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DATING OF PLISKA'S ROSETTE

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Abstract: An attempt is made to set a dating of the popular Pliska's Rosette on the base of astronomical interpretation of signs, depicted on it and using a computer program for searching a moment in time, when a given allocation of planets is really occurred. Relating historical background and some explanations are considered.

Introduction.

In 1961, a seven-ray bronze medallion was found in Pliska, Bulgaria. This object, known also as Pliska's Rosette, became widely popular since 1978, when it was announced by the Bulgarian archaeologist S. Vaklinov [1]. The find attracts the scientists not only with its unusual form, but also with the pairs of special characters, written on the one side of each ray (see Fig. 1). In the middle of the reverse side of the medallion, it is drawn a symbol IYI, which is considered having a meaning "heaven" or "sky" [2]. The number of ends of the symbol IYI (seven) is equal to the number of rays of the medallion. Recently [3] was shown that there exists a semantic link amongst the tokened seven rays of the medallion, the Seven planets in the ancient East and their abstract analogue, the sign IYI.

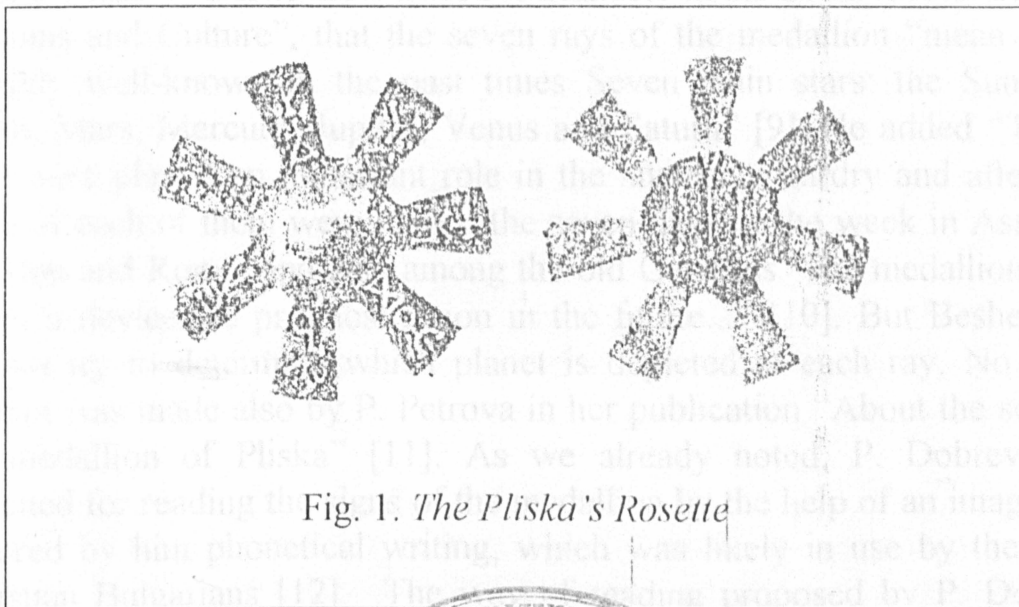


Fig. 1. *The Pliska's Rosette*



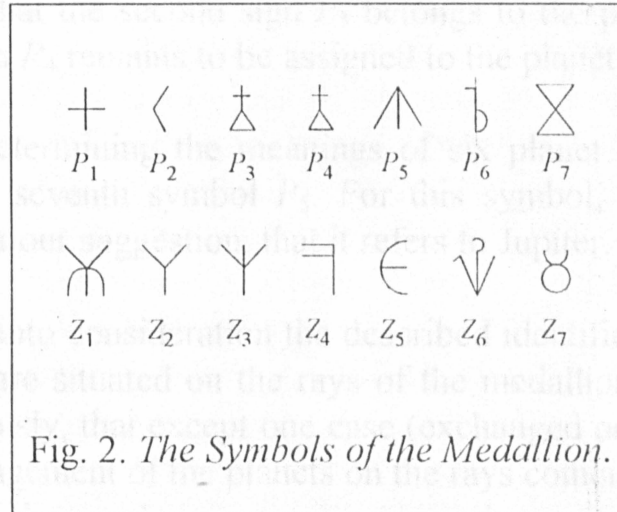
Many attempts were made in order to read some message “alphabetically written” or “symbolically attached” and inscribed by rune. One such attempt (unsuccessful by our opinion) was done by E. Sachev, who overtrusted the Chuvashian language and used it as a possible key for decoding some Proto-Bulgarian words [4]. Another attempt (also unsuccessful according to us) was done by P. Dobrev. He based on the conjecture of V. Beshevliev, who meant that the Seven planets was involved. Let us note, that the Sun and the Moon are traditionally considered being within the set of these planets. P. Dobrev used also a hypothetical “phonetic” writing and supposed that it was employed by the Proto-Bulgarians [5], [6].

