

CHAPTER 4

Sword-God

IN BABYLON of the eighth century the planet Mars became a great and feared god, to whom many prayers were composed and hymns and invocations were sung and magic formulas were whispered. Such formulas are referred to as "magic words with raising the hand to the planet Nergal [Mars]." These prayers were addressed directly to the planet Mars.¹ Like the Greek Ares, Nergal is called "king of battle, who brings the defeat, who brings the victory." Nergal could not be regarded as favoring the people of the Double Streams; on a most fateful night he inflicted a defeat on Sennacherib.

Shine of horror, god Nergal, prince of battle,
Thy face is glare, thy mouth is fire,
Raging Flame-god, god Nergal.

Thou art Anguish and Terror,
Great Sword-god,
Lord who wanderest in the night,
Horrible, raging Flame-god . . .
Whose storming is a storm flood.

In one of its great conjunctions, Mars' atmosphere was stretched so that it appeared like a sword. Often before and later, too, celestial prodigies assumed the shape of swords. Thus, in the days of David a

¹ Böllenrücher, *Gebete und Hymnen an Nergal*, p. 19. Bezdold in Boll, *Stern Glaube und Sternedeutung*, p. 13: "Gebete der Handerhebung: von denen eine Anzahl an Planetengötter andere dagegen ausdrücklich an die Gestirne selbst (Mars) gerichtet sind" (prayers with the lifting of the hand: some of them are directed to the planetary gods and others expressly to the planets themselves).

comet appeared in the form of a human being "between the earth and the heaven, having a drawn sword in his hand stretched out over Jerusalem."²

The Roman god Mars was pictured with a sword; he became the god of war. The Chaldean Nergal is called "Sword-god." Of this sword Isaiah spoke when he predicted the repetition of the catastrophe, a stream of brimstone, flame, storm, and reeling of the sky. "Then shall the Assyrian fall with the sword, not of a mighty man; and the sword, not of a mean man, shall devour him . . . and his princes shall be afraid of the ensign."³ "And all the host of heaven shall be dissolved . . . for my sword shall be bathed in heaven."⁴

The ancients classified the comets according to their appearance. In old astrological texts, as in the book of *Prophecies of Daniel*, comets that took the form of a sword were originally related to the planet Mars.⁵

Besides the swordlike appearance of the atmosphere of Mars, elongated on its approach to the earth, there was also another reason to make of the planet Mars the god of war. A bellicose or martial character was ascribed to the planet because of the great excitement it caused, excitement that brought anxiety to peoples, that led to migrations and to wars. Since early times celestial prodigies have been regarded as portents that forecast great commotions and great wars.

A planet that collided with other planets in the sky and rushed against the earth as if with a fire-sword became the god of battle, wresting this title from the hands of Athene-Ishtar.

"The gods of heaven put themselves in war against thee," the hymns to the planet Nergal say, and this is the war that was recounted in the *Iliad*.

Nergal was named *quarradu rabu*, "the great warrior"; he waged war against gods and the earth. The most frequent ideogram for Nergal in Semitic cuneiform is read *namsaru*, which means "sword";⁶

² I Chronicles 21 : 16.

³ Isaiah 31 : 8-9.

⁴ Isaiah 34 : 4-5.

⁵ Gundel, "Kometen," in Pauly-Wissowa, *Real-Encyclopädie*, XI, Col. 1177, with reference to *Cat. cod. astr.*, VIII, 3, p. 175.

⁶ Böllenrucher, *Gebete und Hymnen an Nergal*, p. 8.

the planet Mars, in the Babylonian inscriptions of the seventh century, was called "the most violent among the gods."

Herodotus said that the Scythians worshiped Ares (Mars), and that a scimitar of iron was their image of him; to him they made human sacrifices and poured the blood on the scimitar.⁷ Solinus wrote of the people of Scythia: "The god of this people is Mars; instead of images they worship swords."⁸

War in heaven among the colliding planets, war on earth among the nations wandering in unrest, a planet running toward the earth with an outstretched flaming sword, attacking land and sea, participating in the wars among the nations—all these made Mars the god of war.

