

Of long-haired stars

written by

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(translated from Italian into English by Margherita Fiorello)

*Ma non v'era che il cielo alto e sereno.
Non ombra d'uomo, non rumor di péste.
Cielo, e non altro: il cupo cielo, pieno
di grandi stelle; il cielo, in cui sommerso
mi parve quanto mi pareva terreno.
E la Terra sentii nell'Universo.
Sentii, fremendo, ch'è del cielo anch'ella.
E mi vidi quaggiù piccolo e sperso
errare, tra le stelle, in una stella.*

**Giovanni Pascoli - *Il bolide*
(*I canti di Castelvecchio*)**

Comets as we know today

Comets - fantastic celestial objects (fig. 1) whose true nature remained uncertain until the middle of last century (1) - are very prosaically a sort of asteroid mainly composed of frozen volatiles such as carbon dioxide, methane, ammonia and water, mixed with dust and various minerals.



Fig. 1 - Comet West C/1975 V owes its name to the Danish astronomer Richard Martin West, who discovered it thanks to the Schmidt telescope, in La Silla ESO Observatory, in the Southern Atacama Desert (Chile). During the period of maximum visibility, in March 1976 it offered a superb show for color and brightness.

Very often they follow elliptical orbits very oblong (more often with a retrograde rather than direct motion), in such a way that they spend a long time in the most distant areas of the solar system and on the other hand they closely approach the Sun in the remaining periods: it is precisely when they are at perihelion that the heat of our star produces their outer ice layers' sublimation, freeing that fluorescent and bright halo of dust and gas, which wraps around their nucleus and can reach tens of thousands of kilometers in diameter: it takes the name of *coma* from which the name *Comet* [from Greek κομήτης (*kométes*) namely haired: κόμη (*kóme*) means in fact hair]. They can have different colors, depending on the evaporating chemical (carbon, hydrogen, oxygen, nitrogen). The force exerted on the coma by the solar wind leads to the formation of the *tail*, manifesting (as was discovered in 1531 by the Italian astronomer and physician Girolamo Fracastoro) always along the Sun direction, but in its opposite side. Actually dust and gas can form two different tails: one with the heavier powders, curving along the orbital path and assuming a variety of colors and another colored in blue, in which ions (produced by the water molecules sublimation by solar radiation), more sensitive to the solar wind pointing straight away from the Sun. Sometimes even the dust tail appears on both sides of the nucleus and then to the tail will be added an *anti-tail* (pointing to the Sun), as in the case of Comet Lulin (Fig. 2)



Fig. 2 - The Comet C/2007 N3 (Lulin), also called *green comet* after the color of its coma: in the left the sharp dust anti-tail and in the right the gas one. Retrograde in motion. On the left shines the star Regulus, α Leonis.

Obscure is comets' origin. According to the Dutch astronomer Jan Oort (1900-1992) *long period* ones would come from an area located half way between the dwarf planet Pluto (farthest of the solar system) and to α Centauri (the star system closest to us): it would just be a real spherical cloud (the *Oort Cloud*) made up of billions of ice chunks mixed with dust and grains of rock. Too far and too dark even for the most modern telescopes, it has never been observed. According to Oort some of these blocks, slowed in their race by the attraction of some star, would fall towards the Sun and after immemorial time would enter the planetary region with an eccentric orbit that would bring them, after the perihelion passage, again in the origin area. The *short-period* comets on the other hand would be sourced instead, with similar dynamics, from a closer place to the Sun beyond the orbit of Neptune, namely the so-called Kuiper Belt (Fig. 3), a ring made of ice and rock pieces, as suggested by Gerard Kuiper (1905-1973), the American astronomer who discovered it.

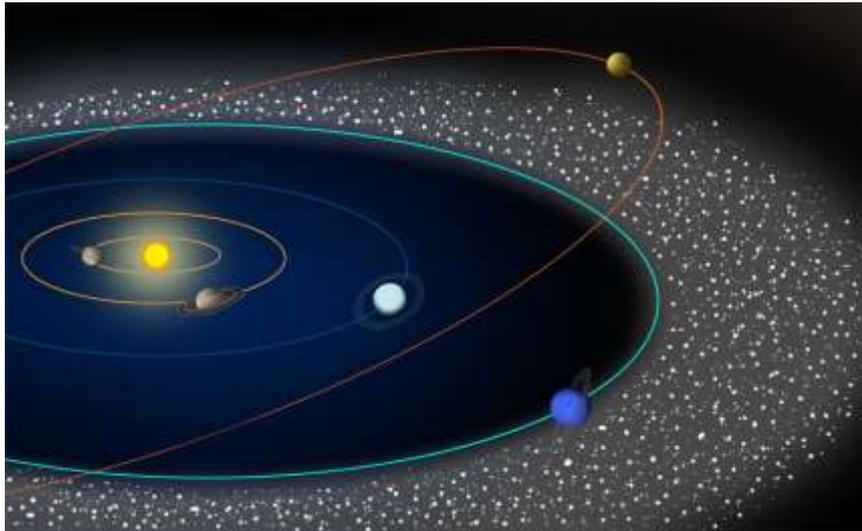


Fig. 3 - The Kuiper Belt.

Comets are among the fastest objects in the solar system and their orbit, variously inclined in respect to the ecliptic, can take the form of an ellipse, as well as a parabola or a hyperbola (Fig. 4). If their orbital period is less than 200 years, or their perihelion passage has been already seen two times (2), they are referred to as *periodic* by astronomers and their name is accompanied by the prefix P/. The periodic comets have elliptical orbits. The term *non-periodic* is used both for the ellipsoidal comets whose orbital period is over 200 years without an observed second perihelion passage, and those with parabolic or hyperbolic orbits. Their name is prefixed with C/ .

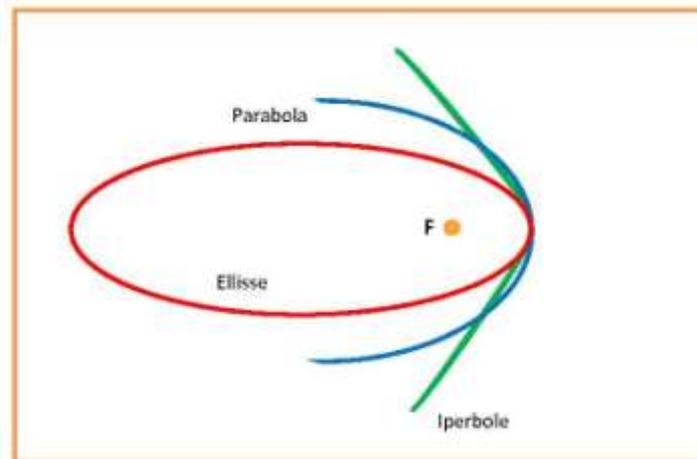


Fig. 4 - Ellipse, parabola, hyperbola.
Note that orbits are almost identical near the Sun .

Their lives' length depends on the number of their passages at perihelion and nucleus' consistence: having the latter a porous structure, it frees and therefore leaks, as said above, water and dust as it approaches the Sun, comets undergo a continuous erosion, which in the long run entirely consume

them. The microscopic debris left by comets along their tail are the cause of the phenomenon known as *shooting stars*: when the Earth has to cross one of them, debris, hitting the upper atmosphere, are completely burned, creating a shining stripe (3). *Perseids* or *St. Lawrence's tears*, which can be seen at night in mid-August are in fact Comet 109 P / Swift-Tuttle's residues, which passes near the Sun every 135 years. The alternative for comets to slowly unfold is to crash into a planet they find on their way: the event is rare but not impossible, as evidenced by the fall on Jupiter in July 1994 of the Comet Shoemaker-Levy 9. So far astronomers.

..... and what they were believed to be once: Aristotle.

From this necessary premise can be easily understood as the nature of these celestial bodies so beautiful, but so special, still proved and proves to be not easy to decipher. Let leave these studies, however, as it should be, to the astrophysics and let move on a ground which is more appropriate and more pleasant for us too, namely the historical one. Under observation since ancient times, in fact comets were not fail to create fear in the collective mind and were hailed as ambassadors of negative changes for the kingdoms and people. That's what we want to investigate and for this we will also make use of some ancient authors' passage (Hephaistio of Thebes, Leopold of Austria, Francesco Giuntini, Gerolamo Vitali and others), which we were pleased to translate into Italian and that we are attaching to this essay.

Let's start from the one whose opinion on comets dominated virtually unchallenged in the West for nearly two thousand years: the Greek philosopher Aristotle (384 / 383 - 332 BC) and one of his works, which he wrote around 340 BC: the four books of *Μετεωρολογικά* (*Meteorologiká*). The chosen title (the Greek word *μετεωρολογία*, *meteorology* comes from *μετέωρος* *metéōros*, "high" and *λέγω* *légō* "I speak", namely "rational discourse around high objects") means for Aristotle a set of phenomena such as the Milky Way, comets, shooting stars, winds, earthquakes, lightning, sea salinity, typhoons, and more. Phenomena he does not consider astronomical (i.e. of the sky) but atmospheric (i.e. of the Earth), according to his strict separation between the supernal spheres consisting of ether and not subject to the processes of generation and corruption, and the terrestrial world. So *μετέωρος metéōros* is what is *at the top, in the air*, but without crossing the boundary of the sublunar world. In this work is confirmed the *imago mundi* already theorized in *Περὶ οὐρανοῦ* (*Peri ouranoû* "On Heaven") namely a spherical universe, finite, unique and ungenerated, which is divided into two zones, the celestial or superlunar and the terrestrial or sublunar. In the first, perfect, incorruptible and divine, consisting of the fifth element, ether, stars rotate fixed in their own sphere; in the center of the second one lies the motionless Earth, populated by corruptible beings, which are the product of the combination of the four elements (earth, water, air and fire) and subject to the changes determined by the motion of the stars. The motion they are moved is according nature and, therefore, circular in the first one, straight (ascending and descending toward the center) in the second: in fact there are only two types of basic lines, the circumference and the straight line and it is natural to assign to the sky, itself excellent and immune from the imperfections of their corruptible beings, the circular motion, because the circle is finite and perfect, the line not. More precisely the planetary spheres rotate (each with a proportional speed to its distance from Earth) from West to East, but at the same time participating to the opposite diurnal motion of the most extreme sphere in which are embedded the fixed stars (4).



Fig. 5 - The Aristotelian universe as depicted by the German astronomer and cartographer Peter Bienewitz, or Petrus Apianus, in his *Cosmographia sive descriptio universi orbis* (1584 reprint).

From this paradigm now codified, Aristotle proceeds in the first three books of *Meteorologiká* examining atmospheric phenomena taking place in the sublunar region, giving in the first one, with a theory not present in earlier thinkers and therefore totally new, the following explanation: "*Here is the origin of these and many other phenomena. From the warming of the Earth by the Sun is generated an exhalation which is necessarily (5) not only one, as some believe, but of two types: one is similar to vapor, the other more similar to breath. The exhalation generated by the moisture, which is located in and on the earth, is like the vapor generated by the earth itself, which is dry, is similar to smoke: the second of them moves upwards because it is hot; the first, moister, sinks because of its weight.*" (6).

The air, or rather the atmosphere around us in short is composed of two exhalations, a moist one, similar to vapor, lower, which is the basis of the mechanism of formation of clouds, rain, dew, frost and so on, and a dry one, like smoke, lighter, which is fire in potency, a kind of high flammability material, from which derive winds, whirlwinds, lightning, earthquakes, the Milky Way, comets and so-called $\phi\acute{\alpha}\sigma\mu\alpha\tau\alpha$ *fásmata*): burning and shooting stars (7). So writes the Stagirite: *Therefore the place around the Earth, is ordered as follows: first under the circular motion, there is the hot and dry element, which we call fire (in fact we do not have a name for what is common to all different types of smoky exhalation, but since this is among the most flammable among all bodies, it is inevitable to name it like that), under the fire there is air. Keep in mind that this kind of fuel, now called fire is spread along the limit the Earth sphere, and so, often, becomes inflamed like smoke as a result of the smallest motion: in fact the flame is a boiling dry exhalation. Under suitable conditions therefore this condensation will ignite when it is set in motion by upper translation*" (8).

The above mentioned upper transfer is that of the adjacent celestial world in which these phenomena, considering their embarrassing irregularities could not surely originate or appear. But let's see what he says of comets in particular (9). He initially starts branding as absurd the opinions of the philosophers who preceded him, namely those of Anaxagoras (496-428 BC) and Democritus

(460-360 BC), who had claimed that comets are planets' apparent conjunction, that coming so close, seem to touch each other; or some Pythagoreans, who had claimed the Comet to be one of the planets appearing only after long intervals of time and with little elevation above the horizon; or Hippocrates of Chios (470-410 B.C.) and his pupil Aeschylus, who asserted that the coma is not part of the comet, but it is acquired in its passage through space, *when our eyesight is reflected back to the Sun by the moisture it carries out* (so due to an optical phenomenon). He then confirms that the haired stars are nothing but a hot and dry exhalation inflamed by friction with the motion of the surrounding ether, and if this exhalation is smoothly extended there will be a comet, if it is extended in depth we will have a bearded star (πωγωνία *pogonia*). He goes on adding as proof of their fiery nature, their appearance heralds winds and drought: belief Aratus will transpose into verse (10):

Οί εἶεν καθύπερθεν δ' εὐκότες ἀστέρες αἰεὶ,
μηδ' εἷς πηδὲ δύο μηδὲ πλέονες κομόωντες·
πολλοὶ γὰρ κομόωσιν ἐπ' ἀρχμηρῶι ἐνιαυτῶι.

