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Trying to Identify some Ancient Residences in Albania through Old Maps

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Abstract

This paper attempts to identify ancient settlements in Albania by cartographic methods by elaborating geographical coordinates obtained from Ptolemy's work. The results of the paper are of interest for archeology, history, geography, geodesy, photogrammetry etc. The problem addressed is not simple, as for some settlements, different literature sources give different values of geographical coordinates. In this context, those geographic coordinate systems that best deal with the real position of these settlements are selected. Thus, for example, the longitude (L) of Ohrid (which serves as a support point), in some sources is given the value L_1 = 46040 ', while in later sources it is given the value L_2 = 470 40'. The calculations are performed for both cases of this longitude, but greater certainty is given when L_2 = 47040 'is obtained, because the geographical longitude of Skopje (Scupi with L = 48030'), Prishtina (Ulpiana, with L = 48040 '), Peja (Siparantum, with L = 46030'), etc., are closer to reality than L = 46040 ', according to which Ohrid appears to be highly displaced to the west, in relation to the aforementioned sites (pic. 2.1). Consequently, settlements located in and near the Apollo - Orikum-Ohrid triangle are identified with other sites (as noted in the following statements). All of these anomalies and others such as these have been handled carefully and according to a logical rationale for the material being processed, taking into account all factors that positively impact the settlement identification process.

Keywords: archeology, history, geography, geodesy, photogrammetry, geographical coordinates, cartographic methods, Putzger, Kiepert, ancient settlements, Albania

1. Determination of Base Locations and Settlements Identified on Ptolemy's Maps

After 1444, in Europe during the XV-XIX centuries, Ptolemy's maps were reprinted nearly 50 times, preserving the type of cartographic projection and some values of geographical coordinates. Of interest are maps elaborated by Gastaldi (v.1560), Sofjano (v.1579), Coronel (v. 1689), Kantel (v.1689), Baudrant (v.1716), Lapie (v.1828), Weis (v.1829), Wilberg (v.1867), Kiepert (v.1871), Putzger (v.1897) etc. This study records the work done by institutions and authors that provide greater accuracy and veracity of the coordinates, compared to the values of the geographical coordinates given by other authors, such as: values of geographical coordinates given by the former Institute of History and Linguistics (some of the geographical coordinates of this paper have been corrected and corrected); Wilberg map (fig. 2.1); Kiepert's map (fig. 2); Putzger's map (fig. 2.3) and Sofiano's map (fig. 2.4).