The sword of the god of battle was not like the sword "of a mighty man"; it was not thrust into the belly, and yet it caused sickness and death. The god of war scattered pestilence. In a prayer to the planet Mars (Nergal) it is said:⁹

Radiant abode, that beams over the land . . .
 Who is thy equal?
 When thou ridest in the battle,
 When thou throwest down,
 Who can escape thy look?
 Who can run away from thy storming?
 Thy word is a mighty catch net,
 Stretched over Sky and Earth. . . .

His word makes human beings sick,
 It enfeebles them.
 His word—when he makes his way above—
 Makes the country sick.

The outbreak of pestilence that appears to have accompanied the first contact with the planet Mars was repeated on each subsequent contact. Amos uttered these words: "I have smitten you with blasting and mildew. . . . I have sent among you the pestilence after the manner of Egypt."

⁷ Herodotus iv. 62.

⁸ Solinus *Polyhistor* (transl. A. Golding, 1587), Chap. xxiii.

⁹ Böllenrucher, *Gebete und Hymnen an Nergal*, p. 36.

The planet Nergal was regarded by the Babylonians as the god of war and pestilence; thus, too, did the Greeks regard the planet Ares and the Romans the planet Mars.

Fenris-Wolf

In the Babylonian astrological texts it is said that "a star takes the shape of divers animals: lion, jackal, dog, pig, fish."¹ This, in our opinion, explains the worship of animals by ancient peoples, notably by the Egyptians.

The planet Mars, its atmosphere distorted by its approaches to other celestial bodies—Venus, earth, moon—took on different shapes. The Mexicans narrated that Huitzilopochtli, the bellicose destroyer of cities, took the form of various birds and beasts.² On one occasion Mars very characteristically resembled a wolf or a jackal. In Babylonia Mars had seven names—Jackal was one of them.³ Also, the god with the head of a jackal or wolf in the Egyptian pantheon was apparently Mars. Of him it is said that he is a "prowling wolf circling this land."⁴

In the Chinese Chart of Soochow, in which it is related on the authority of more ancient sources that "Once Venus suddenly ran into the Wolf-Star," Wolf-Star apparently means Mars.⁵

Wolf or Lupus Martius was the animal symbol for Mars of the Roman religion.⁶ It gave rise to the legend about Romulus, son of Mars, who was fed by a she-wolf. According to the tradition, the conception of Romulus took place during a prolonged eclipse.

¹ Kugler, *Babylonische Zeitordnung*, Vol. II of *Sternkunde und Sterndienst in Babel*, 91.

² Sahagun, *Historia general de las cosas de Nueva España*, Vol. I.

³ Bezold, in Boll's *Stern Glaube und Sterneutung*, p. 9.

⁴ Breasted, *Records of Egypt*, III, Sec. 144.

⁵ The translators of the chart surmised that by Wolf-Star Sirius is meant.

⁶ Cf. Virgil *Aeneid* iv. 566; Livy, *History of Rome*, Bk. XXII. i. 12. A statue of Mars on the Appian Way stood between figures of wolves. "Among the animal symbols of Mars, the wolf holds first place. . . . The wolf belonged so definitely to Mars that Lupus Martius or Martialis became its usual name. As to the meaning of this symbol, it is difficult to understand it." Roscher in Roscher's *Lexikon d. griech. und röm. Myth.*, s. v. "Mars," Col. 2430.

The Slavic Vukadlak, who followed the clouds and devoured the sun or the moon, had the shape of a wolf.⁷ The North-Germanic tribes, too, spoke of the wolf Sköll that pursued the sun.⁸ In the *Edda*, the planetary god that darkened the sun is called Fenris-Wolf. "Whence comes the sun to the smooth sky back, when Fenris has swallowed it forth?" The battle of Mars and Venus is presented, in the Icelandic epos, as a fight between the wolf Fenris and the serpent Midgard.

"The bright snake gaping in the heaven above" and "the foaming wolf" battle in the sky. Storms come in summer. Then comes the day, and "dark grows the sun"; in a great upheaval "the heaven is cloven." "In anger smites the warden of earth, forth from their homes must all men flee. . . . The sun turns black, earth sinks in the sea, the hot stars down from the heaven are whirled, fierce grows the stream . . . till fire leaps high above heaven itself."⁹

Sword-Time, Wolf-Time

Quaking of places,
tumult of peoples,
scheming of nations,
confusion of leaders.
—IV EZRA 9

The fear of the Judgment Day not only did not pacify the nations, but on the contrary, uprooted them, impelling them to migration and war.