*May the stars above be as it is convenient for them,
may neither one or two or more cut a coma;
to many comets in fact a season of drought follows.*

(Aratus, Phenomena, verses 1092-1094)

Finally Aristotle says that such apparition is sometimes accompanied with other unlucky events, as happened under the archonship of Theagenides (468-7 BC), when a meteor fell in Aegospotami or under Nicomachus archonship (341-340 BC), when a wind storm blew on Corinth.

As we said before, the Aristotelian explanation of comets' nature, and in more general terms the one of "atmospheric" phenomena, largely influenced the following studies about this subject, beginning from the commentary dedicated to *Meteorologiká* by Alexander of Aphrodisias (whose *floruit* can be placed at the beginning of the III c. AD), Olympiodorus the Younger (ca. 495-570 AD) and John Philoponus (490-570 AD). We cannot help but be confirmed that the great philosopher's cosmological vision, even if outdated, without a doubt constitutes an unavoidable stage for those who desire in some way to retrace the path, followed by the human thought in order to reach the present level of understanding of the natural reality.

Claudius Ptolemy - Hephaistio of Thebes

Ptolemy (100-175 ca. AD) truly dedicates to comets a few lines in the Chap. 9 of the II Book of *Tetrábiblos* (11), entitled *Of the colors of the eclipses, comets and the like*. In the beginning he states it is always opportune to observe, in occasion of eclipses, both the color of the Lights and the formations occurring around them, like beams, halos etc., because the different color announces a similar effect than the planet which it is connected with. The black color recalls Saturn, the red one Mars and so on, according to an analogy we know true for fixed stars also. Sharing the same planetary chromatic tone of a planet means to share its nature, with a kind of substitutional action, whose theorization we saw to go back to Assyrians (12). To this recommendation the Alexandrian scholar adds another one, namely also observing, in the times of the eclipses, any comet apparition. The method is perfectly consistent, in fact we know that halos, beams, comets belong all to the category of *metéōra*, those anomalous and unexpected manifestations always indicating with their

own appearance a change of the things and of which it is absolutely necessary to take into consideration in the general predictions. Ptolemy in fact goes on recommending their examination in any case, and in every other time too. He therefore introduces in this way his speech on these celestial bodies, to which he assigns Mercury and Mars' nature because the nature of the former is hot and dry and changing and windy the latter, in agreement with Aristotle, who as we have seen wants them forerunner of drought and wind. Cardano comments this statement (13) saying that this phenomenon occurs when *quoniam et ipsae velociter moventur et igneum quippiam prae se ferunt*, namely *because they move themselves* (the comets) *swiftly and show something of igneous*; but that they have something in common with the other planets as can be deduced from their color, not differently from what happens for eclipses: if it is gloomy, the comet also participates of Saturn's nature, if white of Jupiter's one, if reddish of Mars', if tawny of Venus', if polychrome of Mercury's one. Ptolemy goes on saying that they show war and fire and everything generally accompanies such things: and Cardano (14) piles on it scarcity, drought, plague and King's deaths (all effects of the nature of Mars/Mercury together) and many other things. These events will have place in the regions indicated from the Zodiacal sign where the comet will appear and from the direction showed by its tail (Fig. 6); their duration will depend on being visible; the swiftness or slowness of their occurring on the other hand, from its position regarding to the Sun: if matutine within little time, if vespertine with greater delay. This is Ptolemaic thought.

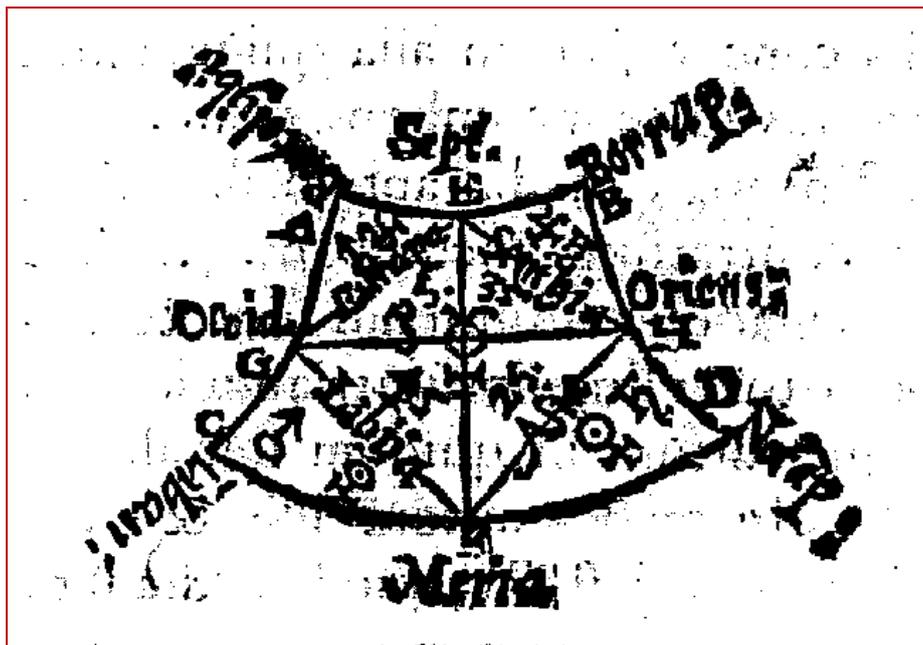


Fig. 6 – The *planispherium*, which Cardano indicates as tool in order to locate the place indicated from the Comet. the image is from *Commentaria*, Book II, Chap. III, Par. XIV.

From Cardano's abundant comment we like to extrapolate an extract about the role of the comet in nativities: *“Moreover, as far as the particular things, the ratio is the same as eclipses. In fact if the native has the significator of life or the Ascendant in place subject to the rulership of the Comet, runs the risk to lose his life: if in truth the Midheaven to some destroys, to others consolidates dignity and position, according the nature of the place and the nativity. On the other hand for the new born children, things are different. Those in fact born with the Comet at the Ascendant either*

or do not survive or if they live, they become really extraordinary. In the same way, if someone is born with the Comet at the Midheaven he will be more than prominent. In fact all the changes in fortune will be always consistent and happy, since everything is favorite for the way it began. And those having the Comet in this position, will not die because of it, but for other cause. It is not the same for those born with the Comet at the Ascendant: many among them, as I said, die because they cannot bear the violent effort of being born; those able to deal with it, come to the light crippled and invalids, not differently from those with the maleficent stars with the Ascendant. In truth those escaped to each damage, are consistent and efficient and quick and are absolutely destined for the highest activities and in their destiny there are kingdoms too, they have in fact vigor and energy.” (15), extract from which we understand this celestial body's role has no half-measures: either destroys or raises the human fates. We will not leave the Pavia doctor without mentioning his own opinion on the nature of comets: he thought they were produced by a sphere placed outside the sublunar world illuminated by the solar beams; so in fact he writes in *De Subtilitate*: “*Quo fit ut clare pateat, Cometem globum esse in caelo constitutum, qui a Sole illuminatus videtur et dum radij transeunt, barbae aut caudae effigiem formant*” (16).

Ptolemy's chapter is practically transcribed word for word by Hephaistio (whose *floruit* can be placed in 415 AD) in the part, in his *Apotelesmatika* (17), entitled *Of the colors of the eclipses and comets* [Book I, chap. 24 - attached translation]. It is the first part, to ἐσπέριοι δὲ βράδιον (*to the West, more delayed*); the second one consists instead of the description of the main comets (*Ippeüs, Xiphías, Lampadías, Kométes, Diskeüs, Ilitia, Typhoon*) with their attributions coming instead from Petosiris (18). We should not be surprised, because all the three Hephaistio's books are a compilation of someone else texts: circumstance not unnoticed to Pingree, who in his Latin preface to the *Apotelesmatika* highlights as in the book I are passed down elements taken for the greater part from Ptolemy and ancient Egyptians' writings, who took them from the Babylonian doctrine of the Chaldeans; in the second one genethliac astrology is taken from Ptolemy and Dorotheus; in the third one elective astrology is taken from Dorotheus; and as for this reason the Theban astrologer added very little of his own.

Returning to the second part of the chapter on comets, it is known that, in the field of the universal astrology, Petosiris (whose name reached us tenaciously connected with that of Nechepso) has been remembered - to say as Gundel says - an authority in the judgment on comets' apparitions, on the eclipses of Sun and Moon and on forecasts for the new year according heliacal rising (19) of the star Sothis (i.e. Sirius). Many authors (in addition to Hephaistio) refer to him: between the rest Pliny the Elder (20), Vettius Valens (21) and Firmicus Maternus (22). Among Greek authors the first reference is in Lucilius (Anth. Palatina XI, 64), who writes in a satiric epigram as Aulus the astrologer foretold, judging his own nativity, his fatal day was come and he had just four hours to live; when he arrived at the fifth one, not desiring to live as an illiterate and having bring shame on Petosiris, he hanged himself (23). *Petosiris* was therefore synonymous with *astrology*.

None of his work survived, unless the fragments published in 1892 by the classical philologist Ernst Riess (24). Of him the Suda (25) under the entry *Πετόσιρις* says : “*Egyptian philosopher* ” who wrote about “ *how Greeks and Egyptians classified things of the Gods. Selections from the sacred books. Studies on stars. And on the mysteries of the Egyptians*”; and Riess explains this list so (26): of the first book, namely the one on Gods, we do not know anything. It is possible however to suppose it dealt either of the cult of Gods or the close relationship existing between Greek and Egyptian divinities. As far as *the selections from the sacred books*, although they can be explained in many ways, he judged however this book was nothing else than astrology. With *studies on stars (astrologumena)* are certainly meant Nechepso and Petosiris' texts: difficult to say how many books they were. Dissertation in any case should be extremely wide, because the authors dealt in the first instance

of the nature of the Universe, then of general astrology, based on judgments through *metéōra*, at last of the particular astrology, which can be referred to every natives. According to Franz Boll (27) these prophetically obscure works were two, one ascribed to the king Nechepso (who effectively lived in the VII c. BCE) and the other to the priest Petosiris, embodied revelations addressed to illuminate royal spirits and represent the main text of the late-Egyptian astrology; written in Greek by these two hypothetical Egyptian authors, they embodied not only all the details of Babylonian and ancient Egyptian *ars*, but also of the Greek one (in particular the ordering of planets according the length of their revolutions). Their text became a real Bible for astrologers, matching for prestige Claudius Ptolemy's astrological work. As far as its dating, the German philologist believes it goes back to at least 150 years before Christ, because it still mentions Corinth as not yet destroyed. The first 26 fragments published by Riess derive from these *studies on stars (astrologumena)*; they are paraphrases or rewriting of Petosiris' texts by other authors; the fragment n. 10 is exactly the second part of the above mentioned Hephastio of Thebes' chapter on the colors of the eclipses and comets. Today nothing is survived of the work *on the mysteries*, which is only known to the Suda *Μυστήριον (musthérion)* is called by the alchemists the dye used to create gold and perhaps the book dealt with that same subject.

Johannes Lydus

The fragment N° 9 of the *astrologumena* on the contrary is extrapolated from the work entitled *Περὶ Διοσημείων (Perì Diosemeíon)* written by Johannes Lydus. *Σημεῖον (semeion)* is the sign, the omen sent from a God and *Διοσημεῖον*, composed with *Ζεὺς, Διὸς (Zeus, Dios)*, means therefore *sign sent by Zeus*. The translation of the title is therefore *Of the signs sent by Zeus*, but in Latin became *De ostentis*, losing for unknown reasons, the attribution of the omens to the king of Gods. Johannes (490-560 ca. AD), son of Laurentius, was called *Lydus* because he was born in Philadelphia in Lydia (today Alaşehir in Turkey). Bizantine writer and civil employee of Justinian era, was author, beyond the mentioned *Perì Diosemeíon*, of the *Περὶ τῶν μηνῶν (Perì tōn menōn)* namely *Of the months* and of the *Περὶ ἀρχῶν τῆς Ῥωμαίων πολιτείας (Perì arkōn tes Romaiōn politeias)* namely *Of the magistrates of the Roman republic*. The three works survived due to the findings in 1785 ca. in Curucisma, a village on the sea at the doors of Costantinopolis, the so-called *Codex Caseolinus Parisinus supplementi Graeci 257*, a membranous *in folio minori* manuscript. The owner, prince Ben Morusi Sutzari, offered it the Count Marie-Gabriel-Florent-Auguste de Choiseul-Gouffier [erudite and lover of antiquities, member of the *Académie Française*, in that moment French ambassador at the Ottoman Porte] who made the wish to get it. When the Count came back to Paris he commissioned the revision and the editing of the manuscript, found already lacking of the beginning, incomplete of the end and battered as if it had been conserved in a cellar, to Karl Benedikt Hase, a German paleographer and expert of ancient Greek philology: he did the job with incredible accuracy and skill, to the point to allow the reading of letters by that time vanished and to overwhelm huge gaps (28). After his death the manuscript was transferred to the *Bibliothèque du roi*, now *Bibliothèque nationale de France (BnF)* where it can be still found, called after him *Caseolinus*; written in IX century or at the beginning of X century of our era, it is composed of 102 sheets, 37 of which containing the *Perì Diosemeíon* (29).