In order to carry out the identification, the settlements whose geographical coordinates are known in both coordinate systems were initially selected. In the coordinate system they are accepted by Ptolemy and in the Gauss-Kryger system, for the creation of topographic maps, published by the Military Geographical Institute in Tirana, during the second half of the 20th century.
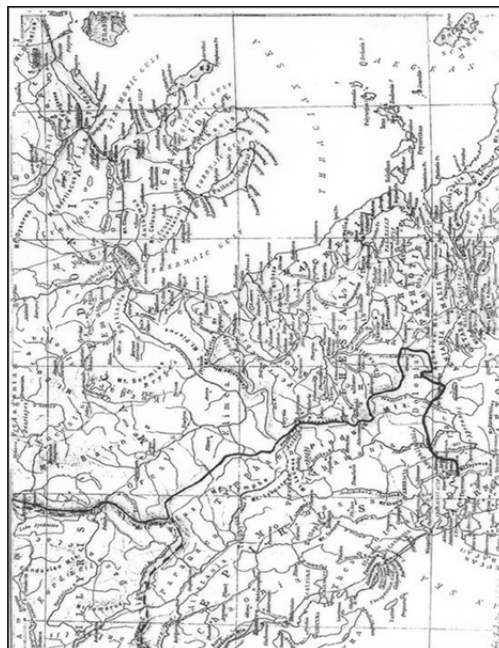
Picture 2.1 shows the base locations, while Picture 2.2 gives the geographical coordinates of the identified settlements, or for which doubts and disputes have arisen.
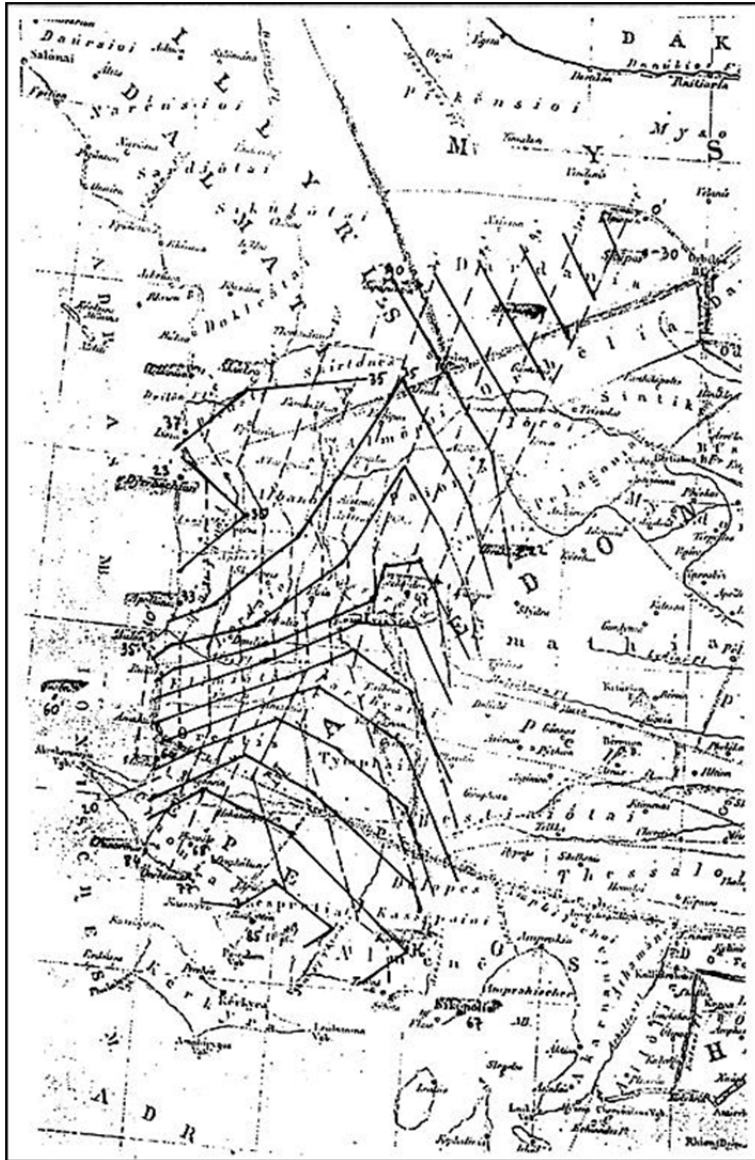
Picture 2.1: Wilberg map , year 1867

Picture.2.2: Kiepert map , year 1871.

Picture 2.3: Putzger map, year 1897

Picture 2.4: Harta e Sofjanos, year 1579

Overview 2.1: Settlements – based

N	Settlements -based	Geographical		coordinates		Changes		Kf.
		Gaus-Kryger		Ptoleme				
		Fi	Li	F'i	L'i	dF	dL	K
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1	Podujeve (Vendenis)	42º54'	21º13'	42º50'	48º00'	4	113	2.0
2	Kline(Chlina)	42º36'	20º35'	42º30'	46º40'	6	70	1.9
3.	Durres (Epidamnus)	41º18'	19º26'	40º55'	45º00'	28	40	5.0
4.	Prizren (Thermidava)	42º12'	20º44'	41º45'	47º00'	28	74	2.0
5.	Prishtine (Ulpiana)	42º40'	21º10'	42º10'	48º30'	30	146	2.3
6.	Peje (Siparantum)	42º40'	20º17'	42º10'	46º30'	30	78	2.3
7.	Bajice (Arribant)	42º33'	20º55'	42º00'	47º30'	33	101	2.0
8	Apolonia	40º44'	19º28'	40º10'	45º05'	34	43	4.6
9.	Vlore(Aulona	40º28'	19º28'	39º55'	44º50'	33	32	4.4
10	Lezhe(Lissus)	41º47'	19º39'	41º10'	45º00'	37	27	22
11	Oher (Lychnidos)	41º08'	20º48	40º20'	47º40'	48	118	2.3
12	Sazan	40º30'	19º16	39º30'	44º10'	60	0	0.0
13	Orikum	40º19'	19º25	39º15'	45º00'	64	41	5.6
14	Nikopoli	39º02'	20º44	37º55'	47º25'	67	107	2.3
15	Finiq	39º55'	20º03	38º45'	45º20'	70	23	1.5
16	Sarande (Ochensmo)	39º52'	20º01	38º35'	45º20'	77	25	1.6
17	Kassiope (Epir)	39º36'	20º32	38º16'	47º00'	80	94	2.3
18	Porto Palermo	40º03'	19º48'	38º40'	45º00'	83	18	1.6

$\sum = 812 \qquad 1150$

$X_{mes} = 45.111 \qquad 63.89$

We point out that in all the sources used, there is no data on the ancient city of Berat. Knowing the coordinates of this city would better specify the process of identification.

