Виды из Москвы – *Views from Moscow*

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The topographic maps of various capitalistic foreign countries

It is necessary first to point out the principal difference of a general character and intention of maps of the capitalistic states from maps of the socialist nations.

In the imperialist states topographic maps serve the aggressive aims of the exploitative classes, the conducting of the politics of colonial conquest, the enslavement of other nations, and they have in the main a military purpose or serve some other interests of capitalistic monopolies. The military establishment manufactures maps, as do different civil organisations, and also private firms and businesses; moreover each pursues its own departmental or private-ownership interests. Naturally, such circumstances do not allow the existence of general planning, of scientific approach or of unified technical requirements especially in the matter of the making of maps.

This is reflected in particular in that lack of coordination which exists with them in the mathematical foundations of maps. For example in the USA for the preparation of maps of one part of the territory one projection is used, and for another a different one. It is typical that for new topographic maps in the USA they have employed the same projection used for our maps. In England for topographic maps of large scale two projections are also employed, calculated on the basis of obsolete data about the dimensions of the earth's ellipsoid. The same picture can be observed in France, Belgium, Holland and other capitalistic states.

In comparison with the well-defined system of a series of scales of topographic maps by the socialist states, the scales of maps of the USA, Great Britain, and other capitalistic states represent a sharp contrast. The scales of individual maps in these countries were established spontaneously, without a link of one scale of maps with another and, in a series of countries, even on fundamentally different systems of measures. For example, in the USA, England, and Canada maps prepared in their national measures exist to this day along with maps in metric scales.

In recent years measures were taken by the Military Department in the USA towards the putting right of its own scale-series of topographic maps, which began to be created mainly in the same scales as in our maps. However the general lack of coordination in the series of scales of USA maps has not completely been eliminated.

In Table 13 is a comparison of the series of scales of Soviet topographic maps and of maps of the USA, England and France.

The lack of coordination in scales also brought about a muddle in the system of sheet lines and nomenclature of the maps of the capitalist states.

In the majority of cases the sheet lines and nomenclature are determined for every scale of the maps irrespective of maps of other scales. Even the sheets of a map of one and the same scale are often issued in different sheet-lines; they have different dimensions and partly they overlap themselves one to another (for example the English 1:126,720 map). The majority of English maps, some French and other maps have arbitrary borders of sheets, not coinciding with meridians and parallels.

Table 13.

USSR	USA	England	France
1:10,000	-	1;10,560	1:10,000
	1:24,000	-	1:20,000
1:25,000	1:25,000	1:25,000	-
	1:31,680	-	-
1:50,000	1:50,000	-	1:50,000
	1:63,500	1:63,360	1:80,000
1:100,000	1:100,000	-	1:100,000
	1:125,000	1:126,720	-
1:200,000	1:250,000	1:253,440	1:200,000
1:500,000	1:500,000	1:500,000	1:500,000
	-	1:625,000	-
1:1,000,000	1:1,000,000	1:1,000,000	1:1,000,000

The topographic maps of the capitalistic states do not have a unified coordinate-grid for maps of different scales. For example on maps of the USA, England, and other countries various grids are used, calculated on different projections, to different ellipsoids and in different measures (miles, yards, kilometres). Only in recent time in these countries are they taking measures to establish a unified 'international' coordinate grid.

On the majority of foreign maps, although the necessary local objects are shown, their qualitative descriptions are however given very poorly or are not quite representative.

The extent of completeness and detail of content of foreign topographic maps in comparison with our maps is also characterised mathematically by the following data. If the general number of conventional signs, applicable to Soviet topographic maps, is taken as 100%, then on English it equals 68%, on American 66%, on French 62%. These figures show that the detail, completeness, and versatility of the content of foreign maps are nearly two times less than that of Soviet topographic maps.

At the same time some American and English maps win over, by their outward appearance, since they are printed with stable inks on good quality paper, but this, certainly, does not enrich their content.

When using the maps of the capitalistic states it is necessary especially to keep in view, with the above information, their other peculiarities which are considered below using examples of the topographic maps of the USA, England and France.

Topographic maps of the USA

On these maps are located usually three linear scales to measure distances in miles, yards and in metres.[1]

Settlements when shown on the maps are subdivided by type of settlement and by the number of inhabitants, which is indicated by the size of the writing used for the name of the settlement. However there are no strict rules for the use of the different scripts.

[1] The USA mile contains 1760 yards, 1 yard – 3 feet, 1 foot – 12 inches, 1 inch – 2.54 cm; 1 mile contains 1.609 km.

The railroads on American maps are subdivided by the number of tracks into single- and double- (multiple-) tracked, and also by the gauge of the tracks – into standard-gauge, broad-gauge and narrow-gauge. The width of the standard-gauge in the USA usually equals 143.5 cm. Conventional signs for railroads are difficult to read and they get lost on the map amidst symbols for other roads.