This work, dedicated like the other two, as can be read in Suda under the entry Ἰωάννης Φιλαδελφεὺς Λυδός, to Gabriel, *praefectus urbis* in 543 AD in Costantinopolis, is articulated in 71 chapters: at the beginning of the fourth one Lydus states his intention “*speaking about the solar and lunar occultations (so in fact eclipses are called), of comets and their species, of their courses, of lightning bolts, of thunders, of lightning and the other celestial prodigies: at last of earthquakes and fires, and predictions can be made from them, not in order to investigate about their physical*

causes or building a theory - philosophers can deal with this - but in order to see if it is possible to likely know from these wonders the outcome of what will come” (30). In short he desired to write a kind of handbook useful to foresee future events according the observed celestial signs. Signs (*σημεῖα semeia*) not wonders (*τέρατα térata*), as he specifies in the proem: in both cases they are *πρόγνωσις (prógnōsis)* that is prescience, the ability of foreseeing, but the *celestial signs* are the ones coming from the sky, while *wonders* are the events against nature occurring on the other hand on the Earth, like the many examples reported by the Bible (as an example in Exodus 4,3, when Moses changes his stick in a snake). The first 20 chapters of the work therefore cover the omens coming from eclipses and comets, from the 21st on, those coming instead from thunders, lightning and earthquakes, these latter subjects relating to Etruscan sacred books and their *discipline tonitruialis* and *fulguralis*. Several chapters are dedicated to comets; on the other hand, Lydus immediately states in the first one he was pushed to write the book having observed with his own eyes the effects of the transit, in 540 AD, of a *knight* comet: Persians, lead by the king Cosroe, attacked Justinian's reign, penetrated in Syria and destroyed Antioch. The tenth chapter introduces comets in general (section 1-10 are a paraphrase of Ptolemy chapter) and ends with the presentation of Campester's treatise on the same subject. This one covers from the eleventh to fifteenth chapter, each of them dedicated to the description and the effects of the six comets *Ippeùs, Xiphías, Lampadías, Kométes, Diskeùs, Typhoon*, in the same order as Hephaistio, but with greater amount of information. Riess relates these six chapters as fragment 9 adhering to Wachsmuth's opinion (31), according which they are taken from Petosiris; this can be inferred from the comment by M. Servius Honoratus at the verse n. 273 of Book X of Vergil's Aeneid, of which we will speak more ahead.

Little we know of Campester. Lydus himself at the beginning of the chapter 9c defines him as *Roman* and he says *he followed the doctrines of Petosis* (it appears as fragment 8 in Riess); in addition his name appears in *Adnotationes super Lucanum*, which Wachsmuth transcribes in two *Epimetra* (32): Lucan' scholiast, in commenting verse no. 529 of the first Book of *Pharsalia*,

*ignota obscurae uiderunt sidera noctes
ardentemque polum flammis caeloque uolantes
obliquas per inane faces crinemque timendi
sideris et terris mutantem regna cometen.*

*The dark nights saw unknown stars
and the celestial vault burning by flames and fires flying
across the sky through emptiness and the hair of the horrible
star and the comet overthrowing the kingdoms on the Earth.
(Marcus Anneus Lucanus, Pharsalia, I, 526-529)*

referring to the omens which hit Rome when Caesar crossed the Rubicon (10 January 49 BC) mentions him, saying “*Campestris scribit cometas quinque esse, id est Ἰππιον Solis, Λαμπαδίαν Lunae, Εἰφίαν Martis, Disceum Mercuri, Τυφῶνα Saturni. Sed quattuor stellas supra scriptas visas esse aliquando, dum regna mutantur. Τυφῶν autem, when visus fuerit, cuncta interitura*”. Therefore *Kométes* is absent. It is evident from the reading of Campester's treatise (33), than he adapted Petosiris' doctrine, which was addressed to Egyptian readers, to his age and to the Roman Empire: the fear of Persians, spread everywhere in the fragment, makes easy to suppose he lived during the last few years of the III c. AD. In any case the comets' description (34) he suggested, as

we said, agrees with M. Servius Honoratus' one, who quotes him in his turn: the Latin grammarian (35) in fact, in commenting Vergil

cometae sanguinei lugubre rubent

when comets glow, blood-red and ominous
(Vergil, Aeneid, Book X, verse 272)

refers Avienus' opinion (36) on the subject, listing the six names to which now we are familiar finally saying that “*plures vel pleniore differentias vel in Campestri vel in Petosiri, si quem delectaverit*”, which sounds therefore as a reference for a more detailed description, to these two astrologers, whose link is therefore openly mentioned. Maurus Servius Honoratus passage [of which we are attaching a translation] is transcribed also by Riess (fragment 11), who suggests at the end of his comment in order to compose differences between Campester, Hephaistio and Lydus testimonies, substantially in agreement for the number of comets, and what on the other hand is claimed by Lucan's scholiast (it is known he is referring on good bases), supposing that from Campester, surely an epitomizer, start two different judgments one of Egyptian origin, and Greek the other. He believes this for the association between each comet and a planet.

We cannot leave Lydus without mentioning that in *Peri tōn menōn* (37) he inserts in the month of August a digression [of which we are giving attached translation], where he quotes Lucius Apuleius' opinion (125-170 ca.): he was a Roman writer, rethorician, philosopher, magician and alchemist; the listed comets are as usual in number of ten, and of them only the description is given.

Leopold of Austria

Now we can introduce the passage about comets in the *Compilatio de astrorum scientia* of Leopold of Austria, of which very little is known. He writes of himself in the *incipit* of the work *Leupoldus ducatus Austriae filius* (which only means for sure he was born in Austria Duchy and not he was a duke's son), adding nothing else about him. The margravate of Austria was raised to the rank of a duchy through the *Minus Privilegium* (a kind of solemn diploma) in 1156 by the emperor Frederick I, head of the Sacred Roman Empire and this date constitutes therefore a first *post quem* time limit: It is not a case that the astronomer Giovanni Battista Riccioli says in *Almagestum Novum* that “*Leopoldus de Austria magnae famae astrologus floruit circa 1200*” (38); on the other hand the only date in the work is *annus Christi 1271* and there is an anonymous French translation of the first eight chapters preserved in Manuscript 613 *fonds français* of *Bibliothèque Nationale de France*, which cannot be older than 1324. The manuscript belonged in fact to Mary of the Luxembourg, second wife of Charles IV the Fair, King of France, who died in 1324, only 19. We will reject therefore both the date proposed by Riccioli and by the anonymous author of the *Geschichte der Astronomie* of 1792, including Leopold between XV century authors (39) and we will prefer instead to say he lived in the second half of the XIII century. The first printed edition of *Compilatio* is published in 1489 by Erhard Ratdolt (40), who dedicated it to Udalric of Frundsberg, bishop of Trent and added beautiful, hand-colored images of planets and the constellations, therefore like they were handed down by the myth, but wearing XV century's clothes. (Fig. 7: Plates engraved by Geronimo de Sanctis from drawings by Johannes Lucilius Santritter, were used from the publisher in order to illustrate also other books.



Fig. 7 - The edition of *Compilatio* of Leopold of Austria edited by E. Raddolt begins with this beautiful image of the *Sphaera Mundi*

Leopold does not take the credit of the work, and on the other hand he warns his readers not to ask who is the author. In addition he clarifies there were more than a author and he was just a *fidelis illorum observator et diligens compilator*. His stated goal is describing the motion of the stars, without lingering on it because many authors already did, but instead focusing with greater amplitude on their effects. Astronomy as necessary premise and foundation of astrology. It sounds like Apotésma Manifesto, it goes without saying! *Compilatio* is articulated in ten treatises: the first on the spheres and their circles and motions; the second on the planetary spheres and their circles and motions; the third one on the examination of science of the influences and on what is this science; the fourth one on the doctrinal introduction of the judgments; the fifth one on the revolutions of the years; the sixth one on the changes of the air; the seventh one on nativities; the eighth one on the interrogations; the ninth one, to which is attached the natural science of the images, as daughter of astronomy (is instead banned necromancy, diabolic and profane); the tenth one on *intentions*, which science is called wonderful and marvelous.

As far as its fortune, the *Compilatio* or at least its first eight chapters were translated in French, as we have seen, before 1324, with the title of *Li compilacions* and Francis J. Carmody, who edited and commented the first three chapters (41), emphasizes the importance of this translation, because it is the best of the rare texts about Arabic astronomy in France before the first half of the XIV century. It was known too (42) to the cardinal and French astronomer Pierre Ailly (1350-1420) and to the German astronomer and astrologer David Origanus (born David Tost von Glatz) who lived between 1558 and 1628.

The short dissertation on the comets of which we are giving a translation is at the end of the fifth treatise: it begins with a quick reference to Aristotle's theories and the opinion of a Father of the Church, John of Damascus (676-749 ca.), who in *De Fide Orthodoxa* (Book II, Chap. VI) asserts that these celestial bodies announce the Kings' death and that they do not belong to the stars which were created in the beginning, but they are formed and dissolved by God will. He goes on then with a list of comets, which are said to be nine and called with Latin names [their features however are those already known to us] ending with the omens could be cast from their presence in each Zodiacal sign.

These last judgments turn out to be a transcription of those stated by Albumasar in *De magnis Conjunctionibus* (Fig. 8) exactly in the part where the Arab scholar speaks about the meaning of the two lunar nodes and *stellae habentes caudas* (43) in each sign.



Fig. 8 - The edition of Albumasar's *De magnis conjunctionibus* . published by E. Ratdolt: again the *Sphaera mundi* and characters in XV century clothes.

Francesco Giuntini

Let's come to the pages dedicated to comets in the *Speculum Astrologiae* by Francesco Giuntini, author of whom we had already occasion to deal with in 2003 in an article about the prediction tools of Renaissance astrologers (44). In a recent visit to the Archiginnasio Palace, built in Bologna in the XIV century, where once was based the ancient University and now the homonymous Library, they showed us a whopping two editions of the *Speculum*, the 1573 edition in a single volume and the 1583 edition in two volumes (Tomus Prior and Tomus Posterior), both in optimal state of conservation (45). About the contents of the first one can be read an *abstract* in Lynn Thorndike's *History of Magic* (46); we will list here the index of the subjects, as on the other hand can be deduced from the *catalogus rerum* at the beginning:

- I. Defense against the adversaries of the Astrology
- II. The incomparable work on the judgments of nativities
- III. On the revolutions of the nativities, work now at last enlarged in many places from the same author and restored in its purity after having removed all the errors
- IV. Introduction to judicial astrology
- V. Compendium of the fixed stars and their judgment in nativities.
- VI. Astrological and poetical calendar, with many nativities for the observation of all the said things
- VII. Treatise on the Moon and Sun eclipses
- VIII. Annotations on comets
- IX. *Tabulae resolutae* for the calculation of the motions of all planets according Nicolaus Copernicus' observations.

The second edition in two volumes was enriched - beyond other authors' works [from Pseudo-Ptolemy's and Hermes' Centiloquium to G. Peurbach's *Tables of the Eclipses*] - also of nearly the whole astronomical and astrological works elaborated by Giuntini in the previous years, as the *Comment to Ptolemy's Quadripartite*, and the *Comment to the Sphaera of J. de Sacrobosco*. It is therefore much wider, we would say encyclopedic.

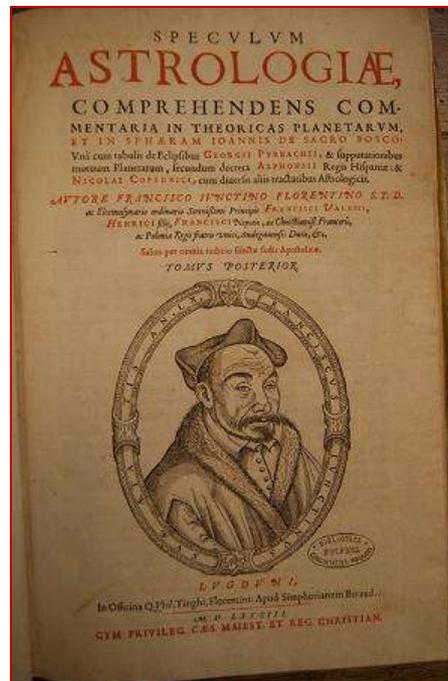


Fig. 9 - Tomus Posterior of Francesco Giuntini's *Speculum Astrologiae* published in 1583.

Annotationes in Cometis, quas mundus numquam impune vidit: ex observationis veterum Astrologorum (47) of which we have translated the first part, fill the pages 1124 - 1339 of Tomus Posterior (Fig. 9) we examined in Bologna. They start giving a definition of this celestial body and we find among those mentioned, word for word, the one given by Leopold of Austria “*cometa igitur (teste Leopoldo) est vapor terrenus, habens grossas partes fortiter coniacentes....*”, confirming that the latter author still was read and quoted. Then there follow the characters and some aphorisms on comets, the omens can be drawn according their different planetary nature, their meaning according the zodiacal signs, in the nativity and the revolutions of the year. These notes are closed, as in Leopold' short dissertation, by the rules in order to find the planet ruling some city or place. Giuntini still worked on comets, with booklets and dialogues, between 1572 and 1577, period connected to the appearance of a supernova and a comet. The stella nova or supernova, extraordinarily large and bright, appeared on the 11 November 1572 in Cassiopea Constellation and attracted the attention of numerous astronomers, in particular of Tycho Brahe (48): who, in his careful observations noticed, not showing a parallax, it should be much farther than the Moon and to belong to the sphere of fixed stars, contrarily to Aristotle's opinion who supported the idea that that region should be absolutely incorruptible. (Fig. 10).