The Scythians came down from the plains of the Dnieper and Volga and moved southward. The Greeks left their home in Mycenae and on the islands of the Aegean and carried on the siege of Troy through years of cosmic disturbances. Assyrian kings waged war in Elam, Palestine, Egypt, and beyond the Caucasus.

Civil war in the nations, tribal strife, and strife between members of households became so widespread that the same complaint was

⁷ J. Machal, *Slavic Mythology* (1918), p. 229.

⁸ L. Frobenius, *Das Zeitalter des Sonnengottes* (1904), I, 198.

⁹ *The Poetic Edda: Völuspá* (transl. Bellows, 1923).

heard in many parts of the world. As I have already said, Mars was named the war god not only because of his swordlike appearance, but also because of these conflicts.

“. . . The land [is] darkened, and the people shall be as the fuel of the fire: no man shall spare his brother,” said Isaiah (9 : 19). In Egypt an inscription of the eighth century that refers to the moon disturbed in its movement, mentions incessant fighting in the land: “While years passed in hostility, each one seizing upon his neighbor, not remembering his son to protect.”¹ Isaiah, speaking of the Day of Wrath, says: “And I will set the Egyptians against the Egyptians: and they shall fight every one against his brother, and every one against his neighbor; city against city, and kingdom against kingdom.”² It was no different seven hundred years earlier, in the days of the catastrophes caused by Venus. At that time an Egyptian sage complained: “I show thee the land upside down; the sun is veiled and shines not in the sight of men. I show thee the son as enemy, the brother as foe, a man slaying his father.”³

The Icelandic *Völuspa* says: “Dark grows the sun. . . . Brothers shall fight and fell each other. . . . Axe-time, sword-time, shields are sundered, wind-time, wolf-time, ere the world falls; nor ever shall men each other spare.”⁴

The wars of Shalmaneser IV, Sargon II, and Sennacherib were carried on in the intervals between the catastrophes and at the very time of their occurrence. The campaigns were repeatedly interrupted by the forces of nature. Of his second campaign Sennacherib wrote: “The month of rain set in with extreme cold and the heavy storms sent down rain upon rain and snow. I was afraid of the swollen mountain streams; the front of my yoke I turned and took the road to Nineveh.”⁵ Before Sennacherib set out on his last campaign to Palestine, his astrologers told him that he had to hurry if he would

¹ Breasted, *Records of Egypt*, IV, Sec. 764. ² Isaiah 19 : 2.

³ Gardiner, “New Literary Works from Ancient Egypt,” *Journal of Egyptian Archaeology*, I (1914).

⁴ *The Poetic Edda: Völuspa* (transl. Bellows).

⁵ Luckenbill, *Records of Assyria*, II, Sec. 250.

escape calamity; ⁶ as we know, he did not escape it. At the same time Isaiah, who encouraged Hezekiah to resist Sennacherib, reckoned with the possibility of a disaster in the year of the opposition of Mars, and thus built his hope on the intervention of the forces of nature.

The Babylonians called the year of the close opposition of Mars "the year of the fire-god," and the month "the month of descent of the fire-god," as, for instance, in an inscription of Sargon.⁷

In *The Birth of the War-God*, the Hindu poet Kalidasa gives a vivid picture of the wars above and on the earth, weaving them into one great battle.

"Foul birds came, a horrid flock to see . . . and dimmed the sun. . . . And monstrous snakes, as black as powdered soot, spitting hot poison high into the air, brought terror to the army underfoot. . . . The sun a sickly halo round him had; coiling within it frightened eyes could see great, writhing serpents . . . and in the very circle of the sun were phantom jackals."

There fell, with darting flame and blinding flash
Lighting the farthest heavens, from on high
A thunderbolt whose agonising crash
Brought fear and shuddering from a cloudless sky.

There came a pelting rain of blazing coals
With blood and bones of dead men mingled in;
Smoke and weird flashes horrified their souls;
The sky was dusty grey like asses' skin.

The elephants stumbled and the horses fell,
The footmen jostled, leaving each his post,
The ground beneath them trembled at the swell
Of ocean, when an earthquake shook the host.⁸

Lightning is usually discharged between two clouds or a cloud and the ground. But if for some reason the charge of the ionosphere, the electrified layer of the upper atmosphere, should be sufficiently increased, a discharge would occur between the upper atmosphere

⁶ Ginzberg, *Legends*, IV, 267, n. 53.

