

CHAPTER IV.

FROM "SIGNS AND WONDERS" TO LAW IN THE HEAVENS.

I. THE THEOLOGICAL VIEW.

FEW things in the evolution of astronomy are more suggestive than the struggle between the theological and the scientific doctrine regarding comets—the passage from the conception of them as fire-balls flung by an angry God for the purpose of scaring a wicked world, to a recognition of them as natural in origin and obedient to law in movement. Hardly anything throws a more vivid light upon the danger of wresting texts of Scripture to preserve ideas which observation and thought have superseded, and upon the folly of arraying ecclesiastical power against scientific discovery.*

Out of the ancient world had come a mass of beliefs regarding comets, meteors, and eclipses; all these were held to be signs displayed from heaven for the warning of mankind. Stars and meteors were generally thought to presage happy events, especially the births of gods, heroes, and great men. So firmly rooted was this idea that we constantly find among the ancient nations traditions of lights in the heavens preceding the birth of persons of note. The sacred books of India show that the births of Crishna and of Buddha were announced by such heavenly lights.† The

* The present study, after its appearance in the *Popular Science Monthly* as a "new chapter in the Warfare of Science," was revised and enlarged to nearly its present form, and read before the American Historical Association, among whose papers it was published, in 1887, under the title of *A History of the Doctrine of Comets*.

† For Crishna, see Cox, *Aryan Mythology*, vol. ii, p. 133; the *Vishnu Purana* (Wilson's translation), book v, chap. iv. As to lights at the birth, or rather at the

sacred books of China tell of similar appearances at the births of Yu, the founder of the first dynasty, and of the inspired sage, Lao-tse. According to the Jewish legends, a star appeared at the birth of Moses, and was seen by the Magi of Egypt, who informed the king; and when Abraham was born an unusual star appeared in the east. The Greeks and Romans cherished similar traditions. A heavenly light accompanied the birth of Æsculapius, and the births of various Cæsars were heralded in like manner.*

The same conception entered into our Christian sacred books. Of all the legends which grew in such luxuriance and beauty about the cradle of Jesus of Nazareth, none appeals more directly to the highest poetic feeling than that given by one of the evangelists, in which a star, rising in the east, conducted the wise men to the manger where the Galilean peasant-child—the Hope of Mankind, the Light of the World—was lying in poverty and helplessness.

Among the Mohammedans we have a curious example of the same tendency toward a kindly interpretation of stars and meteors, in the belief of certain Mohammedan teachers that meteoric showers are caused by good angels hurling missiles to drive evil angels out of the sky.

Eclipses were regarded in a very different light, being supposed to express the distress of Nature at earthly calamities. The Greeks believed that darkness overshadowed the earth at the deaths of Prometheus, Atreus, Hercules, Æsculapius, and Alexander the Great. The Roman legends held

conception, of Buddha, see Bunsen, *Angel Messiah*, pp. 22, 23; Alabaster, *Wheel of the Law* (illustrations of Buddhism), p. 102; Edwin Arnold, *Light of Asia*; Bp. Bigandet, *Life of Gaudama*, the Burmese Buddha, p. 30; Oldenberg, *Buddha* (English translation), part i, chap. ii.

* For Chinese legends regarding stars at the birth of Yu and Lao-tse, see Thornton, *History of China*, vol. i, p. 137; also Pingré, *Cométographie*, p. 245. Regarding stars at the births of Moses and Abraham, see Calmet, *Fragments*, part viii; Baring-Gould, *Legends of Old Testament Characters*, chap. xxiv; Farrar, *Life of Christ*, chap. iii. As to the Magi, see Higgins, *Anacalypsis*; Hooykaas, Ort, and Kuenen, *Bible for Learners*, vol. iii. For Greek and Roman traditions, see Bell, *Pantheon*, s. v. *Æsculapius* and *Atreus*; Gibbon, *Decline and Fall*, vol. i, pp. 151, 590; Farrar, *Life of Christ* (Amer. ed.), p. 52; Cox, *Tales of Ancient Greece*, pp. 41, 61, 62; Higgins, *Anacalypsis*, vol. i, p. 322; also Suetonius, *Caes.*, Julius, p. 88, Claud., p. 463; Seneca, *Nat. Quaest.*, vol. i, p. 1; Virgil, *Ecl.*, vol. ix, p. 47; as well as Ovid, Pliny, and others.

that at the death of Romulus there was darkness for six hours. In the history of the Cæsars occur portents of all three kinds; for at the death of Julius the earth was shrouded in darkness, the birth of Augustus was heralded by a star, and the downfall of Nero by a comet. So, too, in one of the Christian legends clustering about the crucifixion, darkness overspread the earth from the sixth to the ninth hour. Neither the silence regarding it of the only evangelist who claims to have been present, nor the fact that observers like Seneca and Pliny, who, though they carefully described much less striking occurrences of the same sort and in more remote regions, failed to note any such darkness even in Judea, have availed to shake faith in an account so true to the highest poetic instincts of humanity.