From Picture 2.1 and 2.2 it is noted that as the origin of longitude, Ptolemy accepted the meridian passing through the westernmost island of the world known to him, located in the group of Canary Islands of the Atlantic Ocean.

Overview 2.2: Geographical coordinates of the settlements identified

Nr	Places to identify	Geographical coordinates			
		According to the Institute of History (1965)		According to Wilberg (1867)	
		Fi	Li	Fi	Li
1	2	3	4	5	6
Human Settlements					
1	Albanopoli	41º 05'	46º 01'	41º 05'	41º 00'
2	Amantia 1 (Port)	39º 30'	44º 55'	39º 30'	44º 55'
3	Amantia 2	39º 40'	46º 00'	39º 40'	46º 00'
4	Antigone	39º 10'	45º 15'	39º 10'	45º 15'
5	Arnise	40º 40'	45º 20'	40º 40'	45º 20'
6	Apsalo	41º 05'	46º 20'	45º 20'	46º 20'
7	Bylis	39º 45'	45º 00'	39º 45'	45º 00'
8	Dauli	40º 00'	45º 30'	40º 00'	45º 30'
9	Dibona	40º 10'	45º 45'	40º 10'	45º 45'
10	Dobera	40º 45'	46º 40'	40º 45'	46º 40'
11	Dolica	39º 40'	47º 30'	39º 40'	47º 30'
12	Epicari	41º 15'	45º 30'	41º 15'	45º 30'
13	Elima	39º 40'	45º 40'	39º 40'	45º 40'
14	Estreo	40º 50'	46º 20'	40º 50'	46º 20'
15	Evia	40º 15	47º 05'	40º 15'	46º 05'
16	Europo	41º 20'	46º 30'	41º 20'	46º 30'
17	Eriboja	39º 45'	46º 40'	39º 45'	46º 40'
18	Ekatopendon	39º 00'	45º 40'	39º 00'	45º 40'
19	Ealon	38º 30'	45º 40'	38º 30'	45º 40'
20	Festo	39º 20'	47º 15'	39º 20'	47º 15'
21	Girtona	39º 30'	46º 50'	39º 30'	46º 50'
22	Kassiope (port)	38º 25'	45º 30'	38º 25'	45º 30'
23	Omfalion	38º 40	45º 40'	38º 40	45º 30'
24	Orma	41º 30	46º 45'	41º 30	46º 45'
25	Sccampi	40º 20'	45º 45'	40º 20'	45º 45'

1.1   Identification of ancient settlements by graph-analytical and analytical methods

The graph-analytical method in Ptolemy's maps guarantees a more accurate picture of the geographical distribution of the settlements under study, as well as a higher geometrical accuracy, compared to existing maps, as the calculation of Ptolemy's projection and its construction is carried out for scale 1: 1000000 (while Wilberg's map has scale 1: 3000000, while other maps have a smaller scale). The entire territory under study is divided into three zones: North, Center and South, where base areas are selected for each zone and actions are carried out independently.

For the realization of the graph-analytic method, the actions were carried out based on the position of the sites shown in the Ptolemy's cartographic projection, calculated by us, where LO = 47º40 ', in the position of the locations, shown on the map. Wilberg (pic. 2.1) and in actions on the 1: 500 000 scale topographic map (pic. 2.5).

In the analytical method, polynomial formulas with eight pairs of coefficients were used to determine the transformation coefficients. By performing the corresponding actions for both

methods and their variants, mentioned above, the values of the geographical coordinates for all the locations identified are obtained. These values differ very little from one another; for this reason, their average has been taken, on the basis of which the positions of the countries have been determined, but already in the geographical coordinate system used today by the geodetic-cartographic institutions in Albania. 1: 50000 scale topographic maps were used for this purpose. The ownership of human settlements turns out to be as follows:

1- ADPICARI / EPICARI, at source [10] is said to belong to Puka. But according to Ptolemy's coordinates: F = 41º15 'and L = 45º30', this settlement, after the transformations, turns out to be in the vicinity of BUKMIRES, ie. About 23 km south of Puka (by air).
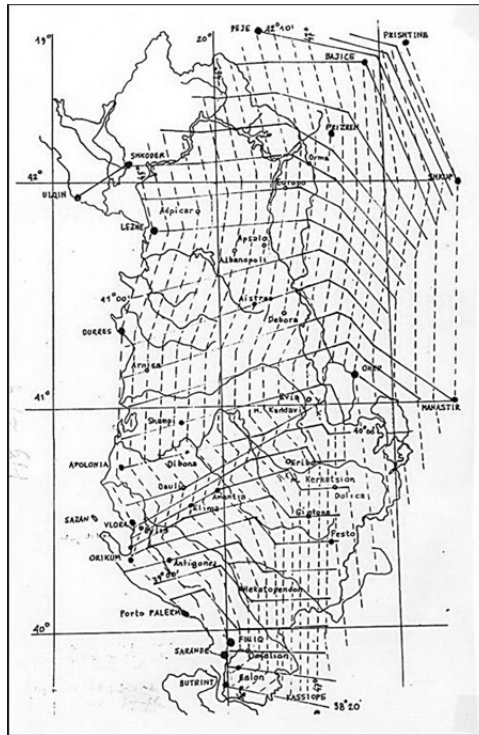
Picture. 2.5: Topographic map of scale 1: 500000 with interpolated lines