Vehicular roads are shown on the maps as roads for heavy, medium and light motor-vehicle traffic. The symbols for roads are accompanied by explanatory captions, indicating the number of lanes of traffic. If such captions are absent then that indicates that the traffic on the road is possible only in two lanes. The character of the surface, height of embankments and depth of cuttings are not indicated on the map; only big slopes are noted by individual conventional signs.

Soil and vegetation cover is represented on the maps with very great generalisation and with less detail than on ours. In the representation of woods, the characteristics of trees are not given. On some maps of civil departments woods generally do not appear. In the representation of soil and vegetation-cover number-symbols, explanatory conventional signs and captions are absolutely not used, which limits the opportunity of more detailed study of the terrain with the map.

Rivers are shown without their supplementary characteristics. On rivers rapids and waterfalls are shown. Fords are marked only in little-settled regions or in such cases, when they represent the only sites of crossing. Bridges are plotted with subdivision of them by construction and with indication by figures of their loading capacity in tonnes *[sic]*.

Relief is shown by contours, the value of which is given in feet.[2] The contours are divided into basic, additional (half), and reinforced ones (every fifth of the basic contours is reinforced). The height-interval of contours on the maps of different states is not uniform. It is established depending on the character of the relief and it is often changed even within the bounds of one and the same sheet. Depending on the scale, the basic contours on the maps are drawn every 5, 10, 20, 25, 40, 50, and 100 feet. The indications of slopes with contours are not set down, and the marks of the contours are not orientated according to the direction of the slope, which makes reading of the relief difficult. A scale of gradients is lacking. For the determination of the steepness of slopes by calculation (see section 42) it ought to be remembered that if measurements on the map of horizontal distances are in metres, it is necessary to convert height-intervals out of feet into metres.

The coordinate grid on American maps, on the military edition, is in essence the same as on our maps. The boundaries and dimensions of coordinate zones coincide with the columns of the sheets of the International Map at the scale of 1:1,000,000, and they have an identical numeration. For the X axis the equator is taken, and for the Y axis the central meridian of the zone.

The nomenclature of sheets of American topographic maps, adopted from 1942, is established from the geographic coordinates of the sheet corner nearest to the equator and the Greenwich meridian, and from the dimensions of the sides of the frame, expressed in minutes. For example a sheet of the map has the nomenclature N 3915 - W 7500/15. That means, that the specified corner of the frame of this sheet has the geographical coordinates 39°15' north latitude (N) and 75°00' west longitude (W), and dimensions of the frame both of latitude and longitude of 15' (the last two figures).

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[2] 1 foot = 0.3 m.

Alongside the indicated system of nomenclature is another one for the sheets of the maps on the scales 1:100,000, 1:50,000 and 1:25,000. Its foundation is the numbering of the sheets of the map at the scale of 1:100,000. The marking of these sheets is itemised from indications of columns and rows, in the crossing of which is the location of a given sheet. For example, a sheet with the nomenclature 5962 means that it lies in column no. 59 and in horizontal row no. 62. Columns are numbered in the direction from west to east from 01 to 49 in the zone from 129°30' to 105° west longitude and from 00 to 77 in the zone from 105° to 66° west longitude. The counting of rows proceeds towards the north from parallel 8°30' north latitude. Four sheets at the scale of 1:50,000 correspond to a sheet of the map at the scale of 1:100,000. These are marked with Roman numerals I, II, III, IV, which are added to the nomenclature of the corresponding sheet of the map at the scale of 1:100,000, so for example, 5962I.

In one sheet of the map at the scale of 1:50,000 are contained 4 sheets of the 1:25,000 map, which are marked with the designation of the corresponding compass-point – NW, NE, SW, SE. Thus the nomenclature of a sheet of the map at that scale will have the form 5962ISW.

The same system of nomenclature is applied for the civil maps at the scales of 1:125,000, 1:62,500, and 1:24,000.

The nomenclature of the sheets of the 1:250,000 scale map is based on the nomenclature of the International 1:1,000,000 Map. Within one sheet of this map are contained 12 sheets (4 rows of 3 sheets) at the 1:250,000 scale, which are numbered with Arabic figures from left to right. For example, K-10-5 signifies that the given sheet lies within the limits of the sheet of the 1:1M map with the nomenclature K-10 and has the ordinal number 5.

English topographic maps

On the maps are usually placed several linear scales: for measurement in English miles, kilometres, furlongs (1 furlong – 220 yards), yards and feet.[3]

The conventional signs for some landscape objects are not uniform on maps of different scales. In Appendix IV-4-3 (see illustration) are the signs for the 1:63,360 map covering the whole country.

Settlements are depicted in great detail, with prominent indication of the dimensions of their structures and public buildings. The sizes of the scripts for signing the names of settlements are determined depending on the number of inhabitants.