An Identification of the Symbols.

In this work is accepted that the signs (the every two on each ray of the medallion) are neither letter-like (as is supposed by P. Dobrev [6]), nor rune-like (as is supposed by St. Mikhailov [7] and D. Ovcharov [8]). We suppose that the signs have an astronomical meaning. Some of them symbolizes the Seven planets known in the ancient time, while the other signs of the medallion are symbols of some seven of the twelve zodiac constellations. Every researcher knowing a little about the past astrological practices, will find quite naturally such kind of interpretation.

First, who assumed the seven rays of the medallion to be represented the Seven movable sky lights, known in the past as “Seven planets”, was V. Beshevliev. In 1981, he wrote in his book “Proto-Bulgar: Customs and Culture”, that the seven rays of the medallion “mean quite possibly well-known in the past times Seven main stars: the Sun, the Moon, Mars, Mercury, Jupiter, Venus and Saturn” [9]. He added “These stars were played an important role in the ancient wizardry and after the name of each of them were named the seven days of the week in Assyria, Babylon and Rome, and also among the old Germans. The medallion was surely a device for prognostication in the future...” [10]. But Beshevliev did not try to determine which planet is depicted at each ray. No such attempt was made also by P. Petrova in her publication “About the seven-ray medallion of Pliska” [11]. As we already noted, P. Dobrev had searched for reading the signs of the medallion by the help of an imagined, restored by him phonetical writing, which was likely in use by the Pre-Christian Bulgarians [12]. The way of reading proposed by P. Dobrev does not coincide with our interpretation described here. As a matter of fact concerning the identification of the planets, we use the data, firstly published in the book “Blagarianity: the religion of the Seven” [13]. The

current work states for the first time one more assumption: the symbols accompanying the planets on each one of the seven rays are marks of zodiac constellations.



Using the literature accessible to us, we could not find a correspondence between some of the symbols and their meanings. As for the four symbols P_1 , P_2 , P_6 and P_7 (see Fig. 2), we can surely say that they relate respectively to the Sun, the Moon, Saturn and Venus, we can easily determine the assignments of the rest three symbols P_3 , P_4 and P_5 to the planets. Starting from some old manuscripts, where the names “red horse” and “black horse” were preserved for the planet Mars and Mercury [14], [15], we found that the two identical figures P_3 and P_4 belong to these two planets. Because two different planets have the same signs, we adopt the assumption that the two triangles of these two signs were formerly colored differently. According to their names, the triangle meaning Mars was probably colored in red, while that of Mercury was black. Unfortunately, up to now, the published studies known to us do not support this assumption. The archaeologist J. Gatev from the Archaeological Museum in Sofia gave us an opportunity to look the medallion at short distance. We saw that there were no visible traces of coloring. We have no information, whether a chemical analysis has been made.

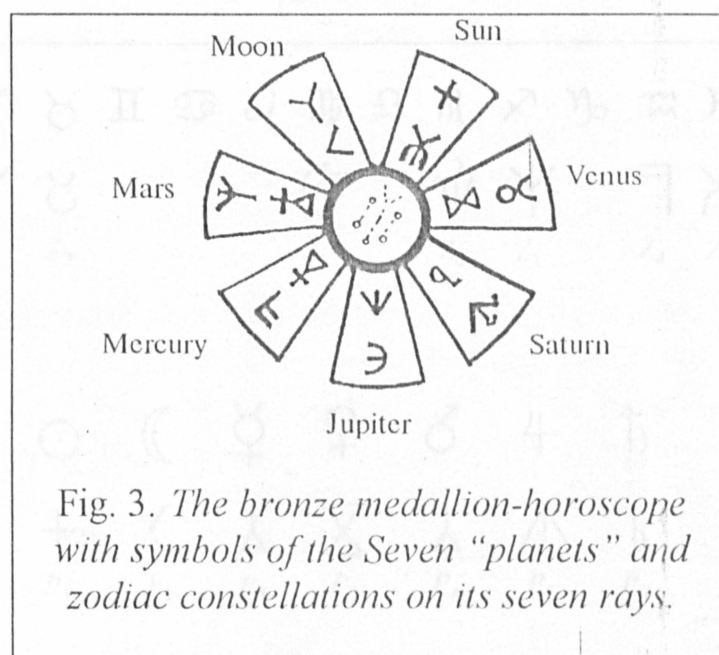
The Medallion is a horoscope.

