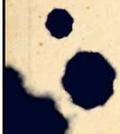




**TOPOGRAPHY, CARTOGRAPHY AND
CADASTRE IN BULGARIA
AT THE END OF 19TH CENTURY AND IN
THE BEGINNING OF 20TH CENTURY –
FIRST STEPS AND FIRST RESULTS**

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1. INTRODUCTION

The history of the geodetic activities in Bulgaria is a history of the military topography and cartography of Bulgaria.



2. TOPOGRAPHIC AND CARTOGRAPHIC ACTIVITIES ON THE BULGARIAN TERRITORIES DURING THE RUSSIAN-TURKISH WAR IN 1877-1878 AND DURING THE FIRST YEARS AFTER IT

There was a Topographic Corps formed during the Russian-Turkish War in 1877-1878 with the Russian Army preparing for military actions on the Bulgarian lands with a task to improve the found triangulation network of European Turkey and to modernize the Russian "General Map".

After passing the Danube River, it was established that there was no developed triangulation and that the "General Map", issued in 1829, was aged.

Then the Command of the Russian Troops assigned to the Topographic Corps the task to create new triangulation and to work out a topographic survey of the Bulgarian lands in conformity with the plane-table method in scale 1:42000 - the first comparatively exact maps of the Bulgarian lands where the relief was presented relatively correctly.

The first Bulgarian editions in the sphere of topography came out after the Russian-Turkish War in 1877-1878. They became a necessity for Bulgaria as a state because of the training of its own managerial military staff.

The maps were drawn up with the Russian cartographic symbols, in the scales traditional for Russia and with the use of the Russian measures of length.

These maps were also used during the so called Temporary Russian Governance of the Bulgarian lands from 1878 to 1891, when the first independent Bulgarian measurement service was created – the Topographic Division to the Ministry of War.

3. THE FIRST ORGAN IN TOPOGRAPHY IN BULGARIA IN 1892

The first organ in topography in our country was called "Manual for Reading Plans", written by Lieutenant Hristo Selveliev and was published during the month of December 1892.

The metric or the decimal system was adopted in our country by a special law in 1892.

Captain Selveliev himself prepared and the second supplemented edition of the first Manual of 1892 came out of print during 1905 – Figure 1-a.



Figure 1. First page of the "Information about Topography for Non-Commissioned Officers and the Training Commands from /

In 1911, Dipl. Eng. Ivan Valkov (1875-1962) wrote and published the first textbook in military topography as a course of the Military School in Sofia. He was a first Bulgarian professor on geodesy at the Sofia University and a first lecturer at the Military school.

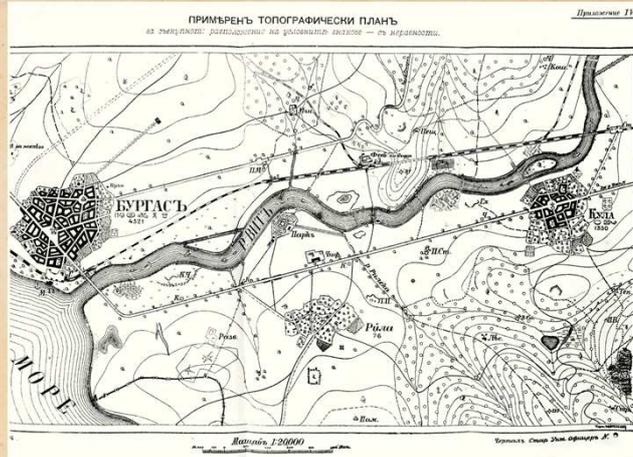


Figure 2. Exemplary topographic plan for the "aggregate rangement of the cartographic symbols – with unevennesses" 1:200000

4. THE FIRST TOPOGRAPHIC DEPARTMENT TO THE HEADQUARTERS OF MINISTRY OF WAR

The first Topographic Department to the Headquarters of the Ministry of War was created on 27 December 1891 by Decree No 176 of Prince Ferdinand I and it was repeatedly renamed:

- in 1898 – Statistic Topographic Department to the Headquarters;
- in 1900 – Cartographic-Topographic Part to the Staff of the Army;
- in 1906 – Military Cartographic Institute with the Staff of the Army;
- in 1916 – Cartographic Division to the Operating Department with the Staff of the Acting Army;
- in 1919 - Geographic Institute;
- in 1930 - State Geographic Institute to the Ministry of War;
- in 1935 - Geographic Institute;
- in 1950 - Military Topographic Service;
- after the accession of Bulgaria to NATO in 2004 Military Geographic Service to the Ministry of Defense.