Railways are shown on the maps with subdivision of them by gauge of track and by number of tracks. The conventional signs for railways on maps of different scales differ slightly.

Motor roads in their representation on maps of different scales are classified differently. They are classified in the most detail on the 1:63,360 map. On maps of all scales roads are shown without indication of the material of surfacing, or of data on bridges, cuttings, embankments and so on; they indicate only places with gradients greater than 143 per thousand (8°). Conventional signs of different types of motor roads are similar to each other. Roads of width greater than 14 feet (4.2 m) are differentiated into roads for high-speed and for normal traffic. The first, available those for more solid roadbed, appear on the maps with

[3] English measures of length differ from the corresponding USA measures by insignificant quantities (the USA inch is bigger than the English inch by 0.00007 mm), and that is why for practical purposes the systems of measure may be considered unified.

the letter A and are marked by the colour red. The second appear with the letter B and together with other roads are shown in orange colour. On roads of types A and B are inscribed their numeration, which may be used for identifying travel-routes on the map.

Soil and vegetation cover in the majority of cases appears without indication of the characteristic and variety of its elements. For example, all forms of wetland are shown by a single conventional sign. All forms of sands are shown with general signs. Absent frequently are data about the type of woodland and similar information about them. Bushes are not picked out.

Rivers are represented without indication of their depth, direction and speed of flow. All bridges are shown by one conventional symbol, distinguishing only pedestrian bridges. Characteristics of bridges are not given.

Relief appears by contours, the counting of which, just as on American maps, is done in feet. Contours succeed each other on the 1:25,000 maps every 25 feet, on the 1:63,360 maps every 50 feet, and on the 1:126,720 maps every 100 feet. Every fifth contour is thickened. Sometimes there are half-contours, drawn with broken lines. The indication of slopes, just as on American maps, is not put down, and marks on the contours do not orientate themselves to the direction of the slope. A scale of gradients on the map is lacking.

The coordinate grid on English maps for the territory, strictly speaking, of Great Britain is constructed on its own national coordinate system, and is called in English the 'National Coordinate Grid'. It is made up of large (500×500 km), medium-sized (100×100 km) and small (10×10 km) squares.

Coordinate lines on the maps follow each other every 1 km in the scale of the map irrespectively of the measures in which the map is constructed (the counting of the lines is shown on the example map in Appendix IV-4-3).

In the National Coordinate Grid for the X-axis is taken 49° N and for the Y-axis 2° W. In order that the values of the coordinates in the territory of Great Britain were positive, the origin of the coordinates is given the value:

$$X = +400 \text{ km}; \quad Y = -100 \text{ km}.$$

The nomenclature of English maps is arbitrary and not coordinated for maps of different scales.

On all maps of scale smaller than 1:25,000, the numbering of sheets conforms to ordinal numbering systems, which are established for individual regions, without connection one to another. Therefore one and the same nomenclature may mean different sheets of the map. The sheet lines and nomenclature of the sheets of the 1:25,000 scale map are based on the National Coordinate Grid. Large and medium-sized quadrangles of the grid are indicated by letters of the Latin alphabet. Every sheet of the map coincides with a small quadrangle of the grid, and its nomenclature is put together from two letters and two numbers. The first letter indicates the large quadrangle, and the second letter the medium-size quadrangle, in which the given sheet of the map fits. The first and second figures indicate the corresponding coordinates X & Y of the southwest corner of the sheet of the map, expressed in tens of kilometres and counting from the southwest corner of the medium-sized quadrangle. For example, ND46 indicates that the given sheet lies in large quadrangle N, in medium-size quadrangle D, and the south-western corner of the sheet has coordinates X = 40 km and Y = 60 km, counted from the south-west corner of quadrangle D.

French topographic maps

All French topographic maps are based on the metric system of measurements.

Of the existing maps, the map at the scale of 1:80,000 is gradually falling out of use as obsolete.

Conventional signs for the maps of different scales are not uniform. In appendix IV-4-4 symbols for the Type 1922 1:50,000 maps are given.

Settlements are classified by administrative type. Administrative importance of settlements is shown on the maps by different scripts used for the writing of their name. Alongside the underwritten name is given an indication of the number of inhabitants in thousands.

Railways on the maps of all scales are shown with subdivision of them by gauge of track and number of tracks.

Motor roads are sub-divided by their representation on the maps into *routes nationales*, *départementales*, &c. On the roads, sections with tree-plantings are distinguished. Data on the width of the roads, the material of their surface, and the height of embankments and depth of cuttings are absent.

Soil and vegetation cover – woods, shrubbery, wetlands, meadows, plantations, sands – is shown without separation of their variety and without distinction of their characteristics. For example all woods are signified by one and the same symbol, without subdivision by species of trees.