The identification of the signs of Mercury and Mars, that is explained here, will become more obviously later in this work, where we will consider the signs of zodiac constellations. Now we will only mention, that our reason follows from the fact, that the planet Mercury is always visibly close to the Sun, hence this planet can be positioned either in the

same constellation in which the Sun is, or at least in the neighboring one. Because one of the two identical signs P_3 or P_4 accompanies the sign of the zodiac constellation Sagittarius Z_3 , and this constellation is not a neighbor of the constellation Pisces, which contains the Sun, we come to the conclusion, that the second sign P_3 belongs to the planet Mercury. In this case, the sign P_4 remains to be assigned to the planet Mars.

After determining the meanings of six planet symbols, we turn ourselves to the seventh symbol P_5 . For this symbol, there is no other possibility except our suggestion, that it refers to Jupiter.

Taking into consideration the described identification, we assume that the planets are situated on the rays of the medallion, as is shown on Fig. 3. It is curiously, that except one case (exchanged order of Venus and Saturn), the arrangement of the planets on the rays coincides with the order of the days of the week in most European languages. If we begin a movement starting the ray noted by the Sun symbol P_1 , then going contrary to the clockwise direction, we will see successively the signs of the Seven astrological planets, as is shown on Fig. 3.

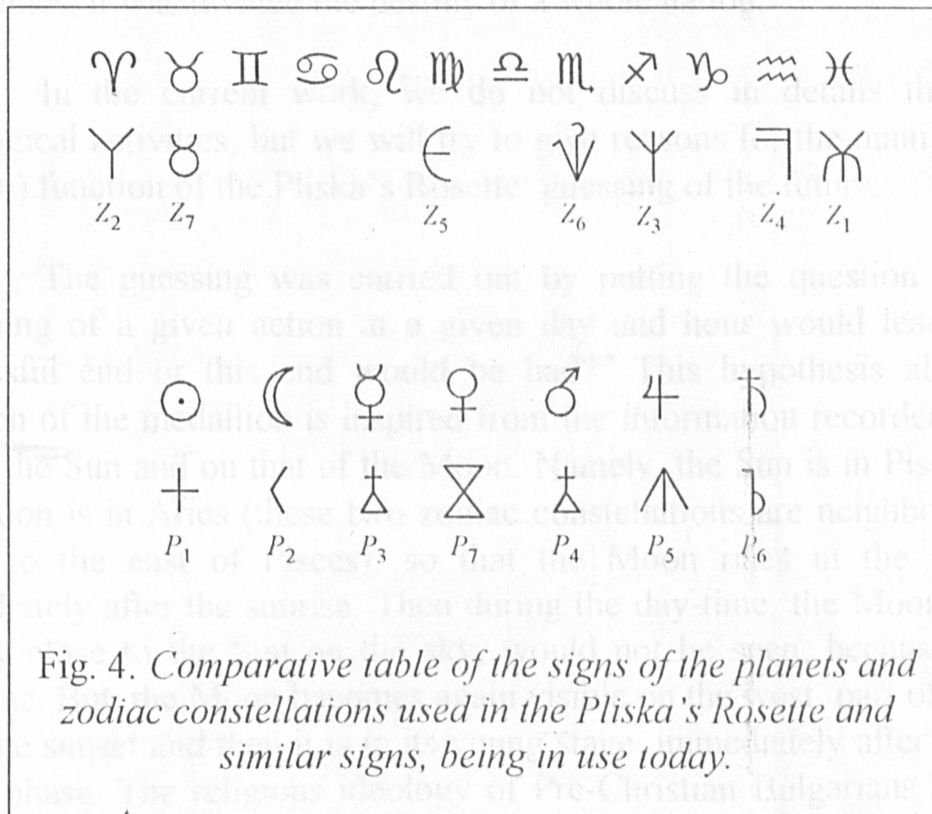


The Medallion is a horoscope.