The first in its kind Yearbook of the Geographic Institute for year 1922 came out in 1923, which was published in one volume, at that in two languages: Bulgarian and French. It provided description of the history, the structure, the personnel composition and the activity of the Geographic Institute for the first time. The publication of the Yearbook continued up to year 1945.

In 1922 the Institute consisted of an administration and 3 departments:

- Geodetic,
 - Triangulation,
 - Astronomic,
 - Leveling and
 - Computing.
- Topographic and
 - Topographic Unit;
 - Topographic Section;
 - Phototopographic Unit.
- Cartographic.
 - Cartographic and
 - Technical.

The former building of the State Geographic Institute is shown in Figure 3 and now it is the Central Military Library and Club of Veterans of the Wars.



a. in 1930

b. in 2013

Figure 3. The building of the former Geographic Institute to the Ministry of Defense, located on Tsar Osvoboditel Blvd. in Sofia located in the proximity of the Central Military Library and Club of Veterans of the Wars.

in 1932 - Central Council on Measurement in Bulgaria, which defined its composition and tasks;

in 1933 - State Geographic Institute in Bulgaria with scope of business control and coordination of the topographic and geodetic activities in our country.

Magnetic and gravimetric measurements, hydrographic works and enormous scientific activity of important practical significance for the development of the geo-sciences in our country, of their application in industry, agriculture consolidation and warfare were made during the period 1933-1944.

5. FIRST APPLICATIONS OF CARTOGRAPHIC AND GEODETIC PRODUCTS FOR STATISTICAL PURPOSES IN BULGARIA IN 1897

At the end of the 19th and at the beginning of the 20th centuries mapping of the statistic data as well as their presentation with various kinds of diagrams was called in Bulgaria “geometric statistics” or “graphic statistics”:

- in 1897 – first “Statistical Collection of the Principality of Bulgaria” with color topographic maps of the border regions of the Principality of Bulgaria and color cartograms presenting various statistic data collected during the first census made on 01.01.1893 within the scope of then counties and regions of the Principality.



The first applications of cartographic and geodetic products used simultaneously for the purposes of the statistical and geographic research in the then Principality of Bulgaria are shown in it. They are a unique scientific-applied work of the Statistical-Topographic Division and of the Cartographic Institute to the Headquarters of the Army to the Ministry of War.

In 1897 Bulgaria had monarchy divided administratively in 22 counties, 85 regions and 1858 municipalities, of which 78 were urban and 1780 rural municipalities. All the maps were in scale 1:200000.

The mapping of the various statistical parameters was per counties and regions. The following were described in detail in the collection: the geographic situation, the kind, the state borders and the area of the Principality of Bulgaria.

Three cross-sections of the territory of the Principality of Bulgaria were developed:

Section I: Western section—Demir Kapia—Sofia—Vratsa—Oryahovo or from south to north: Rila—Vitoshka—Sofia Field—the Balkan Mountain—Danube—Romania;

Section II: Midline section—Chepelare—Plovdiv—Sopot—Sevlievo—Svishtov or from south to north: the Rhodopes—Plovdiv Field—the Balkan Mountain—the Danubian Plain—Danube—Romania;

Section III: Eastern section—Mustafa Pasha—Kavakli—Shumen—Silistra or from south to north: Turkey—Odrin Field—Sakar—Yambol Field—Strandzha—the Kamchiya River—the Ticha River— Shumen Plateau—Deliorman.



A fast and authentic visual idea of the silhouettes of the relief of the Principality of Bulgaria in its three main sections is obtained from the three sections indicated in Figure 4.

