely:

We cannot believe that it occurred shortly after the Permian era, nor even when any of the secondary rocks were forming; since no golden debris is found in any of the older Tertiary grits and sands which occur in the Siberian flank of the chain. *If, then, the mammoth drift be the oldest mass of detritus in which gold occurs abundantly*, not only in the Ural, but in many parts of the world, we are led to believe that this noble metal, though for the most part formed in ancient crystalline rocks, or in the igneous rocks which penetrated them, was only abundantly imparted to them in a comparatively recent period—i.e., a short time (in geological language) before the epoch when the very powerful and general denudations took place which destroyed the large extinct mammalia.

In another work of his, *The Geology of Russia and the Ural Mountains*, Vol. I (London, 1845), p. 473, Murchison presented his conclusions about the geological events which accompanied the deposition of gold:

. . . We conclude that the [Ural] chain became (chiefly) auriferous during the most recent disturbances by which it was affected, and that this took place when the highest peaks were thrown up, when the present watershed was established, and when the syenitic granite and other comparatively recent igneous rocks were erupted along its eastern edges.

Murchison, one of the founders of modern geology, insisted that it was during a major geological upheaval that gold became part of the rocks—it was the time of mountains being “thrown up” and molten rock flowing, before solidifying into granite. Murchison next wondered about the “agency” which deposited the gold in the mountains of the Ural and elsewhere. As a geologist he observed that “the material has been chiefly accumulated towards the surface of the rocks, and then by the abrasion and dispersion of their superficial parts, the richest golden materials have been spread out. . . .” (*Siluria*, p. 455).

This last observation is of fundamental importance, in that since the gold was deposited close to the surface, it could not have come from inside the earth.].

5. J. D. Whitney, *The Auriferous Gravels of the Sierra Nevada of California* (1880), pp. 268-269.

6. *Yasht* 8: 44.

7. *De Iside et Osiride*, ch. 47.