This view of the relations between Nature and man continued among both Jews and Christians. According to Jewish tradition, darkness overspread the earth for three days when the books of the Law were profaned by translation into Greek. Tertullian thought an eclipse an evidence of God's wrath against unbelievers. Nor has this mode of thinking ceased in modern times. A similar claim was made at the execution of Charles I; and Increase Mather thought an eclipse in Massachusetts an evidence of the grief of Nature at the death of President Chauncey, of Harvard College. Archbishop Sandys expected eclipses to be the final tokens of woe at the destruction of the world, and traces of this feeling have come down to our own time. The quaint story of the Connecticut statesman who, when his associates in the General Assembly were alarmed by an eclipse of the sun, and thought it the beginning of the Day of Judgment, quietly ordered in candles, that he might in any case be found doing his duty, marks probably the last noteworthy appearance of the old belief in any civilized nation.*

* For Hindu theories, see Alabaster, *Wheel of the Law*, II. For Greek and Roman legends, see Higgins, *Anacalypsis*, vol. i, pp. 616, 617; also Suetonius, *Caes.*, Julius, p. 88, Claud., p. 46; Seneca, *Quaest. Nat.*, vol. i, p. 1, vol. vii, p. 17; Pliny, *Hist. Nat.*, vol. ii, p. 25; Tacitus, *Ann.*, vol. xiv, p. 22; Josephus, *Antiq.*, vol. xiv, p. 12; and the authorities above cited. For the tradition of the Jews regarding the darkness of three days, see citation in Renan, *Histoire du Peuple Israël*, vol. iv, chap. iv. For Tertullian's belief regarding the significance of an eclipse, see the *Ad*

In these beliefs regarding meteors and eclipses there was little calculated to do harm by arousing that superstitious terror which is the worst breeding-bed of cruelty. Far otherwise was it with the belief regarding comets. During many centuries it gave rise to the direst superstition and fanaticism. The Chaldeans alone among the ancient peoples generally regarded comets without fear, and thought them bodies wandering as harmless as fishes in the sea; the Pythagoreans alone among philosophers seem to have had a vague idea of them as bodies returning at fixed periods of time; and in all antiquity, so far as is known, one man alone, Seneca, had the scientific instinct and prophetic inspiration to give this idea definite shape, and to declare that the time would come when comets would be found to move in accordance with natural law. Here and there a few strong men rose above the prevailing superstition. The Emperor Vespasian tried to laugh it down, and insisted that a certain comet in his time could not betoken his death, because it was hairy, and he bald; but such scoffing produced little permanent effect, and the prophecy of Seneca was soon forgotten. These and similar isolated utterances could not stand against the mass of opinion which upheld the doctrine that comets are "signs and wonders." *

The belief that every comet is a ball of fire flung from the right hand of an angry God to warn the grovelling dwellers of earth was received into the early Church, transmitted through the Middle Ages to the Reformation period, and in its transmission was made all the more precious by

Scapulam, chap. iii, in Migne, *Patrolog. Lat.*, vol. i, p. 701. For the claim regarding Charles I, see a sermon preached before Charles II, cited by Lecky, *England in the Eighteenth Century*, vol. i, p. 65. Mather thought, too, that it might have something to do with the death of sundry civil functionaries of the colonies: see his *Discourse concerning Comets*, 1682. For Archbishop Sandys's belief, see his eighteenth sermon (in *Parker Soc. Publications*). The story of Abraham Davenport has been made familiar by the poem of Whittier.

* For terror caused in Rome by comets, see Pingré, *Cométographie*, pp. 165, 166. For the Chaldeans, see Wolf, *Geschichte der Astronomie*, p. 10 *et seq.*, and p. 181 *et seq.*; also Pingré, chap. ii. For the Pythagorean notions, see citation from Plutarch in Costard, *History of Astronomy*, p. 283. For Seneca's prediction, see Guillemin, *World of Comets* (translated by Glaisher), pp. 4, 5; also Watson, *On Comets*, p. 126. For this feeling in antiquity generally, see the preliminary chapters of the two works last cited.