Fig. 10 - The treatise written by Tycho Brahe on 1572 supernova.

Also on November 13, 1577 a comet, bright as Venus, and with a tail 22° long appeared in the sky, and again was noticed by Tycho, who was fishing outside. The observations on this second object strengthened in the Danish astronomer the idea that the mainstream astronomical theory should be revised. Also in this case the measurement of the parallax showed that the celestial object was well over the Moon and moreover it moved between the spheres of planets, which Aristotle had instead defined *crystalline* and therefore material. Tycho deduced that such spheres did not exist, giving origin to that debate from which would derive the transformation of the meaning of the term *orbis* from *sphere* to *orbit* (49). The debate on these phenomena hummed all over Europe and Giuntini in both cases would express his opinion in *Discours sur que menace la comète* translated into Italian too, an open letter addressed to Giovanni Bonaccorsi, house-steward of the Queen of Navarre, from Lyon on November 28, 1572) and *Discours sur ce que menace devoir advenir la comète apparue a Lyon le 12 Nov 1577*; both the booklets, which met some fame, followed the tradition and favored the previsional aspect (50), assigning as usually to comets the role of ambassadors of evils of every kind.

Leaving this astrologer we will still add something about his life. In Michaud's *Biographie Universelle* (51) we read that he was born in Florence on 7 March 1522, as he said in 1583 edition of *Speculum*. In fact in *Calendarium Astrologicum, Historicum et Poeticum*, which records by day the birth and death dates of many famous men and can be found at the end of Tomus Posterior, we read at p. 1148, under the month of March, in correspondence of the 7 “*Francisci Iunctini Sacrae Theologiae Doctoris natalis anno 1522, hora 13. min. 20 post meridiem*”. Thorndike who had under his eyes 1573 edition, where a misprint (listed among the final *errata corrige* then evidently corrected in the successive one), says he was born in 1523. This difference should be originated by the circumstance that from the X century until 1749 in Florence was not in use the modern calendar style starting from January 1, but the so-called “Florentine style of the incarnation”, beginning on March 25 (the Feast of Annunciation of the Virgin Mary according to the liturgical calendar), postponing it of two months and 24 days. Therefore modern March 7, 1523 would be equivalent to March 7, 1522 of the Florentine calendar. Germana Ernst, who edited Giuntini biography for *Dizionario biografico degli Italiani* of the Enciclopedia Treccani (52), begins in fact saying that the astrologer *was born in March 1523 (Florentine style 1522)*. But we are persuaded on the other hand he was born in 1522: in fact in Tomus Prior, at the pp. 136 and 137, in the Comment to the second chapter. (*the rising degree*) of the III book of the Quadripartite, he offers, as example

But not everybody expressed a positive opinion on the work (54): the mathematician and astrologer Giovanni Antonio Magini (1555-1617) had to denounce in his *Apologetica responsio* (53) several plagiarisms of which Giuntini would be responsible, plundering texts of authors like John Eschenden, Luca Gaurico, Girolamo Cardano and others, and he went so far to envision that for his comment to the *Quadripartite* he was widely debtor to Giuliano Ristori, of whom he had been a student. To partial defense of our author we will say that he inserted at the beginning of Tomus Prior of the *Speculum*, a two page list, containing the *docti viri* [with the period they lived, sometimes wrong - as Thorndike highlights] - who helped him in his work. Among the others there is obviously also Leopold, defined *Episcopus Frisingensis* (of Freising, Bavaria) *natus dux Austriae* and placed in 1200. Therefore Giuntini was mainly a compiler, like the latter, who in his turn for comets drawn on from Albumasar.

Gerolamo Vitali

Let us end this travel, necessarily short, in the world of comets mentioning a text written in 1668, which we are often usual to consult, when we are in search of clarifications on this or that technical term of our *ars*: Gerolamo Vitali (1623-1698) *Lexicon mathematicum astronomicum geometricum*. As the same title explains, it is a dictionary, containing whopping 1345 astrological entries. In our hands the facsimile reprint edited in 2003 by Giuseppe Bezza, in which it is also possible to find a short biography of Vitali: he was born in Capua and after being ordained clergy in the local Convent of Clerics Regular Theatines, he spent the greater part of his life in Rome in the house-church of San Silvestro at Monte Cavallo in Quirinale. The French edition of 1668 was followed by a second one of 1690 in Rome, which shared with the first one very little: rather than a reprint it was a new work, where the astrological and astronomical entries are 125, recording therefore a drastic decrease. Vitali, who had been a student and follower of Placido Titi and that in the previous edition considered the same Olivetan monk as undisputed authority, received several remarks about the wide room dedicated to the influence of the stars and in this way therefore he meant to take his measures .

We are attaching a translation of what can be read in the *Lexicon* under the entry *Pseudostellae*: to the usual definition of comets, which are not real stars because they do not perpetually shine in the ethereal region, but rather they are the product of the combustion in the sublunar world of the exhalation coming from the Earth, follow the meanings they assume according the planet to which they can be assimilated and according to the sign where they appear. Vital draws these latter information from Giuntini, as he states beforehand; strangely enough he forgets the effects about the Comet in Sagittarius and we set right referring to the *Speculum* (56) at the paragraph *Sagittarij crinita cum suis portentis*: “If some comet appears in the sign of the Sagittarius, it heralds lowering of noble men, of cunning scribes, doctors in law, consuls and similar, and misfortunes will fall on them, especially on scribes, their annihilation with loss of the riches, because of some secret. In addition oppression, imprisonments, insults, wars and other events for nobles and kings”. The entry ends with a mention to Guinitius' opinion on comets (Vincent Guinigijs, one of the four Jesuit Fathers who held a lecture in the Roman College of the Company of Jesus, on three comets appeared in the 1618) and of the astronomer Giovanni Battista Riccioli. We find in the *Lexicon* several other entries throwing light on the subject: in addition to the more general *Phoenomena* and *Cometa seu Cometes*, it is possible to read an explanation for each type of Greek or Latin Comet. Therefore we learn for example that *Tenaculum* was also called *Cenaculum* (a kind of of table of four sides), but dark remains the name of the Mercurial *Dominus Ascone* (in Leopold *Ascoriae*).

Conclusion

The age during which Vitali wrote is the one astrology is starting its decline: in the “scientific” world live together with the consolidated geocentric theories, Tycho Brahe's geoheliocentric and Copernican heliocentric theories. At the end of the XVI century the progress of the astronomical knowledge goes through a crucial moment: the observation of the apparitions of numerous comets is followed by debates and dissertations (57) which eventually will through into crisis the Aristotelian-Ptolemaic theories and will make slippery the land on which the astrology had its foundation. *Coeli et Terrae Creator* the Papal Bull by Sixtus V (born Felice Peretti), with which judicial astrology was labeled in January 1586 as superstition, and the already mentioned Bull of Urban VIII, made the rest. Was it just a coincidence that these radical changes were started by the passage of comets?

The issue of the nature of these celestial bodies was not solved for a long time, because astronomers themselves did not succeed to go beyond to the mere recording of the observed phenomenon. The turning point was marked by Edmund Halley, who in 1705 in the *Synopsis Astronomia Cometicæ* claimed that the comets observed in 1456, 1531, 1607 and the 1682 were in effect a same object returning every 76 years, of which foretold its return in 1757. And from then ahead, as we know, many scientific information have been acquired on the subject. But everything was said in the past, as far as out-of-date, does not lose its appeal: always very *gossipped*, capricious as true celebrities, *stars* in word and deed, comets are guests traveling long travels in order to visit us and perhaps could be worth the pain to interpret their message.

Genoa, 30 September 2011

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a Notes a

- 1) The idea that the cometary nucleus is a kind of *dirty snowball* and therefore composed by water and other iced materials should be credited to Fred Lawrence Whipple (1906-2004), astronomy professor at Harvard University and Director of the Smithsonian Astrophysical Observatory of Cambridge, Massachusetts. He had been studying comets for more than 50 years and in 1950 he called into question the model accepted since the beginning of XIX the century, according which the nucleus was an aggregate of porous meteor material containing a remarkable molecular gas amount which, freed from the action of the Sun, originated coma. Cf. Fred L. Whipple, *Mystery of comets*, (Italian translation: *I misteri delle comete*, 1991, Editoriale Jaca Book, Milan.
- 2) Comet 153P/Ikeya-Zhang is the only long period comet (366 years), of which there have been observed two perihelion passages; it has been in fact classified as periodic.
- 3) The relation between Perseids and the Comet Swift-Tuttle was pointed by the Italian astronomer Giovanni Virginio Schiaparelli. In 1866, as result of the perihelion passage of this comet in 1862, he discovered the link between the meteoric swarms and comets, discovery mentioned in a correspondence with Father Angelo Secchi, Jesuit and astronomer, he too our countryman.
- 4) For the reading of the Περὶ οὐρανοῦ or if you prefer, with Latin term, of *De caelo*, we made use of *Aristotele*, Parallel Greek text, introduction, translation and notes by Alberto Jori, 2002, Bompiani Editore.

- 5) The Greek term is ἀναθυμίασις, indicating the evaporation of the water and the emission of fumes.
- 6) *Meteorologiká*, Book I, 346b. The Italian translation is by Lucio Pepe, taken from *Aristotele Meteorologia*, Parallel Greek text, introduction, translation and notes of Lucio Pepe, 2003, Bompiani Editore.
- 7) *Ibid.* 338b24.
- 8) *Ibid.* 341b13 and ff.
- 9) *Ibid.* 342b25 and ff.
- 10) Ernst Maass *Arati Phaenomena*. Weidmann, Berlin 1893, pp. 58 (lines 1092 - 1094).
- 11) Claudius Ptolemy, Italian translation by Giuseppe Bezza, Milan, 1995.
- 12) Please refer to our essay *Della virtù delle stelle inerranti*, which can be read at www.apotelesma.it, site of the Cultural Association Apotelesma under the entry *Articoli*.
- 13) Hieronymi Cardani, *In Cl. Ptolemaei De astrorum iudiciis, aut (ut vulgo appellant) Quadripartitae Constructionis Lib. IIII Commentaria.*, Basileae, Ex Officina Henricpetrina. Book II Chapter IX *De coloribus in deliquijs et crinitis, ac huiusmodi alijs*, Paragraph LIII. The Italian translation of the whole chapter IX can be found in Girolamo Cardano *La natività del Salvatore e l'astrologia mondiale*, edited by Ornella Pompeo Faracovi, Mimesis, 2002, p. 93 and seq.
- 14) Cardano, l.c., still Paragraph LIII.
- 15) Cardano, l.c., Paragraph LIV (my translation).
- 16) In addition to the Comment to the Quadripartite (see reference at note n. 13) Cardano also speaks about comets in the Book IV (*De Luce et lumine*) of the *De Subtilitate Libri XXI* and in the chapter I (*Universum, Cometae, Ventorum ratio*) of the first book of *De rerum varietate* [respectively mentioned at page 420 and pagg. 1-2 of the third Volume of *Opera Omnia* (Hieronymi Cardani Mediolanensis Philosophi ac Medici Celeberrimi *Opera Omnia: Tam hactenus excusa; hic tamen aucta et emendata; quam nunquam alias visa, ac primum ex Auctoris ipsius Autographis eruta: Cura Caroli Sponii, Doctoris medici Collegio Medd.. Lugdunaorum Aggregati. Lugduni, Sumptibus Ioannis Antonii Hugueta et Marci Antonii Ravaud. 1663)]].*
- 17) *Hephaestionis Thebani Apotelesmaticorum Libri Tres*, edidit D. Pingree, B.G. Teubner Verl., 1973. Vol. I, p. 73 and seq.
- 18) *Ibidem*, page 74.
- 19) W. Gundel and H.G. Gundel, *Astrologoumena. Die astrologische Literatur in der Antike und ihre geschichte*, Wiesbaden 1966 (Sudhoffs Archiv. Beiheft 22), p. 32.
- 20) Gaius Plinius Secundus (23-79 AD), known as “Pliny the Elder” in order to distinguish the former from the grandson Gaius Plinius Caecilius, was one of the greatest scholars of the imperial Age; author of an encyclopedic work in 37 volumes, the *Naturalis Historia*. About comets see Book II, Chap. XXII and ff.
- 21) For a dating of Vettius Valens cf. p. 19 of our essay *The Paranatellonta in the ancient Greek astrological literature*, which can be read under the entry *Articoli* at www.apotelesma.it, site of the Cultural Association Apotelesma.
- 22) About Firmicus Maternus see p. 6 of our essay *Da Teucro il Babilonio a Palazzo Schifanoia: i Decani*, which can be read too under the entry *Articoli* at www.apotelesma.it.
- 23) Lucilius was a Roman writer, whose *floruit* can be placed during Nero age (54-64 AD), author of satirical epigrams in Greek.
- 24) Ernst Riess, *Nechepsonis et Petosiridis fragmenta magica*, Philologus, Supplementband 6 (1892) p. 325–394.
- 25) Suda, XI century Byzantine Lexicon (cf. *Suidae lexicon ex recognitione Immanuelis Bekkeri*, Berolini Typis et impensis, Georgii Reineri, A. 1854).
- 26) Ernst Riess, l.c., p. 327 et seq.
- 27) Franz Boll - Carl Bezold, *Interpretazione e fede negli astri*, Sillabe 1999, p. 52 et seq.; CCAG VII, p. 180. For an exhaustive examination of these two astrologers, see also Giuseppe Bezza, *Nechepso and Petosiris*, in www.cieloeterra.it.
- 28) The book was published in 1823 (*Joannis Laurentii Lydi de Ostentis quae supersunt, una cum fragmento libri de Mensibus ejusdem Lydi, fragmentoque Manl. Boethii de diis et praesensionibus, ex codd. regiis edidit, graecaque supplevit et latine vertit. C. - B. Hase, Paris: Imprimerie royale, 1823*).