1- ALBANOPOLI, at source [10] has been identified with the church of Zgërdesh, near Kruja, but based on the coordinates: F = 45º05 'and L = 46º00' it turns out to be in the MACUKULL of Burrel, ie. about 34 km northeast of Kruja and much further south from Qinomaku, where other authors settle.
2- AISTRAIO or ESTREO, previously unidentified object, based on the coordinates: F = 45º50 'and L = 46º20', turns out to be KARSTA of Martanesh.
3- AMANTIA, at source [10] it is identified with Plocea, but, as noted by Wilberg's map of Sofiano, and many other maps, and based on the coordinates F = 39º30 'and L = 44º55', this denomination belongs The VIROIT Boot is therefore a port in antiquity, in the bay of Vlora. Amantia responds to Ploceau only in the map of Lapie (d. 1828) whose geographical coordinates differ greatly from those given in the reprinted works of Ptolemy. We emphasize that in these works, human settlements such as Apolonia, Antigonea, Amantia, Bylis, etc., are not unique even to the South-Eastern European space, in this case, one must

always rely on the values of: a) the geographical coordinates given; b) in the representation of these settlements on the Ptolemy maps, and c) in the values of the new geographical coordinates obtained by analytical and / or graph-analytic methods.

4- AMANTIA, inland, with coordinates F = 39º40 'and L = 46º00' located between VOKOPOLES, and COROGJAT of the district of Berat; so it's not about the Plloçën.

5- ANTIGONE, in various sources it is identified sometimes with the Lekl of Tepelena and sometimes with the Germ of Gjirokastra. Based on the transformation of the original coordinates F = 39º10 dhe and L = 45º15, it turns out to be near the Mesaplikut of Mesaplik, near the Shushica River valley. This position responds best to the appearance of the denomination on Wilberg's map. On the Kiepert map Antigonea with F = 40º17 'and L = 19º40' is located closer to the BRATAJ settlement, so with a slight difference with the Shalësin.

6- APSALO, previously unidentified object, according to the coordinates: F = 41º05 'and L = 46º20', turns out to be between ARREST and BULAC, on the left of the Black Drini River.

7- ARNISA, according to E.Lear, it is located north of the Terbuf marsh; according to Kiepert remains unidentified, while according to our coordinates, with F = 40º40 'and L = 45º20', turns out to be between KAVAJA and GERMANY. We think that Arnisa belongs to Kavaja in antiquity, a settlement that was settled today, after the diversion of the river Shkumbin, which in the time of Ptolemy flowed into the bay of Durres.

8- BYLIS, in various sources it is identified sometimes with Hekali and sometimes with Ballsh. But, as noted by Wilberg's map, etc., in this case Bylis is a coastal settlement, which according to the original coordinates: F = 39º45 'and L = 45º00', corresponds to KANINES of Vlora, on the map of Kiepert, Bylis responds Hekali, but as it is noticed, the object is quite displaced from the coast, i.e that we are dealing with a second designation of Bylis.

9- CASSIOPE, (port), with untransformed coordinates: F = 38º25 dhe and L = 45º30, is identified by the bay below the ruins on the DEMIT hill in Ksamil.

10- DAULI, previously unidentified object, with F = 40º00 'and L = 45º30', is located just north of BALLSHI, so it can be identified with this ancient settlement. We also get such assurance in the presentation of this object on the map of Sofiano.

11- DEBOLI, or DIBONA, previously unidentified, with F = 40º10 'and L = 45º45', located between BANSES and DRENOVICES.

12- DEBORA, or DEBORO, previously unidentified with F = 40º45 'and L = 46º40', identified with the LARGE.

13- DOLICA, previously unidentified, it turns out to be in PORODINE, just northwest of Korça.

14- EALON, previously unidentified, with F = 38º30 'and L = 45º40', located near KODRES (Vurgu area). We find a similar position to the Hill, even in the Lauremberg map, while in the Kiepert map it is mistakenly identified with the Labova of Gjirokastra.