Hydrography is also shown without additional characteristics. Bridges are sub-divided by their representation on the maps into stone, metal and wooden ones. They all are shown by one and the same symbol and are distinguished by colour; stone bridges are shown in red, metal in blue and wooden ones in black. The weight limits of bridges are not indicated.

Relief is shown with contours, except on the 1:80,000 scale maps on which it is shown by hachures, giving only a general idea about the relief. For the vertical interval of successive levels of height: on the 1:20,000 scale maps it is 5 & 10 m, and on the 1:50,000 maps 10 & 20 m. The values of the contours are not written. Indications of slopes and a scale of gradients are absent.

On the 1:50,000 maps contours are combined with a colour-wash, given in grey.

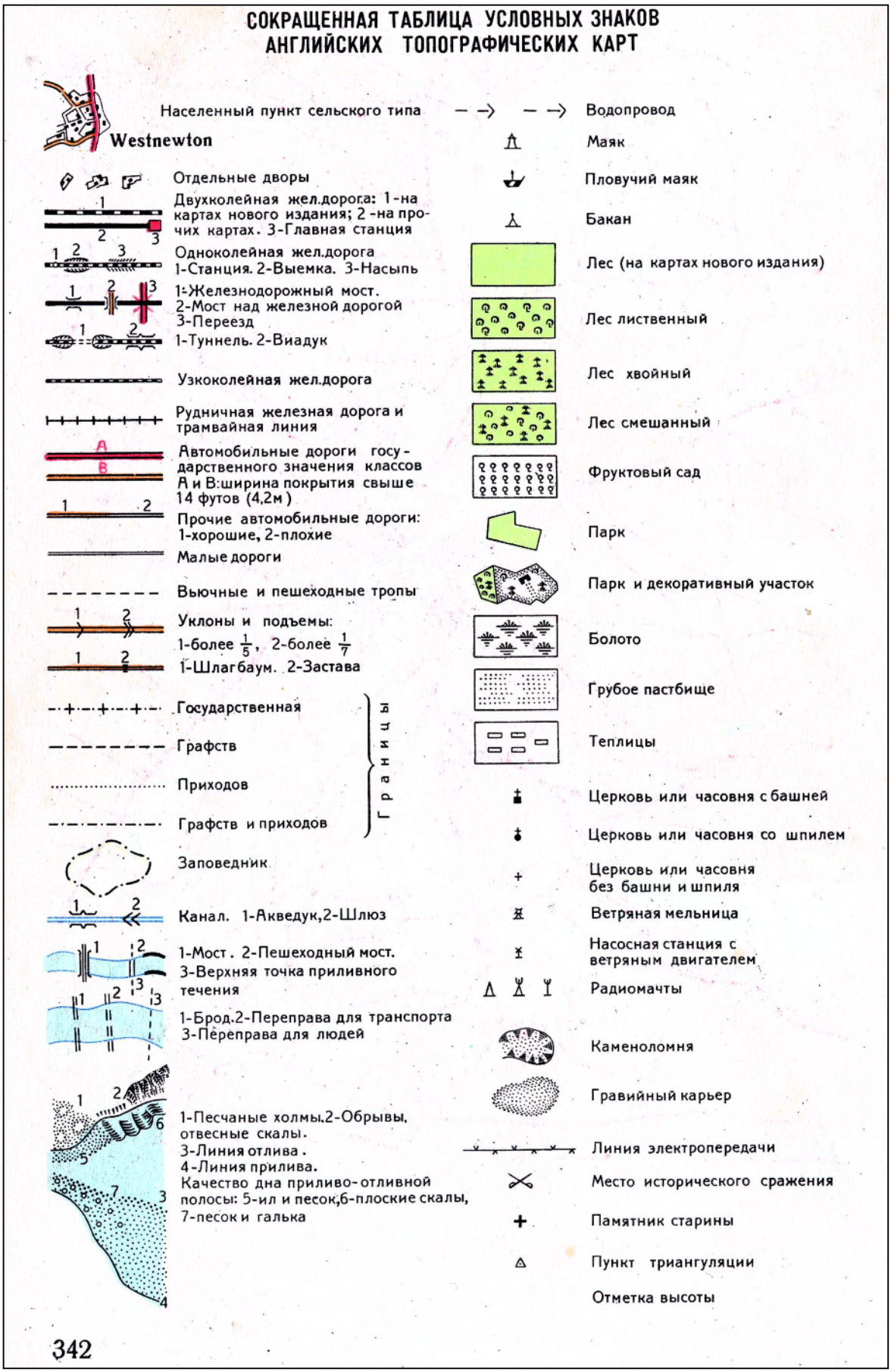
The coordinate grid on the maps at the scales of 1:20,000 and 1:50,000 is constructed independently within the limits of every zone, without coordination with other zones. For the construction of the grids, the territory of France is divided by latitude into three zones. In each zone the intersection of the Paris meridian with the central parallel of the zone serves as the origin of the coordinates. For colonial possessions is established their own zones.