We agree with Beshevliev, that the medallion was used for "prediction of the future", but we specify: This "prediction" was performed by a **horoscope, depicted on the rays of the medallion.** Namely, a symbol of a constellation was added to each symbol of a planet

on each ray. These constellations are so called zodiac constellations, dominating over the planets, while the latter are in their domains. With no efforts we can identify: $Z_2 =$ "Aries", $Z_7 =$ "Taurus", $Z_1 =$ "Pisces", $Z_3 =$ "Sagittarius" and $Z_6 =$ "Scorpius". As for the symbol accompanying the sign of Mercury, we assume there exists no other assumption except this symbol be the zodiac constellation Aquarius. Our arguments follow from the fact, that Mercury is always visibly close to the Sun and because of that, it must be located in the same constellation, in which the Sun is, or at least in the neighboring one. Since Mercury is not in Pisces or Taurus, in which the Sun and Venus are placed, it follows that Mercury must be in Aquarius. And for the symbol Z_5 , which is depicted on the ray of Jupiter, we find that this sign is graphically very close to the sign meaning Virgo in the modern astronomical notations. Of course, we do not reject any other rendering.

We quote a comparative table containing the signs of the planets and zodiac constellations pictured on the Pliska's Rosette and their correspondences being used in the modern astronomical or astrological books (Fig. 4).



In the modern science literature, the term "horoscope" is accepted to have a meaning of a given diagram showing the relative

position of planets in zodiac constellations. In the past times, some horoscope was usually composed (i.e. the position of the planets was recorded) at the moment of a **birth** of an eminent person (e.g. a successor to the throne) or at the day of some **important event having a fateful meaning**. A quite similar practice exists also today in communities, where persons believe in the capacity of astrology.

Having a horoscope composed in order to use it for a passed event or for an upcoming one, the ancient astrologists, applying their system of esoteric knowledge, were going to predict events in a person's life or to predict the issue of various planned actions.

Such a practice existed also amongst the old Bulgarians. As an example, we point out the 35-th answer given by the pope Nicklaus I to the queries of Bulgarians (RESPONSA NIKOLAI I PAPAE AD CONSULTA BULGARORUM. ANNO 866), where was told: "You said, when you was going to a battle, you got accustomed to **observe days and hours and to make... some guesses...**" [16]. Hence we conclude, that it was divined not only a person's life, but also a group of peoples, undertaking a construction of a building or beginning a war, for example. Sometimes, it was divined the destiny of a whole nation.

In the current work, we do not discuss in details these old astrological activities, but we will try to give reasons for the main (by our opinion) function of the Pliska's Rosette: guessing of the future.

The guessing was carried out by putting the question: "When beginning of a given action at a given day and hour would lead to the successful end or this end would be bad?" This hypothesis about the function of the medallion is inspired from the information recorded on the ray of the Sun and on that of the Moon. Namely, the Sun is in Pisces, and the Moon is in Aries (these two zodiac constellations are neighbor, Aries being to the east of Pisces), so that the Moon rises in the morning immediately after the sunrise. Then during the day-time, the Moon, which is very close to the Sun on the sky, would not be seen, because of the sunshine. But, the Moon becomes again visible on the west part of the sky after the sunset and then it is in its young stage, immediately after the new moon phase. The religious ideology of Pre-Christian Bulgarians required that all important actions, i.e. those having a great significance (e.g. battles), be undertaken in the period of the first part of the moon phase cycle: from the day of a new moon to the day of a full moon. As a confirmation, we quote historically recorded events:

Pre-Christian Bulgarians belonged to the nations, that began battles in wars “at increasing moon or at full moon time, but at decreasing moon phase they drew off” [17]. By such a reason only, we may explain an unexpected finish of the siege of Thessalonike in A. D. 548 and the same event at Singidunum (today’s Belgrade) in A.D. 593. In the both cases, the Bulgarian forces were withdrawn from the battle at a moment when their enemies wondered, how to give up themselves. That extraordinary development of the events remained unexplained by the Byzantines and was taken by them as a true miracle (see “The miracles of St. Dimitrios of Thessalonike” [18]). The old Bulgarians obeyed strictly the laws of their “cosmological” religion.