15- EMINAKO, previously unidentified, with F = 41º20 'and L = 46º00', located between DOMGJON and JUJZE, in the valley of l. Little Fan.

16- ELIMA, previously unidentified, with F = 39º40 'and L = 45º40', located between ZHULES and NINESH-IT of Mallakastra.

17- ERIBOJA, previously unidentified, with F = 39º45 'and L = 46º40', located between BROZDOVEC and OSOJE.

18- EUROPA, previously unidentified, with F = 41º20 'and L = 46º30', located near KOLOSJAN, south of Kukes.

19- EVIA, previously unidentified, with F = 40º15 'and L = 46º30', identified with the ancient site BELOW SELCA. This relevance is also verified by the appearance of Evia on the map of Sofiano and in particular on M. Mentille's atlas, with L = 20º40 '. Evia is included in the province of Dassaret, so it may not have longitude L = 46º06 ', (as shown in the Wilberg and Sofiano maps), but L = 47º06'.

20- FESTO, previously unidentified, with F = 39º20 'and L = 47º15', identified with VODICEN,

Cologne district.

21- GINTONA, previously unidentified object, with F = 39º30 'and L = 46º50', is located between PANARIT and VITHKUQ (near Vithkuq).

22- HEKATOPEDON, previously unidentified, with F = 39º00 'and L = 45º40', is identified with the PALOKASTER ruins, north of Gjirokastra.

23- ORMA, previously unidentified, with F = 41º30 'and L = 46º45', belongs to the southern slope of Mount PIKELLIMES.

24- OMFALION, previously unidentified, with F = 38º40 'and L = 45º30', is now well identified with MESOPOTAMINE, east of Finiq.

25- SKAMPI, previously unidentified, with F = 40º20 'and L = 45º45', turns out to be in the Belsh Lakes, in the ZHAMA-CEPA-KOSOVA triangle (closest to Zama).

26- THERMIDAVA, identified with DULLE in the vicinity of Prizren, may occur if the geographical length of this object (according to Ptolemy) is L = 47º00 'and not L = 46º00', since the latter is identified with TEMPLANI (preserving same latitude F = 41º45 ').

2. Determination of Base Sites and Sites Identified on Kiepert and Putzger Maps

The German geographer and cartographer, H. Kiepert, during the nineteenth century, for more than 40 years of systematic study and work, created many maps of Southeast Europe, where the Albanian land occupy an important place of special interest. One of these maps is that of 1871 (pic. 2.2).

As noted, this map includes the Albanian territories located between the latitude parallels: F Jug = 38□ 00 'and Fveri = 41□ 20' as well as between the meridians of longitude: Eastern = 22□ 00 'and Lperend = 19□ 20 '.

On this map, the geographic grid is given every 1□ (division of frames every 10'), while the initial meridian is the Paris meridian (against which the other meridians are full) as well as the Greenwich meridian. The Greenwich meridian has been accepted for calculation, as it has become a tradition in Albanian cartography to this day. The difference between these two meridians is: LG - LP = 2□ 20 '.

We emphasize that the Kiepert map is built on the equivalent conical polar projection (where it does not deform the surfaces), while our topographic maps are built on the Gauss-Kryger analytic projection. However, the orthogonal coordinate changes at the node points of the geographic networks are small, for both mapping systems.

Overview 1.3 shows the geographical coordinates of the ancient sites, which were accepted as base sites, during the analytical solution of the problem under study.

Overview 1.3: Settlements

N	Settlements	Coordinates		Geographic		Changes	
		Kiepert system		Gauss-Kryger system		d F	dL
		F'	L'	F	L	Xi	yi
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1.	Durres (Epidamnus)	41º18'	19º26'	41º18'	19º26'	0	0
2.	Sazan	40º30'	19º15'	40º30'	19º16'	0	1
3.	Vlore	40º28'	19º27'	40º28'	19º28'	0	1
4.	Orikum	40º20'	19º24'	40º19'	19º25'	-1	1
5.	Berat (Antipatra)	40º44'	19º57'	40º44'	19º56'	0	-1
6.	Sarande	39º51'	20º00'	39º52'	20º01'	1	1
7.	Finiq	39º56'	20º07'	39º55'	20º08'	-1	1
8.	Butrint	39º45'	20º03'	39º45'	20º03'	0	0
9.	Oher	41º07'	20º48'	41º07'	20º48'	0	0
10	Nikopoli (Preveza)	39º00'	20º44'	39º01'	20º44'	1	0
11	Heraklea	41º02'	20º24'	41º01'	21º23'	-1	-1

Overview 1.3, Apolonia is missing as a basic object, since its coordinates in both systems vary in values: dF = 5 'and dL = 3'. These values contrast with the corresponding values of the other 11 countries and based on the criteria for eliminating suspicious measurements, it resulted that Apollonia had to be excluded from the base list. But Apollonia's coordinates were set in overview 1.4, to determine whether Kieperti had replaced it with any other settlement. This is also shown in his map, where "Apolonia" is connected to the Vlora-Lushnje motorway.