⁷ Luckenbill, *Records of Assyria*, II, Sec. 121.

⁸ Translated by A. W. Ryder (1912).

and the ground, and a thunderbolt would crash from a cloudless sky.

The planet-god Shiva, Kalidasa says, "deposited his seed in fire" and gave birth to Kumara who battled the great demon named Taraka that "troubled the world."

The Babylonian astrologers ascribed to their planet-gods the ability to emit the sounds of different animals—lion, pig, jackal, horse, ass—and of two species of birds.⁹ The ancient Chinese likewise asserted that planets emit animal sounds when they approach the earth with a rain of stones.¹⁰ It is fairly probable that on some occasion the crash of the discharge "from the cloudless sky" sounded like Ta-ra-ka, the name of the demon who battled the planets.

The Ethiopian king who went up against Sennacherib called himself Taharka or Tirhakah.¹¹ In many places in the Near and Middle East this or similar names suddenly became very popular at the close of the eighth century before the present era; before that time it was unknown.

Taraka troubled the world so that

The seasons have forgotten how
to follow one another now;
they simultaneously bring
flowers of autumn, summer, spring.

The night when Sennacherib's army was destroyed, he survived, but according to rabbinical sources, was badly burned. Some time after his inglorious return from Palestine without his army, he was killed by two of his sons as he knelt in a temple; Esarhaddon pursued his brother-patricides, killed them, and became king. On one of his campaigns against Egypt, his armies became so panicky at some natural phenomenon that they scattered and fled from Palestine where Sennacherib had lost his army to the storm-god Nergal. The laconic cuneiform chronicles, composed in the days of Nabonidus, the last Babylonian king, who lived in the sixth century, record the main events of Esarhaddon's war: "In the sixth year the troops of

⁹ Kugler, *Babylonische Zeitordnung*, p. 91.

¹⁰ F. Arago, *Astronomie populaire*, IV, 204.

¹¹ Isaiah 37 : 9.

Assyria went to Egypt. They fled before a great storm."¹² An army as disciplined as the Assyrian army under one of its famous kings would not have run away from a cloudburst. The event mentioned in this inscription suggested to its modern publisher that the scriptural story of a blast that destroyed the Assyrian host refers, not to Sennacherib's army, but to that of his successor-son; otherwise one must think that on two similar occasions a natural cause subdued the Assyrian army. However, it is probable that after the army of Sennacherib was annihilated, violent atmospheric discharges and some portents in the sky, so numerous in those years, threw the Assyrian troops into a panic so that they fled.

The trembling earth, the displacement of the poles, the change in the climate, the frightening prodigies in the sky, caused great movements of peoples. The Aztecs changed their homeland. "These Mexicans carried with them an idol which they called Huitzilopochtli. . . . They asserted that this idol commanded them to leave their country, promising to make them lords and masters of all the lands . . . which abounded with gold, silver, feathers . . . and all the things necessary for life. The Mexicans departed like the children of Israel in their search of a promised land."¹³ In India the patron of the invading Aryan race was Indra, the god of war, the Hindu Mars.

The Ionians and Dorians spread to the islands, the Latins were pressed by newcomers to the Apennine Peninsula, the Cimmerians wandered from Europe across the Bosphorus into Asia Minor, the Scythians crossed the Caucasus into Asia.

Synodos

We remember that Josephus Flavius, after giving Herodotus' account of the destruction of Sennacherib's army, intended to quote a divergent account of Berosus, and introduced it with the words, "Here is what wrote Berosus," but the account is not preserved.

¹² Sidney Smith, *Babylonian Historical Texts* (1924), p. 5.

¹³ *Manuscrit Ramirez* (of the 16th century) translated by D. Charnay, *Histoire de l'origine des Indiens qui habitent la Nouvelle Espagne selon leurs traditions* (1903), p. 9.

Now, if we know what happened on the night of March 23, -687, are we not able to find out what the missing account of Berosus was?