Let us note, that some reminiscences of “the important function” of the increasing moon phase is preserved in Christianity as a rule for determining the date of Easter. The commonly stated principle asserts that Easter is the first Sunday after the first Full Moon after the Vernal Equinox.

Dating of the medallion.

A crucial question arises naturally: **When the medallion was made** or more precisely, **what moment in time it was related to?**

Based on the place of finding, i.e. “on the archaeological medium”, S. Vaklinov referred it to the 8th - 9th centuries A. D, which is now adopted by almost all researchers.

The essential fact for us is that after having an interpretation to the medallion as a horoscope, we dispose of actually an exact date of its composing and this date can be determined by the locations of the celestial bodies recorded in it.

The chronological investigations, based on an interesting idea of astronomical interpretation of the content of some historical monuments or manuscripts, by using their images or texts, are published, for example in [14], [15] and [19]. There, based on a proper analysis, a particular configuration of movable celestial bodies is made up, so that this situation is accepted as really existing in a certain moment in the past. Using this method in the cited literature, attempts are made to find a dating of old Egypt tombs by artistic drawings in them, as well as to determine the year of writing of the last book of the Bible “Apocalypse”. This is possible,

because as we know, the movement of the celestial bodies is characterized by a considerable regularity and a repetition of similar configurations takes place at average intervals of several millennia, so that the methods of modern celestial mechanics together with computer calculations allow obtaining results for dating with a good precision.

In order to make a dating in our case, we assume that according to the analysis we have already made, the medallion has a relation to the moment of time, when the planets and the Sun were located on the zodiac constellation, as follows:

The Sun in Pisces,
Mercury in Aquarius,
Venus in Taurus,
Mars in Sagittarius,
Jupiter in Virgo,
Saturn in Scorpius.

We wrote a computer program, especially for our purposes. The embedded algorithms were taken from [20]. The program was initially tested by comparing it with programs published in [21] and [22]. We made sure of its validity after a good coincidence of its results and those obtained independently by collaborators of A. T. Fomenko [14] on dating of another historical event, namely the moment of writing of “Apocalypse”, the last book of the Bible. Our results of this dating are published in [15] and [19].

The result of the computer calculations showed that the horoscope depicted on the Pliska’s Rosette, i.e. the disposition of the celestial bodies given on it, was a reality on the stellar sky at a narrow interval **from March 29, 1104 to April 13, 1104 (A. D.)** only and at no time in the whole period from our days backward to 6000 B. C. At that, we note that the solution is **unique** and “**well expressive**” in the mentioned historical period. It is interesting, if we suppose the locations of the planets to be randomly fabricated, there is a very big probability, such a disposition to be **no** existing at all in the whole historical period of time. Arguments for the last assertion are discussed in [14] and [15].

Having found by our computer program the above time interval, we have made an additional test by the help of the program Skyglobe [23]. This test gave a full confirmation of our result and specify also that the Moon was located in the constellation “Aries” exactly on **April 5, 1104**.

We made some other computations at intentionally relaxed conditions of the horoscope. For example, we ignored the location of the Sun in Pisces and eliminated the requirement that the planet Mercury be in a certain constellation at all. It is usually assumed this planet to be hardly observable, because it loses itself in the rays of the rising or setting sun. The ancient astronomer or astrologist being composed the horoscope with the naked eyes, might be admitted the largest inaccuracy just for its position. On the mentioned relaxed conditions, we obtained the following dates:

March 29, 1104	...	April 23 1104 (A. D.),
April 10, 867	...	May 15, 867 (A. D.),
July 11, 487	...	August 5, 487 (A. D.),
April 5, 250	...	May 10, 250 (A. D.),
May 21, 1279	...	June 5, 1279 (B. C.).

The search was made among all the possibilities in the interval backward to the first millennium B. C., where is the last computed result. In the case of the first period, we see it is expanded by 10 days.

Remark: All the dates in the current work are given according to the presently used Gregorian calendar.

Conclusion.

We believe the above described computer calculations will give a possibility for future well-based assumptions regarding the specific reason, for which the Pliska's Rosette - horoscope has been made. From a scientific point of view remains a substantial question: **which important date was recorded by this medallion - horoscope?**

The answer should be obtained during the future investigations by the Bulgarian medievalists, as well as by the researchers of the earliest Bulgarian history.