Given the values of the geographical coordinates of the base countries (overview 1.3), using the collinear formulas and the analytical method, the values of the transformation coefficients and other parameters are determined as shown in Figure 1.5. Then, based on the transformation coefficients, the values of the geographical coordinates of the settlements to be identified and the collinear formulas, the geographical coordinates of the same settlements, but in the Gauss-Kryger system, are determined by the analytical method. The values of these coordinates are shown in Picture 1.4. columns 4.5. Based on the transformed coordinates, the geographical locations of the settlements being identified are determined. The identification results are shown in column 6.

Overview 1.4:

Settlements	Geographical coordinates				Affiliation
	Kieper's map		Topographic map		
	F'	L'	F	L	
1	2	3	4	5	6
Human settlements					
Arnisa	41º04'	19º35'	41º04'	19º35'	Kolushi-Rrogozhine
Clodiana	41º02'	19º51'	41º01'30	19º51'	Stacion rrugor
Scampes	41º05'	20º08'	41º04'18	20º08'30	Elbasan
(Trojektus Genusi)	41º06'	20º18'	41º06'	20º18'30	Shushice
(Stefana)	41º45'5	19º27'	40º45'8"	19º27'	Topoje
Apolonia	40º39'	19º25'	40º39'06	19º25'30	Bishan
Byllis	40º33'	19º42'	40º33'	19º42'	Hekal
Marusium	40º56'	19º42'	40º56'	19º42'	Lushnje
Korragon	40º59'	19º51'	40º54'30	19º51'	Ndermjet Kosoves e Kajanit
Gerrus (Gertunion)	40º51'	19º54'	40º51'	19º54'	Ne afersi te Dragotit
Clamaria	40º06'	19º49'	40º06'	19º49'30	Himare
Orgesos	40º50'	20º06'	40º49'55	20º06'	Tunje
Kodrion	40º41'	20º05'	40º41'30	20º05'	Karkanjoze
Knidos	40º36'	20º08'	40º35'25	20º08'	Novaj
Nymfalion (Asphalt Gruben)	40º33'	19º36'	40º33'36	19º36'	Selenice
Thronion	40º31'	19º33'	40º31'	19º33'	Ne lindje te Risilise
Amantia	40º22'	19º45'	40º22'	19º45'	Plloce
Hekatopendon	40º17'	20º07'	40º16'20	20º07'	Lekli
Omphalion (Adrianopolis)	40º10'	20º16'	40º09'13	20º16'30	Libohove
Helikranon	40º01'	20º08'	40º00'25	20º08'30	Vanistra(Gjirokaster)
Elaius	39º57'	20º22'5"	39º56'20	20º22'30	Savrohon (Epir)
Photike	39º56'	20º38'	39º55'	20º38'	Ellafotopos (Epir)
Arinista	39º55'	20º30'	39º54'25	20º30'	Ndermjet Dhelvinaqion e Limni (Epir)
Patras	41º11'	20º41'	41º10'	20º41'	Struga
Daulia	40º46'	20º24'	40º45'15	20º24'	Lenias (Berat)
Debolia	40º47'	20º38'	40º46'	20º38'	Ne perendim te Pirgut (Korçe)
Pelion	40º38'	20º49'	40º37'25	20º49'	Korçe
Bantia	40º36'	20º41'	40º35'	20º41'	Ravonik
Eriboia	40º23'	20º21'	40º22'32	20º21'	Krushova
Ilion (Kestria)	39º44'	20º29'5'	39º43'07	20º29'30	2.5 km ne veri te Brania (Epir) dhe ne perendim te Granicapu-la
Antigonea	40º24'	20º00'5"	40º23'25"	20º00'30"	3 km ne lindje te Zhaponikes

F.W. Putzger, geographer and cartographer of the century. During XIX-XX centuires there were published many maps and historical and ethnographic atlases, which reflect the main historical

events in the world, in which Albanian lands are presented on a large scale. A map (pic. 2.3) is taken from Putzger's atlas entitled "Historischer Weltatlas". Its content is also found in other historical atlases (mainly in black and white), but map 2.2 is distinguished for its particular values. The geographical network is given every $1°$, and its content is bounded by parallels $F_{south} = 38°$ 00 'and $F_{North} = 41°$ 10', and between meridians with average latitude Latitudinal = $22°$ 05 'and $L_{west} = 19°$ 45 '(vs. Greenwich).