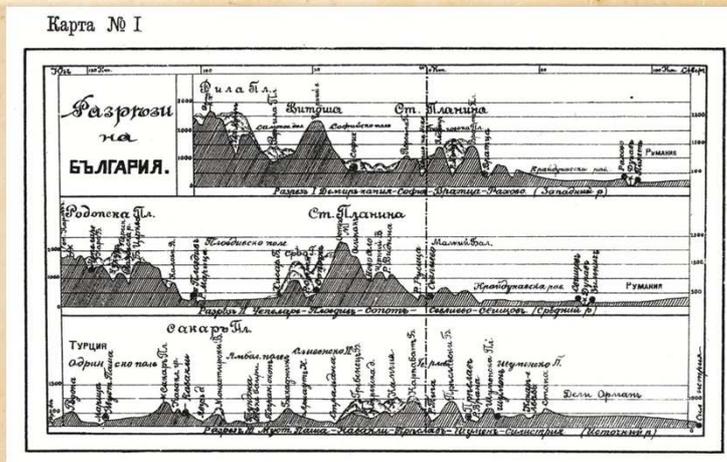


Figure 4. Three cross-sections of the territory of the Principality of Bulgaria

The hydrographic survey included two basins: Black Sea and Aegean (White Sea). Climatically the Principality was divided into 4 belts:

- Danube – Northern Bulgaria;
- Thrace belt;
- Mountainous belt and
- Black Sea belt.

The mapping of the state borders in “Statistical Collection of the Principality of Bulgaria” with the three neighboring states of the Principality – Romania, Turkey and Serbia and with the Black Sea was after the development of polygons, one of which is presented in Figure 5-a in scale 1:300000. The topographic maps of the border zones are within the same scale in Figures 5-b and 6.

Figure 5. a/ Part of the geodetic polygon – Map No 2, 1:300000; b/ Part of the topographic map in 1:300000 of the border zone in Dobrudzha between Bulgaria and Romania in 1897

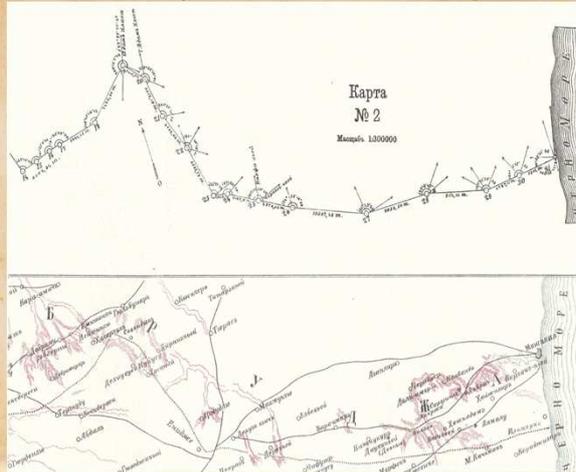
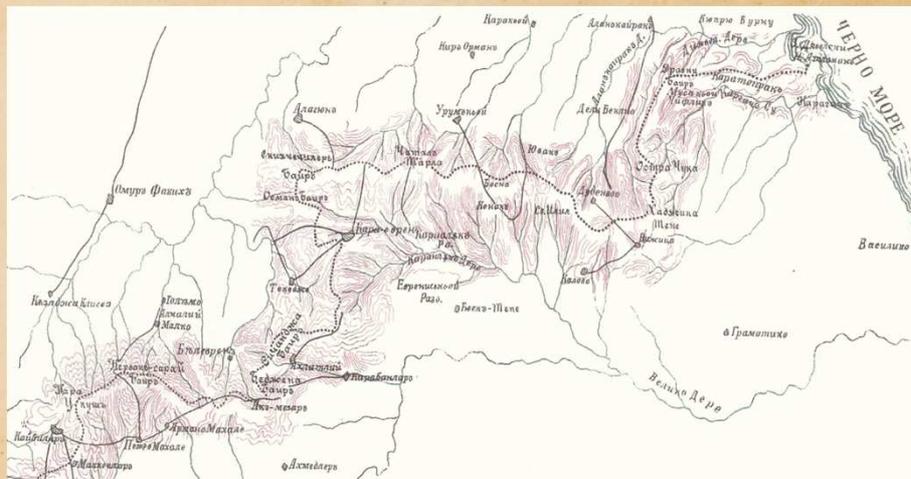