The 1:80,000 scale map has its own arbitrary coordinate grid.

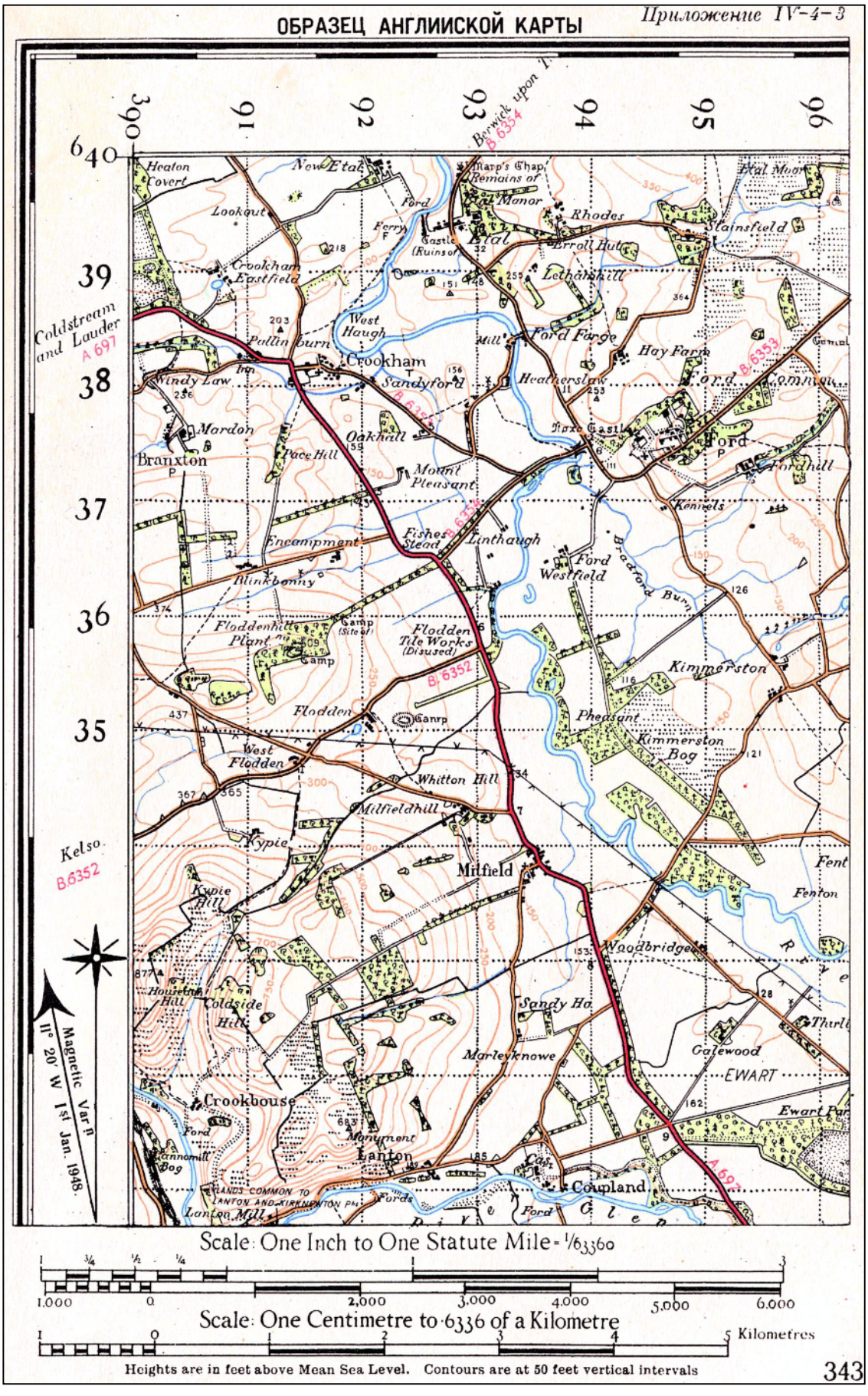
The nomenclature of French maps does not link maps of all scales. Only the maps at the 1:20,000 and 1:50,000 scales have coordinated nomenclatures.

The identifiers of the sheets of the map at the scale 1:50,000 are itemised from indication of column and row, in which is given of arrangements of the sheets. The columns are numbered with Roman numerals, and the rows with Arabic; e.g. XXVII-5. In one sheet of the map at 1:50,000 are contained 8 sheets of the 1:20,000 map, which are identified with Arabic numerals. Thus the nomenclature of a sheet of this map will be XXVII-5-3.

The nomenclature of the sheets of the map at the scale of 1:100,000 consists of the designation of column, which is identified by an upper-case letter of the Latin alphabet, and row, identified by Arabic numerals, for example M-6.