- 29) Joannis Laurentii Lydi, *De ostentis et Calendaria Graeca Omnia* (accedunt Epimetra duo, *De Cometis et De Terrae Motibus*) iterum edidit Kurt Wachsmuth, Lipsiae In aedibus B.G. Teubneri, 1897, preface pp. IXet seqq .
- 30) Translation by Erika Maderna, in Giovanni Lido, *Sui segni celesti*, cura e introduzione di Ilaria Domenici, Medusa Edizioni, 2007.
- 31) His arguments can be found at p. XXXIII of the quoted text, note 29).
- 32) Quoted text at note 29), p. 167. Riess too (text at note 24) transcribes at p. 351 these *Adnotationes*.
- 33) Cf. p. XXXIV of the edition of *De Ostensis* quoted at note 29).
- 34) For the text you can refer to the book mentioned at note 30 (pp. 63-68).
- 35) *Servii grammatici qui feruntur in Vergilii carmina commentarii*, I-II (Aen., I-XII), Georgius Thilo-Hermannus Hagen, ed. Teubner, Lipsiae 1881-1884) Vol. II, p. 421-423
- 36) Postumius Rufus Festus Avienus whose *floruit* can be placed in the second half of the IV century AD was a Roman politician and a poet.
- 37) *Corpus Scriptorum Historiae Byzantinae, Ioannes Lydus* ex recognitione Immanuelis Bekkeri, Bonnae Impensis Ed. Weberi. 1837, pp. 101-102. The passage is also reported by Wachsmuth, quoted work at note 29), p. 166.
- 38) Giambattista (Giovanni Battista) Riccioli, *Almagestum novum astronomiam veterem novamque complectens observationibus aliorum, et propriis novisque theorematibus, problematibus, ac tabulis promotam*. Bolognam Tipografia Eredi V. Benati, 1651.
- 39) *Geschichte der Astronomie von den ältesten bis auf gegenwärtige Zeiten*, Chemnitz, 1792, Erster Band, p. 157. The work lists authors in chronological order and Leopold is placed between Pico della Mirandola (1463-1494) and Johannes Engels (1453-1512). But in the same way we are puzzled by James H. Holden's claim in *A history of horoscope astrology* (American Federation of Astrologers, Second Edition 2006, p. 143) that the *Compilatio* was written after 1278 because "In the eighth treatise there is an horary chart that can be dated to 17 December 1278 at 11,20 a.m.". Between the pages of the eighth treatise there is only a chart with the degrees of planets in the signs: it actually shows the Sun at 8° Capricorn, Saturn at 25° Scorpio and Jupiter at 26° Cancer, values in agreement with those of the proposed date; but also shows Mars at 28° Gemini, whereas the true position for that same date is 27° Scorpio. We do not believe there is a mistake in the degrees indicated by Leopold, also because the chart reads *Figura ista fingit egrum ex puere sanguinem* and it is about a comsumptive child, spitting out blood, in order to explain it, Mars position is highlighted many times. And then time *11,20 a.m.*: for which place is cast this chart? Leopold does not say anything.
- 40) Leopold of Austria *Compilatio Leopoldi ducatus Austriae filii de astrorum scientia decem continens tractatus* Ratdolt, Augsburg 1489.
- 41) Francis J. Carmody, *Li compilacions de le science des estoilles*, Books I-III, University of California Press, Berkeley and Los Angeles, 1947.
- 42) See work quoted at note 41) p.. 45 note 37.
- 43) Abū Ma'shar al-Balkhī Ja'Far ibn Muhammad (Albumasar) *Albumasar de magnis conjunctionibus: annorum revolutionibus: ac eorum profectionibus: octo continens tractatus*, Augsburg, Erhard Ratdolt, 1489 (*Kitāb al qirānāt* Latin translation by John of Seville of 1130 ca.), V treatise, *Differentia septima*.
- 44) *Tecniche previsionali degli astrologi rinascimentali: Francesco Giuntini* by Enzo Barillà and Lucia Bellizia (article published in the n. 55 - July 2003 of the journal *Ricerca '90*). The text was written together while the biographical part should be ascribed to Barillà.
- 45) *Speculum Astrologiae, quod attinet ad iudiciariam rationem nativitatum atque annuarum revolutionum: cum nonnullis approbatis Astrologorum sententiis. Auctore Francisco Iunctino Florentino, Sacrae Teologiae Doctore, ad publicam utilitatem studioso rum omnium aeditum*. Lugduni, Sumptibus Philippi Tinghi Florentini, 1573; *Speculum Astrologiae, universam mathematicam scientiam, in certas classes digestam complectens. Auctore Francisco Iunctino Florentino S.T.D. Accesserunt etiam Commentaria absolutissima Quadripartiti Ptolemaei libros etc.* Tomus Prior, Lugduni, In Officina Q. Phil. Thinghi, Florentini, 1583; *Speculum Astrologiae comprehendens commentaria in teorica planetarum et in Sphaeram Ioannis de Sacro Bosco. Auctore Francisco Iunctino Florentino S.T.D.* Tomus Posterior, Lugduni, In Officina Q. Phil. Thinghi, Florentini, 1583.

- 46) Lynn Thorndike, *History of Magic and Experimental Science, The sixteenth Century*, 1941, Columbia University Press, Ch. XXXIII Astrology after 1550, pp. 129-133.
- 47) The sentence *quas mundus numquam impune vidit* remind us to the analogous *et numquam caelo spectatum impune cometem* of the Roman poet of the IV century AD Claudius Claudian (*De Bello Gothico*, verse 243 - *Claudi Claudiani carmina*, recognovit Julius Koch, Lipsia, In aedibus B.G. Teubneri, 1893, p. 203). The *Veteres astrologi* mentioned by Giuntini in the *Annotationes* are Albumasar, Haly Abenragel, Leopold of Austria and Albertus Magnus.
- 48) Tychonis Brahe Dani, *De nova et nullius aevi memoria prius visa Stella, iam pridem Anno à nato Christo 1572, mense Novembri primum conspecta. Contemplatio mathematica. Hafniae impressit Laurentius benedictij*, 1573. On the astrological forecasts by the Danish astronomer drew from this apparition cf. Margherita Fiorello and Valerio Simei, *Le stelle nuove di Keplero e Tycho Brahe: predizioni astrologiche sulle supernove di due grandi astronomi del passato*, in *Linguaggio Astrale* n.153 year 2008.
- 49) Tycho Brahe wrote about the Comet of 1577 a short manuscript in German for the King Frederick II of Denmark and Norway, who desired to know its meaning, because strongly persuaded of the utility of the astrology for ruling a State. It is called *Vonn der Cometten Uhrsprung was die alten unnd neuen Philosophi inn denselben vermaint unnd aduon zuhalten sei* and there were only two manuscripts, before it was published in 1922 by Johann Louis Emil Dreyer. Cf. Brahe, Tycho, *Tychonis Brahe Dani Opera Omnia*. Ed J.L.E. Dreyer. 15 vols. Haunia, 1913 - 29, Tome IV, p. 379 et seq. In addition the Danish astronomer wrote in 1588 *Tychonis Brahe Dani, De Mundi aetherei recentioribus phenomenis Liber secundus, qui est de illustri stella caudata ab elapso fere triente Nouembris anno mdlxxvii usque in finem Januarii sequentis conspecta*, Vraniburgi cum Privilegio, the second of three books dedicated to the supernova of 1572, the great comet of 1577 and to the other comets later observed. It can be read from p. 3 on in the same book where is published *Von der Cometten*.
- 50) *Discours sur ce que menace la comète*, Lyon, 1572, Par M. François Didier, published in Italian as *Discorso sopra la cometa*, 1573, Venezia, Domenico Farri; *Discours sur ce que menace deuoir aduenir la Comete apparue le 12 de ce present mois de Novembre 1577, laquele se voit encores à present* Par M. Francois Junctini grand Astrologue et Mathematicien. 1577, Lyon, Par François Didier; Paris, Chez Gervais Mallot.
- 51) M. Michaud, *Biographie universelle ancienne et moderne*, Chez madame C. Desplaces, Paris, 1856, Tome Seizieme, p. 602-603.
- 52) The biographies already published can be read on line. For Giuntini see [http://www.treccani.it/enciclopedia/francesco-giuntini_\(Dizionario-Biografico\)/](http://www.treccani.it/enciclopedia/francesco-giuntini_(Dizionario-Biografico)/)
- 53) Ioannis Antonii Magini Patauini ... *Apologetica responsio ad Franciscum Iunctinum Florentinum theologum, mathematicum, atque elemosinarium ordinarium serenissimi principis Francisci Valesii ducis Andegauensis, Alenconii etc.* Patauii, Apud Paulum Meietum, 1584.
- 54) I owe this information to the biography quoted at note 52.
- 55) *Lexicon Mathematicum, astronomicum geometricum, hoc est Rerum omnium ad utramque immo et ad omnem fere Mathesim quomodocumque spectantium, Collectio et explicatio. Adjecta brevi novorum Theorematum expensione, verborumque exoticorum dilucidatione ut non injuria Disciplinarum omnium Mathematicarum summa, et Promptuarium dici possit.* Auctore Hieronymo Vitali Capuano Clerico Regulari vulgo Theatino. Parisiis, ex officina L. Billaine 1668. Facsimile edition by Agorà Edizioni, 2003 cura Giuseppe Bezza with a foreword by Ornella Pompeo Faracovi.
- 56) *Speculum*, 1583 edition (for which see note 45), p. 1130.
- 57) A list can be found in Riccioli's *The Almagestum Novum* (Book VIII, Sectio Prima *De Cometis*, Ch. I), quoted at note 38).

a **There follow the translations of some texts on Comets** a

Hephaistio I, 24 - *Of the colors of the eclipses and comets.*

In truth, one should also observe during the eclipses, the colors of the Lights themselves or the formations that are produced around them, like rays and the like. Appearing black or yellowish, they give place to indications of the same sort as the ones we have listed for Saturn; white of the sort of those we have listed for Jupiter; reddish of the sort of those we have listed for Mars; yellow-orange of the sort of those we have listed for Venus; multicolored of the sort of those we have listed for Mercury. And if the color appears on the whole body [of the Lights] or in their surrounding places, the events will concern the greatest part of the regions, if instead on a part [of the Light] only the part which inclines the particular [chromatic] characteristic .

It is necessary to observe, for general situation, the apparitions of comets during the moment of the eclipses or in any other moments, as the one called *Planks* or *Trumpets* or *Jars* or similar, because their effect, having by nature the properties of Mars and Mercury, is expressed with wars or burning seasons and what depends on them, and show from one side through the parts of the Zodiac where they do their appearance and develop and through the angle of their tail, the places where the events will occur, and from the other through the structure of the formation, so to speak, the kind of the future event and those who will be affected, and through the duration in time the extension of the events and through the relative position to the Sun their beginning, because they appear in the East effects are immediate, if in the West, more delayed.

That one of the comets called *Ippeüs* (Knight) and *sacred star* to Aphrodite, which has the magnitude of the Moon when it is Full, very fast in motion, a sparkling mane ending behind, moves in the universe through the twelve signs, brings quick falls of Kings and tyrants and changes in government in those regions towards which it directs its coma.

Xiphias (Sword), which is convenient to the star of Mercury, appears strong and of paler green, encircled from oblong beams. And appearing at East it means for the King of the Persians and of the Assyrians intrigues and poisons from Satraps, and appearing instead at West it indicates the same things for those living in the West.

Lampadias (Torch), belonging to the star of Mars, is larger and more blazing, similar to the torches which are strongly moved, appearing turned towards East it means drought for the Persians and for Syria, lightning, ruin of the fruits and fires of the royal residences, turned southwards instead it means evils for those living in Syria and Egypt, and also a great number of snakes, turned instead westwards means again these things for those living there.

Kométes is said having Jupiter nature, shines in quieter way and unparalleled, shines in its coma, it is silvery and strongly shakes, so that it is impossible to gaze on it; and it has a man face in itself, according which it seems a God, and it means benefits where it rises and where it tends if Jupiter is in Cancer, Scorpio or Pisces.

Diskeüs ("Like disc") is consecrated to Saturn, is round and has a similar *color* as Saturn, more shapeless than amber and beams spreading around its circumference, has in truth just one aspect and inclined in the same way to every region; it produces wars of every type in all the region and the death of a great King and lowers the condition of those having power and reputation.

There is also a comet similar to a rose and large, of round shape, which is called *Ilithyia*, that has the face of a girl, having golden beams around the head, similar for color to a mixture of gold and silver, it heralds in truth slaughters of people and government changes for the better and the release of those who were imprisoned together. There is also another, large, comet, which is called

Typhoon, very violent and heated, shapeless and slow in motion, it has the coma especially behind, it usually follows the Sun in the extreme limits of North Pole and its appearance is the cause of many evils, of the ruin of the fruits and the Kings, at East and West. Among the others, *Planks* and *Bearded ones* are condensed outside the Zodiac, in the Northern part.