We are willing to adopt one of the two first results of computer dating (1104 or 867) as the most acceptable year pointing to the moment relating to the medallion. These dates satisfy also the condition, that states the Sun to be located in the Pisces constellation. The fact, that the Sun is in that zodiac constellation suggests to us the importance of the **vernal equinox** day. This moment was considered being a "birthday" of a coming



year. According to the modern astronomical data, the sunrise on the day of the vernal equinox has begun its occurring within the limits of Pisces constellation at the time from 148 B. C. and will go on in these limits up to 2000 A. D., approximately. In many old human cultures, the year began at the vernal equinox moment. This was quite probably to be true also in the Pre-Christian Bulgarian calendar.

The location of the Sun in Pisces was formally emphasized on the Pliska's Rosette and this was done twice: 1) The only Sun sign was depicted on the outer ring. All the other signs were placed on the inner one; 2) The symbol IYI, which was cut on the reverse side of the medallion, pointed exactly to the ray of the Sun (see Fig. 3). The mentioned peculiarities allow us to suppose that the **horoscope was made with a purpose of a whole year.**

If we choose the year **867** amongst the above computed dates, we might point out the following two dilemmas, which were having a significant meaning at that time, according to the official Bulgarian historiography:

Dilemma 1. Adopt or not Christianity as a national religion?

Dilemma 2. Which great powers, the newly established Bulgarian Church join to? - Constantinople or Rome?

In "standard" textbooks of Bulgarian history is accepted, that the process of adopting the Christianity was conducted in 864 A. D. During the following 865, the prince (kniaz) Boris suppressed a revolt of Bulgarian notablenes, who were led by Boris' son Vladimir-Rassate and who wished a restoration of the old popular "paganish" religion. In the next year, an official delegation, representing the Roman Pope, came to the town of Pliska and was staying there from 866 to 870.

However, a stone inscription found in a village of Balshi in today's Albania contradicts to the above dating of events: "Boris, renamed Mikhail, the ruler of Bulgarians [adopted Christianity] in the years 6374 [=866 A. D.], together with the peoples given him by the God [24]. The same date of converting Bulgarians to Christianity was supported by the Bertin's manuscripts, which had a purpose to describe some periods of German history [25]. Following this date, the revolt of Vladimir-Rasate and the restoration of the popular "paganish" faith, being in fact a "cosmological" religion, is confirmed to be in 866 or in the next 867. In

this last case, it is obtained a complete coincidence of the last mentioned year and that one, computed on condition that medallion represent a horoscope.

It is most likely that in 867, Bulgarians for the last time were requested their questions of the stars. As we know, the Christians strictly prohibited the methods of astrology, i.e. the prediction of the future by observation the positions of the Seven lights on the stellar sky. We argue this fact by mentioning the words belonging to the eminent Bulgarian theologian John the Exarch, who was contemporary with and a fellow of St. Clement of Okhrid (“The first archbishop of Bulgarian language”), of St. Naum of Preslav and Okhrid (“The first manager of Bulgarian Church”) and of Christ-lover Bulgarian Tzar Simeon (King Simon) the Great. All astrologists were subjected by him to a cutting criticism: “They even consider the sky lights as a reason for what is occurring in human life, indeed not being under suspicion, how much they are wrong... **but they [the lights] cannot affect the person’s life in any way**, and cannot create neither reasonable and patient, nor foul and ill, or rich and powerful princes and kings, or on the contrary, poor and wretched, rugged and rude men, according to the vain and confused mind, and to the wrong wishes of the astrologists”. In order to strengthen this negative attitude to the astrology, the Christian theorist added: “Indeed, all the astrological thoughts and theories are very ridiculous, they are inherent of their exceptional madness” [26]. Thus, this bright picture reflects the brutal collision of both religions: the anthropocentric Christianity and the cosmical paganism.

As we know, the triumphant Christianity stopped during many centuries the development of astronomy, a science very closely related to the astrology. The existed fact, that Pre-Christian Bulgarians confessed definitely a “cosmological” religion, was confirmed by St. Clement of Okhrid, who said: “One must blame those, who consider themselves being worshiped to the things, created by the God, and called them gods: the Sun, the Moon, the stars, the water and the fire” [26]. The Bulgarian archbishop Theophyllact of Okhrid (1090-1126), who was a successor to the Okhrid’s Throne of St. Clement, wrote about the Bulgarians: “They did not know the name of the Christ, served the Scythian madness, as well as the Sun, the Moon, and the other stars...” [27]. In the same historical document, the mentioned Theophyllact told about the dispute of Bulgarian prince (kniiaz) Omurtag (or Murtagon, Omvritag, which literally means “the Great Pagan”, obtained by translation from West-Iranian language) and captured Kinamon, who was a Christian, that last one said: “... you

stress the Sun and the Moon and force me to be amazed at their brightness...” [28].