Abbreviated table of the conventional signs for English topographic maps



Example of an English Map

Приложение IV-5

ПЕРЕЧЕНЬ НЕКОТОРЫХ СОКРАЩЕННЫХ ПОДПИСЕЙ,ПРИМЕНЯЮЩИХСЯ НА ТОПОГРАФИЧЕСКИХ КАРТАХ США, АНГЛИИ И ФРАНЦИИ

Сокращенные подписи на картах США

AFB	военно-воздушная база (Air Force Base)
Br.	мост (bridge)
C.	мыс (cape)
cem.	кладбище (cemetry)
Col.	учебное заведение (college)
elec.	электрифицированный (electrified)
Fd	брод (ford)
F.	лес (forest)
Ft.	форт (fort)
Fy.	паром,перевоз (ferry)
Hosp.	больница,госпиталь (hospital)
i.	остров (island)
L.	озеро (lake)
LH	маяк (lighthouse)
Mt	гора (mountain)
navgb.	судоходный (navigable)
Po.	почтовая контора (post office)
PT	почта и телеграф (post and telegraph office)
R	хребет (range)
RS.	радиостанция (radio station)
Sch.	школа (school house)
Sta	станция (station)
T	телеграф (telegraph office)
Wdm	ветряная мельница (windmill)
WM	водяная мельница (water mill)
WT	водяная цистерна водонапорная башня (water tank,water tower)

Сокращенные подписи на английских картах

B^{ks}	казармы, бараки (barracks)
Bat^{y}	батарея (battery)
B.M.	репер (bench mark)
Brick Y^{d}	кирпичный завод (brick yard)
Br.	мост (bridge)
Car Ho	вагонное депо (carhouse)
Cas	замок (castle)
Cem^{y}	кладбище (cemetery)
Chem W^{ks}	химический завод (chemical works)
Ch^{y}	дымовая труба (chimney)
Coll^{y}	каменноугольная копь (colliery)
Engine Ho	паравозное депо (engine house)
F (V)	паром для транспорта (ferry for vehicles)
F(F)	паром для людей (ferry for foot passengers)
F.Br.	пешеходный мост (foot bridge)
F^{m}	ферма (farm)
G^{t}	большой (great)
Ho	хутор (house)
Melting Ho	плавильня (melting house)
Mil	военный (military)
P	почта (post)
P.T.O.	почта с телеграфом (post and telegraph office)
R	река (river)
Salt Ho	солеварня (salt house)
Sch	школа (school)
Smy	кузница (smithy)
Sta	станция (station)
W	колодец (well)
Wood Ho	дом лесника (woodhouse)
W^{ks}	завод (works)

Сокращенные подписи на французских картах

A^{t}	полустанок (arret)
Anc^{n}	старинный (ancien)
Ars^{l}	арсенал (arsenal)
B^{ide}	деревенский дом (bastide)
B^{g}	местечко,поселок (bourg)
Briq^{ie}	кирпичный завод (briqueterie)
Cas^{ne}	казарма (caserne)
Ch^{au}	замок (chateau)
Dist^{ie}	винокуренный завод (distillerie)
Ec^{se}	шлюз (ecluse)
E^{le}	школа (ecole)
F^{bg}	пригород (faubourg)
Fab^{e}	фабрика (fabrique)
Fec^{ie}	крахмальный завод (feculerie)
F^{rie}	чугунно-литейный завод (fonderie)
F^{r}	печь для обжига извести (four)
F^{me}	ферма (ferme)
F^{ge}	кузница (forge)
Navig.	судоходный (navigable)
Pap^{ie}	бумажная фабрика (papeterie)
P^{ge}	проход,переправа (passage)
P^{te}	почта (poste)
Poud^{ie}	пороховый завод (poudrerie)
Poud^{re}	пороховый погреб (poudriere)
P^{ts}	колодец (puits)
R.	река (riviere)
R^{au}	ручей (ruisseau)
St^{on}	станция (station)
Suc^{ie}	сахарный завод (sucrerie)

List of various abbreviations used on topographic maps of the USA, England and France

For the maps at the scales of 1:500,000 and 1:1,000,000 a nomenclature similar to ours is accepted.

A peculiarity of French maps is the use of the decimal system of angular measurement along with the degree system. For the decimal system the circumference is divided into 400 equal parts – grads (g); 1 grad is divided into 100 parts, called minutes (c); 1 minute is divided into 100 parts, called seconds (cc); $1^g = 0.9°$ and $1^c = 0.54'$. Geographical coordinates of sheet corners and the graticule are given in two systems. The counting of longitude in the decimal system is conducted from the meridian of Paris, and in the degree system from Greenwich. The magnitude of the declination of the magnetic needle and deviation of the meridian are given in the decimal system.