We can assume that Berosus knew that the catastrophe was caused by a planet in contact with the earth. Seneca, in his work, *Naturales quaestiones*, described the cataclysms of water and fire that visited this world and brought it to the brink of destruction. He also presented the opinion of Berosus, which is remarkable in that it reflects ancient knowledge similar to that at which we arrived after a long series of deductions and conclusions. Seneca wrote: "Berosus, the translator of Bel, attributed to the planets the cause of these perturbations." And he added: "His certainty in this matter was so great as to fix the dates of the universal conflagration and deluge. Everything terrestrial, he says, will be burned, when the stars which now follow different orbits will reunite in the sign of Cancer, and will place themselves in one line, so that a straight line would pass through the centers of all these globes. The deluge will come when the same planets will have conjunction in Capricorn."¹

Disregarding the specific details of this assumption, there still remains a kernel of truth. The catastrophes of flood and of conflagration were ascribed to the influence of planets, and the conjunction was called the fatal moment. Such being the opinion of Berosus on the cause of the world catastrophes, the catastrophe that befell Sennacherib was probably explained by him in the same way. We are thus able to reconstruct Berosus' record which was omitted in Josephus.

Chaldean scholars were aware that the planetary system is not rigid and that the planets undergo changes. We find in Diodorus of Sicily: "Each of the planets, according to them [the Chaldeans] has its own particular course, and its velocities and periods of time are subject to change and variation."² They counted the earth among the planets, for Diodorus wrote that the Chaldeans stated "that the

¹ The same idea, but with varying positions of the stars as the cause of the catastrophes, is found in Nigidius, quoted by Lucan, and in Olympiodor, *Commentary to Aristotle*. See Boll, *Sternnglaube*, p. 201, and *idem*, *Sphaera*, p. 362; Gennadius (George Scholarius, patriarch at Constantinople), *Dialogus Christiani cum Iudaeo* (1464). A French edition of the works of Gennadius was printed in 1930.

² Diodorus of Sicily, *The Library of History* ii. 31 (transl. Oldfather).

moon's light is reflected and her eclipses are due to the shadow of the earth." ³ This implies that they knew the earth is a sphere in space, a fact known also to a number of Greek philosophers. ⁴

A few Greek philosophers were aware that planets, on close contact, are greatly disturbed, and that out of their agitated atmospheres comets are born. The perturbations in such contacts may be so strong that, when the earth is involved, deluge or world conflagration may take place.

Zeno, the founder of the Stoic school of thought, ⁵ and likewise Anaxagoras (-500 to -428) and Democritus (-460 to -320), declared that planets at conjunction may become coalescent, thus taking the form of comets. Aristotle, who misunderstood their teaching, declared: "We have ourselves observed Jupiter coinciding with one of the stars of the Twain and hiding it, and yet no comet was formed." ⁶

Diogenes Laërtius recorded that Anaxagoras thought that comets are "a conjunction of planets which emit flames" ⁷; and Seneca, without naming Anaxagoras and Democritus, wrote: "Here is the explanation which is given by some ancient authors. When a planet enters in conjunction with another, they confound their lights into one light, and they have the appearance of an elongated star. . . . The interval which separates them is illuminated by both of them, inflames and transforms into a trail of fire." ⁸ Seneca, who regarded this as an explanation of the nature of comets, questioned it, reasoning that "planets cannot remain for a long time in conjunctions, because by necessity of the law of velocity they would separate."

Plato, on the authority of the Egyptian sages, ascribed the deluge and conflagration of the world to the action of a celestial body that, changing its path, passed close by the earth, and he even pointed to the planets as the cause of periodic world catastrophes. ⁹ The Greek

³ *Ibid.* ⁴ Aristarchus of Samos recognized that the earth revolves together with other planets around the sun.

⁵ Seneca *De Cometis*.

⁶ Aristotle *Meteorologica* i. 6 (transl. E. W. Webster, 1931).

⁷ Diogenes Laërtius, *Lives*, "Life of Anaxagoras." ⁸ Seneca *De cometis*.

⁹ Plato *Timaeus* 22C, 39D.

term for the collision of planets is *synodos*, which, in the words of a modern interpreter, requires a meeting in space and also a collision of planets.¹⁰

The Romans knew that the earth is one of the planets; Pliny, for instance, wrote: "Human beings are distributed all around the earth and stand with their feet pointing toward each other. . . . Another marvel, that the earth herself hangs suspended and does not fall and carry us with it."¹¹

The earth, one of the planets, had been subject to conflicts with other planets, and traces of knowledge of these occurrences may be found in the early writers. Origen writing against Celsus stated: "We do not refer either the deluge or the conflagration to the cycles and planetary periods; but the cause of them we declare to be the extensive prevalence of wickedness, and its (consequent) removal by a deluge or a conflagration."¹² Celsus and Origen were familiar with the view that the deluge and the world conflagration were caused by planets, and that these world catastrophes could be calculated in advance.