Another hypothesis of dating, namely that one, which concerns the year **1104**, could not be rejected. Nevertheless, this date is most perfectly obtained from the **computational** point of view. Thus, the Tabov’s hypothesis [29] for shortening of the generally accepted now Bulgarian historical chronology is upheld to a certain extent. That hypothesis is a part of a more general global chronological theory of A. T. Fomenko [14], which asserts a “layering” of narrative historical texts. The reader might expect further suitable interpretations in this direction.

We hope the future investigations will provide more detailed explanations of the results given above.

References:

1. S. Vaklinov. **Ein Denkmal Runischen Schrifttums Pliskas**, In: **STUDIA IN HONOREM VESELIN BESEVLIEV**, Sofia, 1978, pages 245-254.
2. В. Бешевлиев. **Прабългарски епиграфски паметници**, София, 1981, page 23.
3. М. Сидоров. **Българиянството - религията на Седемте**, София, 1997, pages 97-104.
4. Е. Сачев. **Надписът върху бронзовата розета от Плиска**, In: **ВЕКОВЕ**, София, 1977, № 6, pages 78-81.
5. П. Добрев. **Каменната книга на прабългарите**, София, 1992, pages 91-95.
6. Ibid., see also: П. Добрев. **Светът на прабългарите**, София, 1994, pages 104-105.
7. С. Михайлов. **Към тълкуването на бронзовата седмолъчна розета от Плиска**, In: **СТАРОБЪЛГАРИСТИКА**, София, 1995, № 2, pages 94-101.
8. Д. Овчаров. **Отново за бронзовата седмолъчна розета от Плиска**, In: **СТАРОБЪЛГАРИСТИКА**, София, 1995, № 4, pages 114-115.

9. В. Бешевлиев, *Ibid.* page 23.
10. *Ibid.*, page 23.
11. П. Петрова. **Към въпроса за седмолъчната розета от Плиска**, In: ПРИНОСИ КЪМ БЪЛГАРСКАТА АРХЕОЛОГИЯ, София, 1992, page 104.
12. П. Добрев, *Ibid.* 1992, pages 91-95.
13. М. Сидоров, *Ibid.*.. page 96.
14. А. Т. Фоменко. **Новая Хронология Греции. Античность в Средневековье**. Том. I, Московский государственный Университет, Москва, 1996.
15. Е. Келеведжиев. **Астрономическа датировка на исторически паметници**. In: Списание за Астрономия "Андромеда", бр. 23, 1998, pages 30-33.
16. **Фотий патриарх Константинополски до княз Борисъ; Папа Николай до българите**, София, 1994, page 134.
17. De Groot, J. J. M. **Die Hunnen der vorchristlichen Zeit**, Berlin, 1921, page 61.
18. ГИБИ, Vol. III, София, 1960, page 126.
19. E. Kelevedzhiev. **Dating the Apocalypse using Computational Astronomical Methods**, Summer School "Application of Informational Technologies to Biblical Studies", Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, July 27 - August 7, 1998, Sofia, Bulgaria.
20. P. Escobal. **Methods of Astrodynamics**, John Wiley and Sons Inc., New York, 1968.
21. Astronomical Applications Department of the U.S. Naval Observatory; <http://aa.usno.navy.mil/aa>, 1998.
22. Astronomy Lab, v. 2.03; <http://www.download.com>, 1998.
23. Mark Haney. Skyglobe 3.6, Klass M Software, Ann Arbor, MI, 1989-93.
24. **Христоматия по история на България**, София, 1964, page 124.
25. *Ibid.*, page 117.

26. Николов, Н., Хараламбиев, **Звездобройците на древността**, София, 1986, page 263.

27. Ibid.

28. ГИБИ, vol. IX, part 2, София, 1992, page 263.

39. Й. Табов. **Падането на стара България**, София, 1997, pages 36-90.

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