Figure 6. Part of the topographic map in 1:300000 of the border zone between Bulgaria and Turkey in 1897, reaching the Black Sea



The mapping of the Statistical Data from the First Census on 01.01.1893 in the Principality of Bulgaria was performed by different cartographic methods, which were used in "Statistical Collection of the Principality of Bulgaria" during the preparation of the cartograms in about the composition of the population in gender, religion, mother tongue and actual growth as well as of the cartograms with the relations of the cattle, the horses, the sheep, the goats and the swine with regard to the population in the Principality of Bulgaria.

Cartogram of the population per gender in Bulgaria in conformity with the census on 01.01.1893

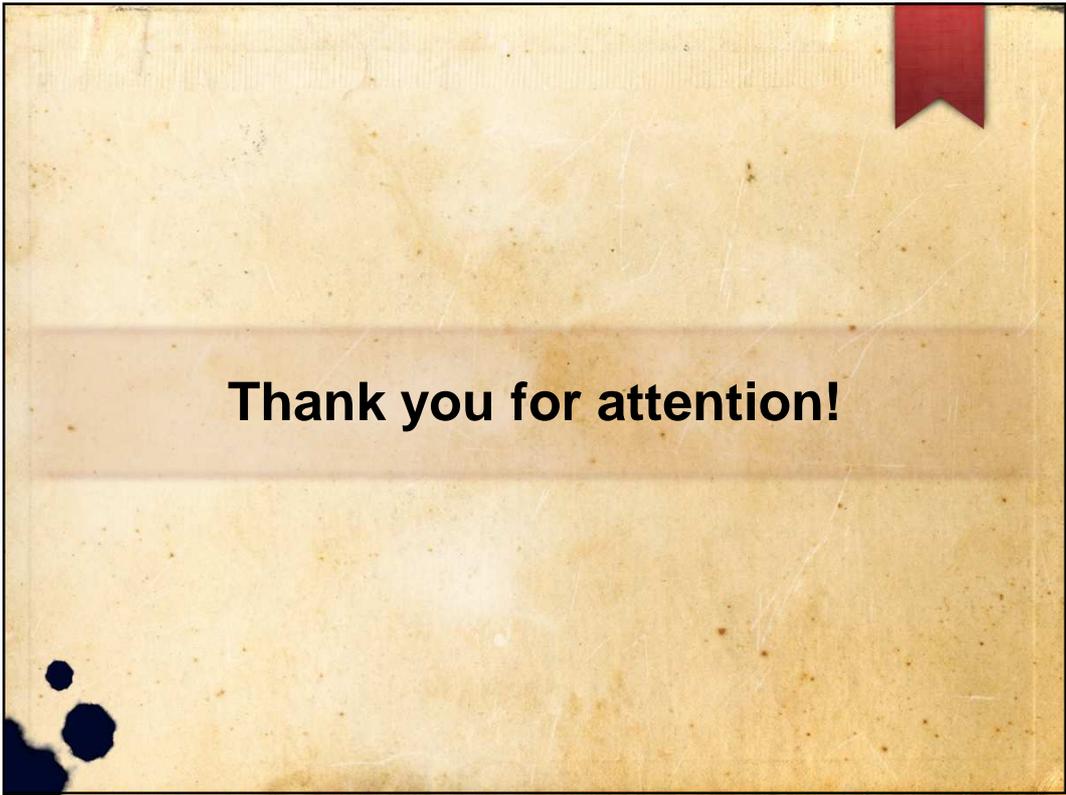


Cartogram of the ratio of the horses to the population in Bulgaria in conformity with the census on 01.01.1893



6. CONCLUSIONS

The scientific and the scientific applied contributions of the Geographic Institute to the Ministry of War and of the Bulgarian geodesists who worked in it and who left a bright trail in various spheres of military topography, higher geodesy, geodetic astronomy, cartography, photogrammetry, gravimetry and the other geosciences are incontestable, big and of great significance.



Thank you for attention!