Pliny wrote: "Most men are not acquainted with a truth known to the founders of the science from their arduous study of the heavens," namely, that thunderbolts "are the fires of the three upper planets."¹³ He differentiated them from lightning caused by the dashing together of two clouds. Seneca, his contemporary, also distinguished lightnings that "seek houses" or "lesser bolts" and the bolts of Jupiter "by which the threefold mass of mountains fell."¹⁴

A vivid picture of an interplanetary discharge is given by Pliny: "Heavenly fire is spit forth by the planet as crackling charcoal flies from a burning log."¹⁵ If such a discharge falls on the earth, "it is

¹⁰ Boll, *Sternnglaube*, pp. 93 and 201. The Greek term "requires a meeting in the same horizontal and vertical planes and a collision. The planets thrust one another and cause the destruction of the world" ("ein Zusammentreffen und auch ein Zusammenstossen auf derselben Ebene, also nach Breite und Höhe stossen die Planeten ineinander und lösen dadurch das Weltende aus").

¹¹ Pliny, *Natural History*, ii. 45.

¹² Origen, *Against Celsus*, Bk. iv, Chap. xii, in Vol. IV of *The Ante-Nicene Fathers* (ed. A. Robert and J. Donaldson, 1890).

¹³ Pliny, *Natural History*, ii. 18.

¹⁴ Seneca, *Thyestes*.

¹⁵ Pliny, ii. 18.

accompanied by a very great disturbance of the air," produced "by the birth-pangs, so to speak, of the planet in travail."¹⁶

Pliny says also that a bolt from Mars fell on Bolsena, "the richest town in Tuscany," and that the city was entirely burned up by this bolt.¹⁷ He refers to Tuscan writings as the source of his information. By Tuscan writings are meant Etruscan books.

Bolsena, or the ancient Volsinium, was one of the chief cities of the Etruscans, the people whose civilization preceded that of the Latin Romans on the Apennine Peninsula. The Etruscan states occupied the area of what was later known as Tuscany, between the Tiber and the Arno.

Near Bolsena, or Volsinium, is a lake of the same name. This lake fills a basin nine miles long, seven miles wide, and 285 feet deep. For a long time this basin was regarded as the water-filled crater of a volcano. However, its area of 117 square kilometers exceeds by far that of the largest known craters on the earth—those in the Andes in South America and those in the Hawaiian (Sandwich) Islands in the Pacific. Hence, the idea that the lake is the crater of an extinct volcano has recently been questioned. Moreover, although the bottom of the lake is of lava, and the ground around the lake abounds with ashes and lava and columns of basalt, the talus of a volcano is lacking.

Taking what Pliny said of an interplanetary discharge together with what has actually been found at Volsinium, one may wonder whether the cinders and the lava and the columns of basalt could possibly be the remains of the contact Pliny mentions. Again, if the discharge was caused by Mars, it would probably have occurred in the eighth pre-Christian century. The catastrophes of that century brought the great Etruscan civilization into sudden decline and launched the migration of newcomers to Italy leading to the founding of Rome. The Etruscans, as cited by Censorinus and quoted in the Section on "The World Ages," thought that celestial prodigies augured the end of each age. "The Etruscans were versed in the science of the stars, and after having observed the prodigies with attention, they recorded these observations in their books."

¹⁶ *Ibid.*

¹⁷ *Ibid.*, ii. 53.

The Stormer of the Walls

Following the upheavals in which, in the words of the Babylonians, Mars-Nergal "moved the earth off its hinges," and, in the words of Isaiah, "the earth moved exceedingly" and was "removed out of her place," mighty and repeated earthquakes devastated whole countries, destroyed cities, and shattered the walls of strongholds. "Blood-stained stormer of walls" is the ever repeated epithet of Ares in Homer. Hesiod, too, calls Ares "sacker of towns."¹ "Behold," said Amos, "the Lord commandeth, and he will smite the great house with breaches [into pieces]." Then came the "commotion" of the days of Uzziah, and of the days of Ahaz, and of the days of Hezekiah, when "the bricks are fallen down" (Isaiah 9 : 10) and only "a very small remnant" of the people remained (Isaiah 1 : 9). Those were days of "trouble, and of treading down, and of perplexity by the Lord God of Hosts" and "breaking down the walls" (Isaiah 22 : 5).