M. *Servius Honoratus' commentary to the X Book of the Vergil's Aeneid.*

Line 272 - *cometae sanguinei lugubre rubent*. Comets in addition are called *crinitae* in Latin and Stoics say these stars are more than XXXII, whose names and effects are mentioned by Avienus, who put Vergil's stories into iamblings. Plinius Secundus too says that comets are natural stars, appearing in established moments. In the same way remember this also, that comets have the nature of the five planets, so sometimes herald good things, sometimes very bad. In fact if they have the nature of Venus or Jupiter, they foresee optimal things; if that of Mars or Saturn, less good; the Mercurial one then is as the planet to which it is combined; so (Mercury) is believed to be the minister of Gods [TN: in the sense that the planet obeys to the wishes of the others, as made Mercury with the Gods]; here because therefore he says *cometae sanguinei lugubre rubent*, that is harmful. They say that this star is Electra, with whom Jupiter laid, who seeing Troy in flames, tore out her hair and was received between stars. Really in Avienus there are different comets: the star which drawing behind a tail of oblique fire produces almost a mane is called *Hippius*; this comes from the sunset towards the rise, shows evils for Persia and Syria; if it is directed to South frees Africa and Egypt from evils, announcing the plague only for sheep; if it is directed northwards, scourges Egypt with wars and miseries; if it is directed westwards, it plagues Italy and whatever extending from Italy to Spain; if it goes from South northwards, in truth signifies safety from external wars, but rather inner sedition; there is another comet, whose name derives from the sword, in fact is called in Greek ξιφίας (*Xiphias*), whose tail is longer, and pale is its color and it is said it has not coma, and its light is weaker, which if it is directed westwards it means that the King of the Persians will be threatened from intrigues, and announces also wars; it involves the Sires too in an analogous situation; and it announces that the Libya and Egypt can be overwhelmed by deceits and traps; that if it is directed westwards, it means injurious alliances for the king of that region, that foretells it can be destroyed because of a girl taken in spouse. There is another comet which is called *Lampas* and shines like a torch; when it observes the East, it heralds that all those Eastern parts can be overwhelmed by fogs and that their fruits will be spoiled by the gloomy air; if it observes the South, it heralds that Africa can be tormented by drought and snakes; if it observes the West it heralds that Italy will be afflicted by continuous river flooding; if it observes the North, it signifies famine for Northern populations. There is also another comet, which is called *Cometes*; in fact it is encircled from comas all around. This is said to be softer: so if observes the East, it means happy events for this region; if the South, joys for Africa and Egypt; if it looks the West, Italian land will achieve what it wished: they say it appeared when Augustus obtained the rulership; and at last future joys for all are heralded; if it observes the North it signifies universal prosperity. There is then another comet that has the shape of a tympanum, not very shining, and has the color of the amber, which they call *Disceus*. Since this one generally does not only come from a place, it signifies for the whole orb massacres, robberies, wars and the rest of evils. The sixth comet they say it is called *Typhon*, after the name of the king Typhoon and was seen only once in Egypt, and it is said it was of red color, not like the iron but like blood; they say its disc is small and burning, they say its coma appears as tenuous light, and it is said this was sometimes in the Northern part. They say that Ethiopians and Persians have seen it and suffered hunger constrictions and every kind of

evil. If someone desires, can search in Campester or Petosiris, greater and more detailed peculiar qualities (of comets).

Johannes Lydus - *Perì tōn menōn Book IV chap. 73*

According to Aristotle there are nine kind of comets, according to Apuleius instead ten: *Ippias*, *Xiphias*, *Pogonias*, *Dokias*, *Pithos*, *Lampadias*, *Kometes*, *Diskeús*, *Typhon*, *Kerastes*.

Ippias had this name from its race and its speed, spreads oblique beams and difficult to perceive; *Xiphias* seems to stretch itself like a sword or a long spear, of pale yellow color and dim as a cloud; *Pogonias* scatters like a beard its coma not from its head, but from below; *Dokias* is nearly similar to *Xiphias*, but it has faint, not sharp extremities; *Pithos* (*Jar*) draws its name from its shape; *Lampadias* is heated and is usual to shine as flaming stone or burning tree; *Kometes* is wide in appearance and is as happy, dragging some silver curls; *Diskeús*, as it wants its name, appears like a disc, neither shining or red, but like amber; *Typhon* appears heated and similar to blood, and radiating some thin curls; *Kerastes* like a horn shaped moon, which it is said appeared when Xerxes arrived in Attica.

Ptolemy then adds also another type of comet, called *Trumpet* and appearing in the Northern zone. The students of nature say that the comets take shape in the sublunar cavities, showing a nature similar to stars; in fact they are not stars, but a kind of concretion produced by earth exhalations, and have origin from the air compressed by contact with ether.

Leopold of Austria - *De Cometa*

A Comet is a vapor coming from the earth which has strongly cohesive thick parts inside, going upwards towards the upper part of the fire; this means that alterations of the reigns and the other great things in this world, that some say being generated from the conjunction of two planets, others from the encounter of the vapor with a planet or star light. Johannes Damascenus says that Comet has been created by God in order to announce kings death who perish for its work. Comets are 9: the first one has Saturn nature, it is black or cerulean: its appearance signifies mortality and famine; the following two have Jupiter nature, *Argentum* and *Rosa*. *Argentum* has a very beautiful beam like the purest silver and cannot be gazed on. And when it appears it means fertile years mainly if in that moment Jupiter is found in a water sign. *Rosa* is large and beautiful and looks like an human and its color is like of silver mixed with gold; and its appearance signifies death of the king and the affluents and the things of the world will change and will be better. Four are of Mars nature: *Veru*, *Partica*, *Tenacula* and *Matura rubea*: and all signify battles and terrors in the world: and from their color and the nature of the sign in which they appeared for the first time it is known the evil they signify: and if they appear in the East will quickly occur what they herald, in the West it will be late. One is of Venus nature and it is called *Miles* and is large as the Moon; it scatters hairs and beams on its back and it covers the 12 signs and harms Kings and the powerful ones: and in the world people and who want to change the ancient laws and to promote some of new, will rebel; the worst meaning is from the tail part. One is of Mercury nature and it is called *Dominus Ascorie* and is cerulean and small and long tailed; when it appears means death and wars. *Veru* is awful looking and goes close to the Sun. *Partica* has a large body and it especially signifies scarcity of waters and

mainly if it is with Venus. If with Mercury, they will die young and learned people. If with the Moon the people will die. If with Saturn mortality will be serious. If with Mars there will be wars and death by sword. If with Jupiter its meaning concerns Kings and the rich ones. If the Comet will appear at the Ascendant of nativity or of some place's foundation chart or of some chart or in the profected sign or the return Ascendant or in the directed degree it signifies the native's death or destruction of that thing the Ascendant of which was that sign; and if it will appear in the sign of the MC when someone is elevated to a dignity, the elevation to the dignity will threaten a danger, according the sign was found at MC at the moment of his elevation.

If the Comet will appear in the Aries equinox it means damage for the reign of Babylon and wars between Greeks and Barbarians and Italic and Alexandrian people, misfortune of Romans, great drought and eye pain and the death of cattle and fall of the nobles and the elevation of the poor ones, and many gold and silver veins with great warmth in summer and religiouses will meddle in matters they are not involved; and if it appears in the East there will be hatred between Persians and others and many regions pay obedience to the King of Babylon. If in the West the most eminent persons will suffer evils from the king and killings in the West and many rains, flooding of rivers and snows.



If the Comet appears in Taurus there will be wars and dreadful clamors in Roman and Babylon' s lands, serious illness with scarcity of commodities and misfortune for Italy with imprisonment and oppression and mortality and many dry pains as scabies and itches and death of oxen and roads interruption and some place will be abandoned because of earthquakes and there will be bitter cold and corruption of crops and fall of the fruits of the trees and scarcity of cultivations and plantations; and if in the East, the king will fear about his enemies and people will be hit by blight which will last in the following years and there will be many indispositions from summer quartan (malaria); if in the West it means many rains.



If the comet will appear in Gemini: the King of the Romans will have troubles and misfortunes and the King of Egypt will kill him and after him a thief- a stranger- will rule and there will be diseases and deaths and famine and death of children and abortions of pregnant women and death of birds and great thunders and lightning and venom poisoning fruits and if this occurs in the East many eminent persons decay from their ranks; if in the West it means much imprisonment and many rains.

If the Comet appears in Cancer signifies wars and many deaths and many evils and drowning and sudden death of more than one and many rains; little fish and if it appears in the East there will be troubles and good price of the commodities at the end of the year. If to the West it means fights between Kings and after this the peace.



The Comet in Leo means war between Kings at the end of the year and much spilling of blood in the East and death of many nobles and stranguria and pain of the eyes and diseases of wolves and rabies of the dogs; and if in the East many quarrels and drought. If it appears in the West means many diseases and physical strength involves and rabies in dogs.

If the Comet appears in Virgo means trades degradation with injustice and many fever pains and shakes and flatulence of women and ulcers and pimples; abortion of pregnant women. And if it will appears in the East and the Sun is found in Virgo Persians will win the Alan people; and if is found in the West war to Babylon



The Comet in Libra means hardness of the King of Babylon and intensity of injustice and deaths of the kings of the West and death of nobles and princes; and spilling of blood and mortality and commodities which are torn and scarcity of rains and much serenity of winds and disease of rivers, dryness of the plants, leaves scarcity, destruction; and if it appears in the West will be many the troubles of the King of Babylon and expensive the horses and mules, and wars in the lands of Romans and they will kill each other. In the West (it means) that servants do not obey to their masters and mediocre fruits.

The Comet in Scorpio means testicles, blister and ribs pains and struggle between Kings; and suffering of child-bed women; many toxic rains and fruits decomposition because of the ice and darkness of the air and moisture and scarcity of waters and rivers drying and bad taste of the fish; and if it is in the East well-being for Babylonians; and little mortality and this will last 6 years; and wolves and dogs rabies; if it is in the West there will be locusts, but they will harm very little.



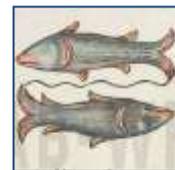
The Comet in Sagittarius means sourness of the King on mobs and desire to accumulate money and the death of a nobleman and intensity of the heat and scarcity of the palm fruits; and (if it appears) in the East death of the King and fights and robberies and little gain from the inheritances and fruits; in the West many reveries during dreams with abortion of women.

The Comet in Capricorn means war between Kings and many misfortunes in the West and for the one ruling there and dreadful clamors in Persia and towards the South plenty of robbers; and decrease of religiouses and good persons and death and hail and snows excess and plants and especially those of the gardens will be destroyed; and (if it appears) in the East obstacles for Kings from their enemies which will be reason of death for them and of renewal for the most eminent persons of the reign and there will be many snows and rains and preservation (from the destruction) of vines and fruits; in the West wealth of grass of the year and abundance of water.



The Comet in Aquarius means Kings' death in the Eastern region, and a man aspiring to the reign and many deaths, killings and combats in the Western region; and this will last for a long time and leprosy and darkness of the air and many thunders and flashes and lightning and death of many because of these things, scarcity of birds and fish and good price of commodities; and if it appears in the East with the Sun in Aquarius there will be wealth of grass; if in the West there will be dreadful clamors in Persia and pillages.

The Comet in Pisces means death of common people and slaughter among Kings of black men and Egyptians and this because of faith and bad omens; and the King will march and burn the city and will be damaged; and there will be abuse among people and clerics will kill each other and poverty will arise and fish will die and there will not be gain from the waters; and if it will appear in the East and the Sun is in Pisces, there will be roughness in chiefs and princes and they will not obey the King and take away King's properties and there will be fear in many regions; and misfortunes in Persia with many rains; and if in the West there will be many sorrows and deaths for people in many regions, especially in the West and it will last 3 years and there will be many birds and fish and flooding of the rivers; and if it has been with someone's rulers signifies for them problems, and wars will come and there will be violence and envy among people and especially for those of high and average rank, and also foreshadows enemies and misfortune due to this.



For what to concern knowing the sign or the planet of any particular place or city: I believe there is a fourfold way: one is the foundation of the city or place; the sign rising in that moment is the sign of the city or place and the strongest planet in that hour it is the planet of that city or place and it is called almutan and this is the way that can be reputed the most sure. Another way is through the good or bad events occurring to that city or place, because if happens something good, it is necessary that planet significator of the city or the place is strong in the figure and its sign is in some of the angles and that the benefic planets are in it or make an aspect with it. If in truth something badly will happen, it is necessary that the planet of the city or the place is weak and with malefics or beholding those same ones with a malefic aspect and that its sign is cadent and malefic are in it or behold it with bad aspect. The third way is through the examination of the tenth house of the nativity of the prince who founded the city: and this third way is mentioned in the Quadripartite in the part II Chap.3 glosses: at last the fourth way is taken from someone through the day of the market of that city, which if it occurs on Venus day, it is Venus the planet of that city.

Francesco Giuntini - *Notes on Comets, than the world never saw without consequences: according to the observations of ancient Astrologers.*

Although the celestial bodies seem small because of the immense distance, however they are in truth by far larger than one cannot believe. And those celestial bodies act on these inferiors, by this medium, since they attract and extract and to such point they elevate towards the highest part of the earth or the water their exhalations, that they are object of *impressions*, than at last they melt, mold, heat, and modify through their virtue, after elevating them, which at last a Comet or a Halo is born, or the rain or other similar body. And the sky acts on these inferior things in three ways: through the motion, the light and the influence.