The passage given above is a translation of section 69, the third portion of chapter 8, from the 1959 edition of *Voenaya Topografiya* by I A Bubnov, A I Kremp & S I Folimonov, published in Moscow by the Ministry of Defence of the USSR. The Russian title translates into English as 'Military Topography'.[4] For many decades successive editions of this book were the principal text, and indeed were the syllabus, for basic officer training in map reading, navigation, landscape study and air photo interpretation throughout the Soviet Union and its satellites.

Over the decades the editorial collective writing this textbook slowly changed (and the edition numbering was reset each time it did), but from 1933 to 1977 the lead-author was Iliya Alexeievich Bubnov. He had been born in 1900 in Tashkent. During the Civil War period he had simultaneously been an accounts clerk in the National Commissariat for State Control in Moscow and a student of mathematics and physics at Moscow State University. In 1920 he enrolled as a student on the military topographic course back in Russian Turkestan, and like others recruited to the Corps of Military Topographers at that time he gained rapid promotion as former Tsarist officers in the Corps (and the Military Topographic Service as it became in 1923) were progressively sidelined or purged. In 1931 he became Deputy Head of the editorial-publishing section of the Military Topographic Service. From then until his retirement as a Major-General in 1959 he held various posts, but almost all involved teaching military topography and publishing official teaching materials.[5] He continued to produce further editions of 'Military Topography' after his retirement, and the final edition crediting him as an author appeared in 1977, the year after his death.

The section on the Maps of the Capitalist Nations first appeared in the 1953 edition and was revised and enlarged for the 1959 one. Although it was again revised for the 1964 and 1969 editions, it was relegated to an appendix, and it did not appear at all in the 1977 edition. This appearance and disappearance reflects a changing perception of the need for Soviet officers to know about western maps. To teach any Soviet citizen, even a military officer, anything concrete about the West was ideologically dangerous. It could only be justified by a

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[4] ИА Бубнов, АИ Кремп, СИ Фолимонов (I A Bubnov, A I Kremp and S I Folimonov), *Военная Топография*, fifth edition, Moscow: Военное Издателство, 1959.

[5] ЕИ Долгов & СВ Сергеев, (E I Dolgov and C V Sergeev), *Военные Тонографы Красной Армии,* Moscow: РИЦ Министерства Обороны РФ, 2005, 89-90.

pressing need in the early years of the Cold War to prepare the Soviet Army to fight in countries mapped by the western powers but not by the Soviets. As the Cold War dragged on, not only did the likelihood of a ground war in Western Europe seem to reduce, but from the late 1950s onwards Soviet-specification mapping of the West started to be prepared, and by about 1970 coverage was complete. There was then no further need to teach Soviet army officers how to read an Ordnance Survey map.

Reading the passage, one feels of course a patriotic urge to refute individually each point made, starting of course with a statement on the importance of not including Scotland and Wales within England. Such refutation is more complex than might first be thought, because almost every response has to begin with 'Yes, but …'. What is perhaps more important is to consider why the Soviets considered some of the features of Ordnance Survey practice to be weaknesses, and whether the different Soviet practices were truly better. This approach in turn reveals as much about what the Soviets felt was important in their own maps as about the American, OS, and French maps described.

To the Russians the issue of sheet lines and sheet nomenclature was overwhelmingly important. The USSR itself was a huge country containing vast tracts of unpopulated and (until 1956) unsurveyed land. Mapping the whole USSR at 1:100,000 had required unprecedented efforts, yet before this task was completed a new target had been laid down: to map the entire Soviet Union at 1:25,000. If other countries were also to be mapped the area to be covered, and the number of sheets to be prepared, were staggering. No country had ever before considered mapping entire continents, far less the world, at tactical scales. Only with a truly global system of sheet lines that avoided any duplication could the practicalities of such projects be contemplated. In the age before computers, only with such a system could storage and retrieval of the printed sheets (and reproduction material) be imagined. Furthermore demand for copies of most of the sheets prepared was likely to be in single figures (at best). Each sheet therefore had to be a separate 'tile' of the overall map. Overlaps, combined sheets, and 'arbitrary' sheet lines all had to be avoided. Even the combined 1:200,000 sheets of Central and Eastern Europe produced during the later stages of the Second World War [6] thus ceased to be mentioned, and all Warsaw-Pact officers were trained to produce combined sheets by 'cutting and sticking' up to nine separate sheets together.[7]

The Ordnance Survey's sheet lines were thus an anathema to the Soviets. During the 1890s and the first five years of the twentieth century the OS had developed a neat hierarchy of matching small sheets covering England and Wales at different scales all based on the rigid sheet lines of the one-inch New Series. Although this was based on a different projection, the logic was very much that later adopted by the Soviets. The impracticality of this scheme to map users, particularly in a coastal nation, became clear so rapidly that neither the small sheet one-inch map in colours nor the small sheet half-inch map of England and Wales were ever completed. The history of OS small and medium scale mapping has ever since been a story of successively bigger printed sheets with ever more complex systems of overlap, all strongly driven by consumer preferences. Published sheets have become less and less dependant on the underlying pattern of the 'tiles' aggregated to produce the map. The

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[6] A diagram of the distribution of these combined sheets is given in ПС Паша, ФГ Корнилюк & АВ Петров (P S Pasha, F G Kornilyuk, and A V Petrov), *Военная Топография, Учебное Пособие,* Moscow: Военное Издатльство, 1952, 79.