Recurrent displacement of the terrestrial globe, torsion of the lithosphere, and migration of the inner parts of the globe must have caused a succession of earthquakes over a prolonged period. But in comparison with the great catastrophes, when "heaven reeled," the local earthquakes received only slight attention.

In the reports of the astrologers of Nineveh and Babylon, earthquakes are often mentioned in just a single line, as in the following message: "Last night there was an earthquake." The frequent trembling of the earth became a source of omens for the magicians, which were reduced to formulas: "When the earth quakes in the month of Shevat," or "When the earth quakes in the month of Nisan," then one or another event will take place. As in the following sentence, the observation could be basically correct: "When the earth quakes through the whole day, there will be a destruction of the land. When it quakes continually, there will be an invasion of the enemy."²

Reports concerning earthquakes in Mesopotamia in the eighth and

¹ Hesiod, *Theogony*, ll. 935 ff. *Purandara* or "town destroying" is the usual appellation of Indra.

² R. C. Thompson (ed.), *The Reports of the Magicians and Astrologers of Nineveh and Babylon in the British Museum* (1900), Vol. II, Nos. 263, 265.

seventh centuries are very numerous, and they are dated.³ Nothing comparable is known in modern times. In some of these reports, Nergal (Mars) is mentioned as the cause of the calamity. "The earth shook; a collapsing catastrophe was all over the country; Nergal strangles the country."⁴ Temples constructed with great care, so that the foundations might absorb shocks and resist them, were often destroyed by the catastrophes, and the cause was again the planet Nergal. Thus Nergal is referred to in connection with the collapse of the temple in Nippur that was destroyed in an earthquake.⁵

The kings of Babylon, the successors to Sennacherib, record in many inscriptions the repairing of breaches in the palaces and temples of the land. Sometimes the same temples or palaces were repaired by two kings in close succession, as in the case of Nergilissar (Neriglissar) and Nebuchadnezzar.⁶ In the great catastrophes of the eighth to the seventh centuries, practically no structure escaped damage, and new buildings were erected so as to absorb frequent shocks. At the close of the seventh century, Nebuchadnezzar described the precautions taken in placing the foundations of the palaces "on the breast of the netherworld"; these foundations of large stones with joints fitting one into the other have been unearthed in excavations.⁷ The Babylonians also found that walls of burnt bricks were of greater elasticity than walls of stones; they were built on foundations of great blocks of stone.⁸

These ever recurrent earthshocks in a country as rich in oil as Mesopotamia also caused eruptions of earth deposits: "The earth threw oil and asphalt," observed the official astrologers, as the effect of an earthquake.⁹

³ See Kugler, *Babylonische Zeitordnung*, p. 116. ⁴ *Ibid.*

⁵ Langdon, *Sumerian and Babylonian Psalms*, p. 99.

⁶ See the Section "Mars Moves the Earth from Its Pivot," note 6.

⁷ R. Koldeway, *The Excavations at Babylon* (1914); *idem*, *Das wieder entstandene Babylon* (4th ed., 1925).

⁸ Koldeway, *Die Königsburgen von Babylon* (1931-1939), Vols. I and II. Cf. Pliny, ii. 84: "The solidly built portion of the city being specially liable to collapses of this nature . . . walls built of clay bricks suffer less damage from being shaken."

⁹ Kugler, *Babylonische Zeitordnung*, p. 117.

The Scriptures and the rabbinical sources record repeatedly the repairing of breaches in the House of the Lord. On the day of the "commotion" of Uzziah the temple suffered a great breach.¹⁰ References to breaches in houses, large palaces, and small dwellings are very numerous in the prophets of the eighth century. Isaiah speaks of "breaches of the city of David that they are many."¹¹ Repair of breaches in the Temple was the permanent concern of the kings of Jerusalem, also "the wall that was broken" of the city's outer bulwark.¹²

Since in modern times earthquakes occur only very seldom in Palestine, the frequent reference of the prophets and psalmists to them caused perplexity: "The earthquake held a place in the religious conceptions of the Israelites quite out of proportion to its slight and relatively rare occurrence in Palestine."¹³