1. Through the motion: because the movement of the sky means life for all the beings living here. In fact if the movement of the sky ended, the births would end and the dissolution in these inferior things, if the sky stopped, every movement of the inferior things would end, indeed not even a twig could be risen .
2. Through the light: since the celestial light produces in the air the primary qualities. Then from the temperaments of the primary qualities derive the secondary ones, from which it follows that the celestial bodies with their light produce the alterations and the changes happening in the air and

bodies. Therefore also the Sun sends us the day and the night, it is itself the sky candle, the planets ruler, ornament and perfection of all the stars, giving life to all the things, and beneath it is noon and summer in every moment.

3. Through the influence since in a wonderful way it produces in the bowels of the Earth mineral and metals. Moreover they are generated and differently start in the different regions of the Earth, according to the influences of a different sky and the places' position. In fact pepper and aromatic herbs don't sprout everywhere, nor also everywhere the sweet wines and the cereals root.

And the influences of such kind also vary in people's inclinations, although the will in itself is free. Therefore, according the benefic or malefic constellation, we see natives luckier than others, and some inclined to study by nature, and hard-working, clement and chaste, others in truth thieves, lustful, quarrelsome, although they are not forced to that, for the freedom of their will. After all, when is mentioned the force and the effectiveness or influence (as I call it) of superior bodies, between which planets have the most important place, as between planets the Sun and the Moon; in the same way when it is said that Saturn is cold and dry, Jupiter in truth warm and moist, and that really they are subject to the Sun; in the same way Mars is warm and dry and of igneous nature, Venus is cold and moist and maid of the Moon, Mercury is variable and Moon is cold and moist; all these things we said of the qualities of the stars should be understood, not with the meaning we think that stars are warm or cold or dry or moist in true sense of the word: there are not in fact qualities or changes in celestial bodies, but we should mean they have some force to provoke in the inferior bodies hot, cold, dry and moist.

The Comet therefore (as Leopold testifies) is an exhalation starting from the earth, having inside strongly integrated thick parts, ascending by virtue of a some star towards the upper part of the fire; meaning alterations of kingdoms and of other great things in this world. That is a Comet is an hot and dry exhalation, dense and viscous, elevated by virtue of stars to the fire of the air which there burns and is moved in circle with the air. Or, a Comet is, according to Albertus, a dense exhalation originating from the Earth, whose parts are joined each other, rising little by little from the inferior part to the upper part of the fire, where scattered and inflamed it touches the concave part of the fire, therefore it often seems long and wide.

This definition and more extended description contains, enough clearly in truth, the causes and the way the Comet is generated. In fact it is necessary that the Earth exhalation and the viscous substance of the Comet are abundant, otherwise they would be quickly consumed by the heat which burn them, and the space of time the Comet can be seen is short, without a doubt in seven days: most times the Comet appears for 40 and more days, until the substance of which is composed is consumed by the burning, also churned by this fast movement. Although, as testifies Pliny, there have been seen Comets fixed in a place. The Comet's efficient cause is the Sun and the stars, which attract vapors to the highest region, because the more or the less vapors are warm, the higher or lower are risen by the heat of the Sun and the other stars. Therefore as we see clearly for the Sun, when it is observed while absorbing and to attracting water. Comets' surrounding matter or adjacent zone is an hot and dry exhalation. Or a compact, slow, dense vapor, forced by the motion of stars and then ignited. And from here it becomes evident the reason why a Comet does not explode as soon as fire breaks out. Although astrologers hand on that more and more substance it is supplied them by virtue of the dominant planet. In fact a substance of such kind does not rise all in the same moment, but part after part. In fact while the first part is burning, there follows the next one as nutriment of the fire. So it lasts until the convenient nutriment remains high, and it stops, in truth, when the substance lacks. Under Caesar Augustus a Comet of huge size appeared, where the Tiburtine Sibyl showed to Caesar Augustus the most glorious Virgin's child and he said to him: "This child is more powerful than you, adore him".

Because of the nature of the Sun and the stars, that is their own complexion or nature, the color of comets varies too, the Saturnine one is black, the Lunar one is pale, the Solar one reddens. And that color in truth, which can be seen and assigned to planets, that same one should be examined for the rulership of those on Comets. In truth these things are said from the point of view of the astrologers and not of the physicists. The Comets are an evidence that all the nature is ruled by some mind. So that such *impressions* are not without reason, neither they exist by chance. The experience also testifies they are signs. So that they are placed between the omens by poets and Astrologers, although they have darker meanings than stars. So Ptolemy says. The falling Stars and the haired ones have the second place in judgments . So that in some way their meaning too can be observed by wise people. This has been acknowledged by the general consent of the ages, that comets are wonders and they signify and foretell many evils, and future events for people and countries. Therefore in the books of Maccabees, being seen some armed knights riding in the sky and appearing in their ordered dispositions, people concluded that something of new and great was imminent (Maccabees, Book II, Chap. 5).

1. The aim of Comet's physical effect is a benefit for people. In fact it is peculiar to the Comet to destroy corrupted and poisoned smokes, even if on the other hand they are generated to strike terror into people and to foretell evils. Therefore also the Rainbow has its some final reason in the Sacred Writings: therefore also in other igneous Meteors can be seen health for the living beings. In fact through them smokes raised above are consumed, otherwise they would overwhelm everything of their putrefaction, which use of bloodletting (1) is used for the human body too,
2. Comets' goals is to prepare drought, plague, famine, wars, change in reigns and countries, laws, traditions. In the same way Comets foresee to mortals winds, earthquake, sterility, flooding of waters, heat and great warmth and in the same way numerous other great evils and very serious.
3. A Comet is sign of great warmth. In fact an average heat could not free so much matter from the Earth and push it upwards.
4. The second effect of a Comet is sterility of the ground, and famine and the great cost of wheat. Since the earth becomes barren for the great drought and the lack of humor, because dryness is the fruits' stepmother while humor the mother, therefore a great hot strongly dries the ground, and destroys every plant's lymph and enough the trees too, reason why they wither, nor they can carry any fruit. Or so.
A Comet produces infertility of land because to a Comet is required a great and considerable exhalation, with its elevation from the land is removed its fat fertility, removed which, the land becomes barren and the moisture from which the earth should be fertilized, is destroyed by the excess of drought. So that the comet is indication and scarcity in that region it especially watches, and from which the matter of which is composed originates.
5. Comets herald plague for animals, since the air is polluted and badly arranged from the hot, large and cloudy exhalations, absorbing which the animals are intoxicated and poisoned and die. In the same way since in that time weather is truly warm and therefore the radical moisture is removed through the overheated air, from people and animals' bodies, in which the natural humor has solid seat, therefore animals die. For this reason doctors' advice is to use cold and moisture, so that the radical moisture increases and conserves.
6. Comets provoke wars and sedition and change in governments, since in the age of the Comet there are in the air many hot and dry exhalations, drying men and light up warmth in them, for which they easily are induced to wrath, and following to quarrel and then to fight, and after fight follows a change in rulership, since the rulership follows the winner.
7. Comets heralds death of princes, Kings and similar Monarchs and Heroes. In fact Princes live more languidly than others, they use more refined foods and can therefore more easily been intoxicated. Princes' death have greater renown, because their reputation is more illustrious. In

addition choleric then follow with greater strength to the passions of the soul. So that they foment wars and sedition: they participate in fact to fights and easily are induced to wrath and fight with greater enthusiasm. Therefore often they die. Macrobius wrote that Costantine's death was announced by an Haired star of unusual largeness, in 304 AD. The same thing we read in Vergil, who writes about Caesar's death

*Non alias coelo caeciderunt pura sereno
Fulgura, nec diri toties arsere Cometae*

8. From Comets' power come very serious flooding, since as it is known the Comet derives from exhalation. Then exhalation arouses winds, winds move the sea, and flooding is generated, then the sea invades and overflows places inclining towards those the slope is greater, which generally are sandy, as the depressions.
9. Comets denote earthquakes, since winds and earthquakes have origin from their same substance.
10. Comets herald and arouse winds. Because then many exhalations get up and those not inflammable or receptive of the light, bounce laterally and generate winds..
11. Comets are usual to be heralds of the great part of evils to come, to foresee dreadful events for the following years, so that the pious ones admonish to soothe God with prayers, so that He distract His indignation. Someone say however it occurs that no evil is followed to the comet's appearance, and that in distracting it there resides the helping benevolence of stars. Being Jupiter in Pisces, if the comet called *Silver* appears, it was observed that it supplied a great amount of wheat.
12. Pliny says: If Comets shaped as Flutes are observed, such comet threatens evils to the musical art.
13. The same Pliny writes that if is seen a Comet in the shameful parts of the signs, i.e. in the middle of the signs, it heralds obscene things and shameful and indecent behavior.
- 14: If the Comet, like Ptolemy demonstrates, will behold with aspect of trine or square some fixed star, it means ruin of Arts and ingenious minds.
15. History examples can be drawn, from which it appears that great changes heralded by Comets are immediately followed to it. In fact many writers mention these examples.
16. Seneca says that to the Comet appeared under Paterculus and Vopiscus Consulate followed remarkable and continuous storms. In Achaea and Macedonia in truth some cities collapsed for the earthquake.
17. Callisthenes told, that a Comet appeared before that Helice and Boura, Achaeian cities, were submerged in the sea, which happened in the two years preceding Leuktra battle, for which that Comet and the following storms and the collapsed cities, were nearly wonders foretelling ruin for the Spartans and change for the whole Greece.
18. In the first year of the disastrous internal war of the Greeks, which they call Peloponnesian, after a Comet, a stone was thrown straight from the violence of wind on a island of the Aegospotami, island near where 26 years after the Athenians, defeated in a great battle, and later being besieged the city, lost freedom and power. This Comet burned 75 days, as Plutarch writes in Lysander. People say that Anaxagoras foretold that a stone would have fallen from the sky after that fire, but Aristotle says that the stone has fallen for the force of winds after having been torn in some place.
19. Aristotle places an example of his age and says that after a Comet followed a dry winter, while the Northern winds assiduously blew.
20. We have seen too in our times unusual and harmful droughts..

21. Comets therefore do not appear in vain, but they can be recognized so they announce great things and so that, warned, we make every effort in order to mitigate them. To unthinkingly despise signs of such kind is to be ignorant, because they have physical causes at last, and are tested by the judgments of the good and prudent people, and in truth they should be considered in such a way which don't remove mercy from our minds, but confirm in us the right and devout judgment on God, and that we judge that they are signs ordered by the Divine, warning us to implore God's help.
- 22 On the certainty of meaning and warnings of comets writes Pontano in these poems here:

Ventorum quoque certa dabunt tibi signa Cometae.

- (1) *Nearly open vent on purpose to draw a certain amount of air, which like wind is swelling the humor contained within; once it was said generally of blood* (from the Dictionary of the Italian Language of Niccolò Tommaseo).

Character and some aphorisms on Comets

1. Comet is of hot and dry nature, and of igneous consistency, they are signs and omens. Since the Comets appear, strong winds appear and droughts are many. And this happens because there rises a conspicuous exhalation, which evaporates and melts moisture, so it cannot consolidate, be condensed and be melted in water and when Comets are lesser, smaller and rarer, there will be winds and drought; when in truth they will be larger, winds and droughts will be warmer.
2. Comets appear very rarely since undoubtedly are born from the place in which stars are placed, and not so much matter rises as is required to the generation of the Comets, enough to produce one or many Comets.
3. A Comet lasts the space of 7 days, generally in truth also 40 days, or at most until all the substance of which it is composed is consumed. Averroes attributes 13 days to its duration, others 80, someone 6 months. The cause of a so long appearance is because it is necessary that the Comet's substance is truly abundant, otherwise it would be soon consumed, and then daily several exhalations, feeding its fire, are carried upwards.
4. Rarely Comets are born in winter, for the great cold and humidity, since cold and moisture hinder and prevent the increase of the hot exhalation. This in summer, because of the excessive warmth and of the heat of the Sun, which consumes and disperses the matter, would be not able to rise to the higher region. Also in spring due to excess of moisture because the heat is not enough to raise so much matters. But frequently in autumn, especially when there is Mars-Saturn conjunction, since then the heat raising the matter is stronger.
5. Some comets are snow-white, others red. And these colors in truth are produced, according Seneca's judgment, from the difference in porosity and density of the matter. In fact the matter of little density offers a white color and in that case a white colored Comet is generated. When on the other hand the matter is compact and averagely thick, red. Comets red as burning carbons appear then. When then the matter is strongly compact, purple Comets are seen. Astrologers rather want that the diversity of the color means a different influence, therefore they attribute to planets Comets' color. They say in fact that Saturn's one will be of livid color, Jupiter's one silver, Mars' one red, Sun's one gold, Venus' one dark because of the thickness, Mercury's one cerulean.
6. Comets are various in their shape, since some are *Hairy*, this occurs when exhalation is denser in its middle, on the other hand less dense towards the extremities. *Bearded*, if their extremities

are more sparse and scattered. *Tailed*, when the substance is denser only in a part, in the remaining one, extended in length, it is truly more porous.