This map, as well as Kiepert's map, shows some of the Albanian lands, including some of the countries of interest to us. The content of the map is built into the intermediate conical polar projection, while the base (backing) sites are sufficient for solving the task, also by the analytical method. Figure 1.6 shows the base locations and their geographical coordinates in both systems. As can be seen, in this overview the number of base locations is smaller compared to the Kiepert map, but also the number of settlements identified (overview 1.7).

Overview 1.6: Basic settlements

N	Settlements	Coordinates		Geographic		Changes	
		Putzger		Gauss-Kryger		d F	dL
		F'	L'	F	L	Xi	Ji
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1.	Oher (Lychnidus)	41°07'	20°48'	41°07'	20°48'	0	0
2.	Berat (Antipatra)	40°43'	19°58'	40°44'	19°56'	1	-2
3.	Sarandë (Onchesmus)	39°52'	20°02'	39°52'	20°01'	0	-1
4.	Gjirokastër (Arqyrus)	40°04'	20°095'	40°07'	20°075'	3	-2
5.	Finiq (Pholnice)	39°53'	20°07'	39°55'	20°08'	2	1
6.	Heraklea (Pelagonia)	41°00'	21°22'	41°01'	21°22'	1	0
7.	Prevezë (Nikopoli)	39°00'	20°44'	39°01'	20°44'	1	0

Although the number of base locations is smaller, compared to the possibilities of the Kieper map, seven pairs of collinear equations are sufficient to accurately calculate the transformation coefficients.

The mean square error turns out to be: m = ± 00°43 ', which is 2.5x greater than the mean square error for the locations on the KIEPERT map. When calculating the transformation coefficients, the Gjirokastra coordinates were excluded, as they contain numerous errors, which adversely affect site identification.

From the equations constructed, from Table 1.6 and from the collinear formulas the values of the transformation coefficients and other parameters were calculated by means of (by analytical method) the conversion (transformation) of the geographical coordinates (for the identified settlements) into the Gauss-Kryger system. Based on the new coordinates (column 5.6 overviews 1.8) and topographic maps with a scale of 1: 50 000, the following properties are given:

Overview 1.8: settlements being identified

N	Settlements	Coordinates Geographical				affiliation
		Putzger		Gauss-Kryger		
		F'	L'	F	L	
1	**2**	**3**	**4**	**5**	**6**	**7**
1	Pelium	40°41'	20°51'	40°41'09"	20°51'13"	Zemblak (Korçe)
2	Klodiana	41°03'	19°46'	41°03'09"	19°46'13"	Peqin
3	Scampa	41°06'	20°05'	41°06'09"	20°05'13"	Elbasan
4	Candavia	41°07'	20°22'	41°07'09"	20°22'13"	Dardhe (Libra-zhd)
5	Phanole	40°08'	20°01'	40°08'09"	20°01'13"	2 km ne VP te Kardhiqit

N	Settlements	Coordinates Geographical				affiliation
		Putzger		Gauss-Kryger		
		F'	L'	F	L	
1	2	3	4	5	6	7
6	Antigone	40º18'	20º01'	40º18'09"	20º01'13"	Lekli
7	Omfalium	40º14'	20º22'	40º14'09"	20º22'13"	Permet
8	Elaeus	40º02'5"	20º14'	40º02'39"	20º14'13"	Libohove
9	Gitana	39º55'5"	20º08'	39º55'39"	20º08'13"	Delvine
10	Hadriano-poli	39º55'	20º16'	39º55'09"	20º16'13"	Jorgucat
11	Helicra-num	39º51'	20º08'	39º51'09"	20º08'13"	Dhivri
12	Dodona	39º33'	20º28'	39º33'09"	20º48'13"	Dodona

In picture 1.8 it is noted that the DODONA object is correctly identified, so this object can also be taken as a support point. From this overview also from overview 1.9, it is noted that apart from the "Scampes" facility, which is identified with Elbasan (as in overview 1.4), all other sites are identified differently.

Overview 1.9:

N	Settlements	Identification		Changes	
		Kiepert	Putzger	dF(3-4)	dL (3-4)
1	2	3	4	5	6
1	Clodiana	Stacioni rrugor	Peqin	-1' 31"	+4' 47"
2	Omfalium	Libohovë	Përmet	-4' 56"	-5' 43"
3	Antigone	Zhaponikë	Lekli	+5' 16"	-0' 43"
4	Elaeus	Savrohon	Libohovë	-6' 19"	+8' 17"

From Picture1.9 it is noted that the differences are significant, especially for the Elaeus facility and, not only between them, but also with the identification made to the last three locations of this overview, based on the geographical coordinates given by K. Ptolemy.