Troy, the scene of the Homeric epos, was destroyed by an earthquake. The famous "sixth city" at Hissarlik, recognized as the fortress of Priam, king of the Trojans, fell because of earthshocks, a fact established in the excavation by the archaeological expedition of the University of Cincinnati.¹⁴

There are a number of theories concerning the cause of the earthquakes, but none of them is generally accepted. One connects the cause of earthquakes with the process of mountain building. Mountains are supposed to have their origin in the cooling of the earth and contraction of its crust.¹⁵ This theory is based on the assumption that originally the earth was liquid. The folding of the crust creates mountains and causes earthquakes.

Another theory sees the cause of earthquakes in the migration of

¹⁰ Josephus, *Antiquities*, IX. x. 4. See Ginzberg, *Legends*, VI, 358.

¹¹ Isaiah 22 : 9.

¹² II Kings 12 : 5; 22 : 5; II Chronicles 32 : 5; Amos 6 : 11; 9 : 11.

¹³ A. Lods, *Israel: From Its Beginnings to the Middle of the Eighth Century* (transl. S. H. Hooke, 1932), p. 31.

¹⁴ C. W. Blegen, "Excavation at Troy," *American Journal of Archaeology*, XXXIX (1935), 17.

¹⁵ See the discussion of the problem of mountain building in the Section "The Planet Earth."

land masses, even of entire continents. This theory, too, is based on the concept of a thin crust resting on a viscous substratum. Geological and faunal similarities of South America and West Africa suggested their separation in recent geological times, and their migration in opposite directions. According to this theory, thermal convection is the mechanical cause of this migration, with magma supplying the heat.

Still another theory supposes that there are great mountains and deep valleys on the inner surface of the crust, facing the magma. The sliding of huge rocks along these mountainous slopes under the pull of gravity is presumed to be the cause of earthquakes.

The mountainous western coast of North and South America, or the shore of the Cordilleras, and the eastern coast of Asia stretching into the East Indies form the area of greatest earthquake activity, with 80 per cent of the entire mechanical force released in earthquakes concentrated there. Another area stretches from the Mediterranean toward the highland of Asia.

In an attempt to find the relation of earthquakes to other natural phenomena, a statistical investigation of the earthquakes of the middle of the nineteenth century was conducted, and the results suggested that earthquakes are more numerous when the moon is new and again when it is full, or when the pull of the moon acts in the same direction as the pull of the sun or when it acts in the opposite direction. The time when the moon is in perigee, or closest to the earth, was also found to be favorable for earthquakes.¹⁶ These observations were challenged as to their general validity.

However, mountain building is a process the causes of which have not been established; the migration of continents is but a hypothesis; and the crumbling of the earth's crust must have some additional cause besides the force of gravity, because this force was active when the crust was built and made possible the formation of the crust in its present shape. Hence, all these theories are only hypotheses about unknown causes of known phenomena.

On the basis of the material offered in the foregoing pages, the assumption is made here that earthquakes result from torsion of the

¹⁶ Cf. the scientific publications of A. Perrey.

crust following a change in the position of the equator and the displacement of matter inside the globe caused by the direct attraction of a cosmic body when in a close contact. Pull, torsion, and displacement were responsible for mountain building, too.

If this conception of the causes of earthquakes is correct, then there must have been fewer and fewer earthquakes during the course of time since the last cosmic catastrophe. The regions of the Apennine Peninsula, the eastern Mediterranean, and Mesopotamia, for which we have reliable records, can be compared in this respect with the same regions of today.

Earthquakes in Asia Minor, Greece, and Rome are described or mentioned by many classic authors. For the purpose of comparison with the earth-tremor activity of the present day, it is enough to point to fifty-seven earthquakes reported in Rome in a single year¹⁷ during the Punic wars (-217).

If our interpretation of the cause of earthquakes is correct, then not only must more tremors and stronger shocks have been experienced in olden times, but also their cause must have been known to the ancients.

Pliny wrote: "The theory of the Babylonians deems that even earthquakes and fissures in the ground are caused by the force of the stars that is the cause of all other phenomena, but only by that of those three stars (planets) to which they assign thunderbolts."¹⁸

¹⁷ Pliny ii. 86.

¹⁸ Pliny ii. 81.