7. Some Comets are larger, other smaller. That one supplied with greater abundance of matter will appear greater; and the contrary.
8. Some Comets are observed going up, when they are pushed upwards from the occurring matter, and all that exhalation burns. Others are seen coming down when the matter is lacking, the same when it is not added.
9. The Comet moves either according to the motion of the star under which it is born, which extracts its exhalation, or according to the movement of the higher region of the air, circular from the East naturally towards the West. Seneca however states that the Comet sometimes moves from North to West through South, and from North to East, which he asserts he himself has seen, and assigns as cause of that, just the matter of which it feeds, from the moment following the burning of the flame, as it is possible to see for the tow.

The species of Comets

According to Aristotle there are two kind of Comets, that is *Comets* and *Pogonia*, that is *Hairy* and *Bearded*. So in fact Aristotle says: If matter burns in every part it is called Comet, i.e. *Hairy*: if the flame is extended in length, it is said *Pogonia*, that is *Bearded*. There are commonly reviewed and listed, namely, that among Comets one is tailed, the other bearded, the third hairy.

The Comet is tailed, when the matter of exhalation is extended in length and parts lean behind for longer. The Comet is bearded, when the matter of exhalation is thin and continuous, and drops downwards. The Comet is hairy, when the matter of exhalation, in the middle it is of denser substance, and thinner alongside. Then in fact in the middle the light appears more compact and rarer at its side. To this triad can be assimilated those species enumerated in Pliny Book II, Chap. 25 and confirmed by Leopold in Treatise 5 on the revolutions of the years. The other names of Comets in truth are these

1. *Veru (Spit)*, that it is near the Sun, is awful in the aspect and appears by day: and when it appears it announces lessening of the fruits, of the trees, of the lands and of what is born in the earth: and the death of the Kings and the affluents and those apt to rule.
2. *Tenaculum*, that it is almost of Mars color and has under of it a beam seeming vapor of ash color: and when it appears means shortage, however not in excessive way, not famine, and means fights, about which religiouses meddle beyond the measure it's up to them.
3. *Pertica (Perch)*, sometimes stretching lighter and denser beams. And when this appears, it means drought and scarcity of water and commodities; and if it will be conjunct with a planet, it foresees other things according to the nature and the position of the planet to which it is bodily joined: if it is joined with Saturn there will be mortality especially between the old ones and between friars and those who they wear saturnine garments. If then it is joined with Jupiter, its meaning will manifest between Kings and the noble people for better or worse: depending on whether he is lucky and strong or unlucky and weak. Truly it is joined with Mars, it means many wars and deaths by sword and effusion of blood and fires. Joined to the Sun it cannot appear. And if it is joined with Venus it means drought and great lessening of waters. If then with Mercury, it means the death of young people and learned men and scribes. If with the Moon, it means mortality occurring between common people and others of vile condition.
4. *Miles (Soldier)*, being sacred to Venus, and haired in the back or tail, emits a lunar beam. They say that one of this kind appeared, when Xerxes arrived in Greece. And when it appears, it crosses the 12 signs: and it means damage for Kings and nobles and the eminent people and that in the world people who want to change laws and old governments and to promote some

of new, will rebel and its worst meaning will be manifested in the part towards which it will stretch its tail and hairs.

5. *Dominus Asconae* or Mercurial, which is cerulean and small and provided with tail. When therefore it will appear it means the death of King or eminent people and nobles apt to reign; and especially for the part towards which it will stretch the tail or the beams and it means fights.
6. *Aurora (Aurora)* or *matutina*, which is of Mars, tailed and red. When in fact it appears from the Eastern part having its head downwards (it announces) fights and fires and plague and famine in the countries of the Arabs and in Egypt drought and scarcity of water; and this will be extended to the Western parts.
7. *Argento (Silver)* or *Argentea (Silver)*, which exceeds in brightness nearly all the stars, and easily exceeds others' light for the purity of its beams. When in truth it appears being Jupiter in Pisces or in Cancer, it means abundance of wheat and the fruits in the parts where it appeared; in truth if Jupiter is in Scorpio however those things will happen with slightly smaller intensity.
8. *Rosa (Rosa)*, which is large and round, and it is impressed with a human picture. When therefore it appears, it means deaths of Kings and of eminent people and the affluent and the nobles and those inclined to rule and the occurrence of great things and their coming and the appearance of ancient things' cause: they will be changed however for the best.
9. *Niger (Black)*, which is always similar to Saturn. When it appears means mortality by natural death and death by sword and beheading.

If the Comet appears at the Ascendant of nativity or foundation of a place or another chart or in the profected sign or at the return Ascendant or in the directed degree it signifies the native's death or destruction of that thing whose Ascendant was that sign; and if it appears in the sign of MC when someone is elevated to a dignity, it will threaten a danger to whom is elevated to a dignity. Leopold's judgment.

When the Comets are generated in earth signs, they herald sterility because of drought. When in water signs, sterility and plague because of abundance of rains. In air ones winds and sedition and also plague, however not always, in fire ones then wars.

Gerolamo Vitali - *Pseudostellae*

It is generally called pseudostella whatever comet or new phenomenon suddenly appearing in the sky or the region of the elements or ethereal one: however more precisely the term is used for those having origin in the higher region of the air, so there are called *pseudostellae*, as if to say false, like "considered so", with the exception of those perpetually shining in the ethereal region, and do not endure any change. Nevertheless these sublunar ones, as they imitate the ethereal in light and colors, in the same way are filled of qualities according to the nature of the planets to which they are assimilated and that it should be believed to mainly concur to their birth. They herald favorable or unfavorable events; although however the appearance of phenomena of such kind, since their action is partially distorted and patched with the bad qualities of skies, partially with those of the earth, is always extraordinary and therefore it is always to fear. And in truth, since the matter of which they are made consists of a dense viscous and fat exhalation, which is mixed in one, which is burned either from the sphere of the fire, near to them, or from the stars, from whose motion it burns and lasts until its viscosity is not consumed, as Aristotle says in the chap. 7 of Meteorology, so that their matter by now disintegrated, consequently, like residual exhalation, is converted in

winds and marine storms, in earthquakes, sterility of the earth, perturbation of the air, and heralds other evils of such type. From that Pontano in *Urania*:

Ventorum quoque certa dabunt tibi signa Cometae
(Comets will give to you sure omens also on winds)

We like to mention from Giuntini (Treatise on Comets) their particular meanings deriving both from the nature of the planets which they refer, and from the qualities of the signs, where they appeared, since the knowledge of this thing can help a lot to avoid those things of which they will have been omen and to strengthen ourselves through the opposite ones.

So:

- ♄ Comets, *pseudostellae* of the nature of Saturn, as are those having a dull, livid, blurry color, of this kind are *Pithetes*, *Tenaculum*, *Hircus* etc., found at the Horoscope of the world, herald misfortune for many, famine, plague, exiles, poverty, distresses, mourning, terrors and damages for the animals fit to human necessities; they bring moreover when it is their season extremely intense cold, ice and clouds; intense snows, strong winds, storms, shipwrecks, loss in fishing, devastation of harvests by browses and locusts, flooding, hails and similar. As far as people in addition they denote several accidents and dangers and they will be sad, envious and lonely, full of problems more than usual.
- ♃ The apparition of comets of Jupiter nature, as it is the *Argenteus*, means fertility of the year, healthy rains convenient to their own seasons, serenity of the air, above all if in air signs; in truth it means for bodies prone to diseases, above all those that have Jovial complexion, pleurisy and other diseases, of which at its place we said to be caused by Jupiter.
- ♂ The comet of the nature of Mars, called *Veru* (*Spit*) or *Perch* indicates dryness of the sources and drying of the rivers, and winds bearers of diseases and decline of fruits and fates; to these things very frequently there follow thunders, lightning and flashes; the sea will be rough more than usually and shipwrecks will happen. And because Mars, by its nature inflames the bile, so will be raised frequent fights, riots, wars and sedition. Among the diseases there will be rampant dysentery, burning fevers, bleeding *et similia*.
- ☉ If the Comet of Sun nature, as it is commonly called *Rosa*, will be observed at the Ascendant of some region or of some very powerful man, death or sedition or tumult with a change of things will follow, but perhaps better things for them. Even sunny people, which are generous, wise, cheerful, generous, authoritative, will be afflicted by many troubles.
- ♀ Venus *pseudostella* of yellow gold color and very shining, threatens evils of its own nature, affections of the stomach, kidneys, of spermatic vessels, from which women, sacred virgins, lustful adolescents inclined to pleasure and similar will be very damaged. It also brings corruption of the fruits, water flooding, changes of states and laws.
- ☿ Mercury Comet, of cerulean color, called *Dominus Asconae*, in addition to winds stronger than usually, brings famine, war and plague, with the death of some great man and frenzy, lethargy, epilepsy and similar to mercurial people, especially the ingenious ones.
- ☾ At last the lunar Comet always announces something bad for feminine condition and humble people, above all for those ruled by the Moon, like phlegmatic temperaments, erratic, pale, fickle, cowards, meticulous to whom cause diseases by excess of humidity, hydropic catarrhs, paralysis and epilepsy. In general terms it means sterility, changes of laws and arguments and wars of little importance.

Moreover if the Comet is elevated over the aforesaid planets it will extremely increase its meanings; if on Saturn it brings resistant and long-lasting diseases; if on Jupiter distinguished, noble,

considerable for their glorious deed people will die; if on Mars men will quarrel and start wars; if on the Sun kings and powerful people will fall and vile ones will rise; if on Venus lessening of waters are announced; if on Mercury rows and diseases of young people; if on the Moon many losses of assets; if on *Caput Draconis* noble and valued people will be killed; on *Cauda Draconis* it denotes there will be loss of fruits of trees. Giorgio Valla then adds that if a hairy star turns its tail towards Saturn, heralds scarcity of fruits and famine; if towards Jupiter the destruction of palaces; if towards Mars diseases, death and atrocious wars without change of the public things; if towards Venus, death of great women and Queens; if towards Mercury, hangings and infamy for the multitude. At last, according to the quality of the signs in which these phenomena occur, they have different meanings.

- ♈ In fact if they shine in Aries, they indicate future clash of arms, effusion of blood and death of powerful men; moreover great dryness, common diseases and affections of eyes and the head, cattle's epidemic disease, elimination of nobles and the more distinguished people, with great and injurious sultriness.
- ♉ If in Taurus, they mean corruption of harvests and of fruits, awful earthquakes, strong winds, and moreover strong cold in their season; from here there will result strong diseases, dry pains like scabies, impetigo and itches etc.
- ♊ If in Gemini they mean fights, seedbeds of war, diseases and from these death of children and adolescents, abortions of pregnant women, death of birds, thunders and lightning, with so great violence of winds, to uproot trees. Moreover lust and lack of restraint in fornication, elimination of honest people.
- ♋ If in Cancer it indicates a multitude of locusts, attacking and devastating harvests and therefore scarcity of wheat and other cereals, or because corroded by them or the worms that in them are produced; moreover they herald wars, discords, shipwrecks, pillages, famine and much more evils.
- ♌ If in Leo they denote destruction of buildings, infestation of wolves and due to them many obstacles for people, birth of worms in cereals, dogs' rabies, eye affections and wars.
- ♍ If in Virgo it means many troubles, pains and fevers, tremors, ulcers and spots, especially in the feminine sex, so miscarriages should be strongly feared. In addition harassment for honest people and lack of restraint in wicked people's life.
- ♎ If in Libra they denote scarcity of rain, violence of winds, drying of rivers, scarcity of cereals, awful earthquakes. In addition death of Princes, massacres, treachery and similar things.
- ♏ If in Scorpio they foretell many wars between Princes, quarrels and revolutions in reigns. Beyond this, troubles and diseases in every category of people, dangers and pains for child-bed women, and affections of the parts designed to generation and corruptions of fruits of the land.
- ♐ *Lacking.*
- ♑ If in Capricorn they herald great cockiness in wicked people's ways, fornication, adultery, wars, rows, poisons administered to Princes. In the same way winter's rigor, hails, snows; from this scarcity and shortage of fruits.
- ♒ If in Aquarius they bring diseases to people, long lasting wars, darkness of the air, with violence of winds, thunders and lightning. In addition deadly plague and dead women above all unexpected death of excellent people.
- ♓ If finally they appear in Pisces they indicate the devastating condition of people, atrocious wars, rebellions and betrayals. In the same way navigation will be dangerous and the art of fishing will suffer damage.

It is necessary moreover to turn attention to the fact that, if the appearance will happen in the East, the indicated thing will happen faster, if in truth in the West, later. The places then that more will be troubled from this problems are those which the tail will tilt or those ruled by the signs where (the comet) will become visible. These things are drawn from Giuntini, with which almost all the writers on comets agree. However Vincenzo Guinitius of the Society IESU, in the oration held on the Comet of year 1618, seen in Rome's hemisphere, states that they bring happiness not less than unhappiness, although however people, for the specific characteristic assigned to them by nature, observe more the accidents than propitious events. After all Riccioli, in *Almagestus Novus*, Book 8, Section 1 chap. 2, after a long examination of this subject he deduces that if comets are elementary, generally and by their own nature, they must herald some considerable change of the things, having place in the sublunar region, whose effects will not lack, indeed they will be manifested therefore not so much later, according the order of the nature and the addition of other causes. If in truth they are celestial, produced from the ethereal matter, were disposed by God, so that the mortal eyes will be raised to the sky, because they expect something of great either for them or their own regions, nearly they are the word of God: especially in truth in those regions in which they will be perpendicular or they will linger longtime at the Ascendant.

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