3. Supplementary Notes and Conclusions

Various authors, Albanian and foreign, identify the name "Epidamnus" with the ancient castle at Cape Rhodon. Then, by shifting the Epidamen coordinates: F = 40º 55 'and L = 45º 00' to the above position (in the second variant, where LOher = 47º 40 '), we find that some ancient human settlements, located in the Apollo-Triangle, Epidamnus - Ohrid, will undergo significant shifts in their position, such as:

1. ARNISA, identified near Kavaja, shifts between LIKSHNIQ and LIKSHI, with new coordinates: F = 41 '18 'and L = 19º 38'.
2. SCAMPIS, identified with Zhamen, it is already positioned in the HIGH RANGE, with coordinates: F = 40º 58 'and L = 19º 49'.
3. ALBANOPOLI, identified near Macukull of Burrel, turns out to be on the northern slope of Rune Mountain.

If Epidamn is given latitude F = 40º 50 '(as given in some sources), then we will have new positions. Thus, ARNISA will be located in the triangle MARIKAJ - KASHAR - BERXULL, with F = 41º 22 'and L = 19º 38', while SCAMPIS is between SHEZES-PAJOVA and BISHKEM with F = 41º 03 'and L = 19º 49'.

But Epidamni is not the only human settlement of exaggerated latitude. This is also observed in other settlements (along the Adriatic coast), especially Vlora. This is also evidenced by the unequal values of latitude variations ΔF = 60 '(between the Gauss-Kryger system and Ptolemy). Vlora, located near Sazan has dF = 32 ', Durres has ΔF = 28', Lezha has dF = 37 'and Apolonia has dF = 34'.

In this context, we can say that relying on the geographical coordinates of Epidamn, and on Wilberg's map, it appears as if this object is located on the Cape Rhodon. But this is only a consequence of the errors of latitude given by K. Ptoleme. This conclusion is based on cartographic logic.

In Putzger's map, the CANDAVIA settlement is identified with the Pearl of Librazhd (as shown on the map) which apparently replaces the ancient EVIA designation. But on many maps, Evia is identified with the Lower Selce, a fact that we support more.

In the case of L_Oher = 46º40 ', some sites will be identified differently than Lher = 47º40'; while the places far from Ohrid are unchanged. This is shown in Figure 1.10.

Overview 1.10:

N	Settlements	Geographical coordinates in the system Gauss-Kryger		Belonging to the object
		Fi	Li	
1	Eiminakon	42º00'	20º09'	About 1.5 km to the SW of Mollekuqi
2	Orma	42º05'	20º31'	3 km east of Perbregu (Kukes)
3	Europo	41º57'	20º25'	KOLOSJAN
4	Adpicari	41º52'	19º55'	SIMONI (1 km in west m. Shilor)
5	Assalo	41º425'	20º18'	VAJMEDHEJ (between Arasit e Bulaçit)
6	Albanopoli	41º415'	20º09'	2 km east of Macukull
7	Estreo	41º26'	20º14'	KRASTA e Martaneshit
8	Dobera	41º235'	20º33'	OKSHTUN I VOGEL
9	Arnise	41º09'	19º36.5'	between Kavajes and Germenjit
10	Scampi	40º565'	19º58'	ZHAMA
11	Evia	40º56'	20º16'	between Selites and Mollasit
12	Dibona	40º477'	19º48'	between Kutallise and Malas-Grope
13	Dauli	40º37'	19º46'	BALLSH
14	Bylis	40º26'	19º31.5'	KANINA
15	Amantia	40º225'	19º28'	KEPI I VIROIT
16	Eribea	40º39'	20º26'	between Gurkuqit and Dusharit
17	Dolica	40º375'	20º42.5'	GOSKOVA E POSHTME
18	Festo	40º23'	20º38'	between Vodices and Gostivishtit
19	Antigone	40º153'	19º42.5'	SHALES
20	Hecatope-ndon	40º085'	20º07'	PALOKASTER
21	Omfalion	39º54'	20º06'	MESOPOTAM
22	Ealon	39º49'	20º06'	KODRA
23	Cassiope (Port)	39º49'	20º01'	Poshte Kodres se Demit

We assume that the identifications in Putzger's map are more accurate than in Kiepert's, since Putzger's map was published after Kiepert's and relied on more accurate maps.

The results of this study are not conclusive, but are a good basis for discussions among history specialists, archaeologists, geographers, ethnologists and others. We believe that the problem of identifying ancient geographical sites still requires intensive and integrative work.

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