[7] See, for example, Bubnov et al. (1959), 164-166, but similar passages appear in all post-war Soviet (and Warsaw Pact) military map reading manuals.

only major OS series that attempted to reverse this trend was the Provisional Edition of the 1:25,000 map. Commercially this was a disaster, precisely because of its small sheet size, rigid sheet lines and complex sheet nomenclature. Yet this was the only OS series that the Soviets felt conformed to a sensible structure.

The Soviet system of sheet lines and sheet nomenclature has remained unchanged for roughly eighty years; generations of Soviet and other military officers have been taught (and are still taught) that it is the only correct way to structure a series of maps. Yet when the system was tested in action in the Second World War it had to be modified and large combined sheets were printed. Now, as civilian users in the former USSR steadily develop uses for maps (and GPS systems) unavailable to them in Soviet times, this Soviet shibboleth is having to be rethought. The sheet lines of Ukrainian maps have been changed, and their numbering is national, not international. Even in the Russian Federation, which remains vast and where restrictions on the availability of topographic maps are still maintained, change may yet take place.

It is hardly surprising that the Soviets found the classification systems for British roads to be confusing; they were and are. The combination of the Ministry of Transport system, based on the perceived importance of the road rather than its physical condition, with the (sometimes long-outdated) OS data on the width of the metalled surface (but not its construction) could have been designed to confuse foreign agents. Much of our interpretation of the OS printed image depends in fact on a complex of unstated economic, social and constructional assumptions about what we expect our roads to be like. Understanding cricket is simple in comparison.[8] Soviet mapping of the structure, height, width, length, and load capacity of bridges was also far beyond anything attempted by OS. By Soviet standards British mapping of roads, and of bridges and other river crossings was, and is, hopelessly inadequate.

The passage translated stresses the much wider range of symbols available for use on Soviet maps and the comparatively limited detail provided about many landscape features on western maps. How and why this was so is worth considering. Firstly the difference in the range of symbols is, at least in part, spurious. OS maps have never covered more than Great Britain and Ireland. Thus in the Britain of the 1950s there was little need for a symbol to indicate a mosque, because there weren't many.[9] Matters were different elsewhere in the Empire, and British official maps of overseas territories used many symbols unnecessary in Britain. Nevertheless, even at the height of empire, British maps have never needed to differentiate between intermittent and permanent sites of yurts. Similarly the range of different types of wetland distinguished on OS maps is quite small. This is because most British wetlands have been drained, and those that remain are piffling in comparison to the marshes and swamps of Belarus or parts of Siberia. Britain's rivers are correspondingly tiny in comparison to the Volga, Ob or Lena, and are mostly not commercially navigable. Their flow rates and depths are both small and unpredictably variable. Similarly Britain has no tundra, no high mountain landscapes, and few desert landscapes to be represented.

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[8] For some of the complexities of OS road classification see Y Hodson, 'Coloured Roads on Ordnance Survey First Edition 1:2500 Plans and One-Inch Maps 1897-1935, and the Rights of Way Disclaimer', *The Cartographic Journal*, **42** (2005), 85-110.

[9] Current OS policy is perhaps worse. The present use of hitherto specifically Christian symbols to indicate non-Christian places of worship demonstrates the sort of official tact and sensitivity that triggered the Indian Mutiny. British maps of overseas territories used to use a range of perfectly satisfactory symbols to differentiate the places of worship of the major world religions.

What the passage does not mention is that the huge range of Soviet topographic symbols was then relatively new. Pre-war and wartime Soviet maps had been made to a succession of much simpler specifications.[10] The experience of the Great Patriotic War led to a radically expanded symbol list in 1946, and this was the time when numerical data on the passability of rivers, bridges and roads was introduced. A further expansion took place in 1951, and in 1959 the Soviet symbol lists were expanded yet again. Even for the Soviets this seems to have been the point where the limit of practicality was reached. The 1963 revision thus contained 38 fewer symbols and subsequent changes in 1973 and 1983 were minor. Nevertheless further work continues in Russia to devise ways of representing different landscapes in greater detail and with greater precision.[11]

The Military Topography manual was not the only Soviet publication of the Cold War era to describe western maps, and indeed it only provided a superficial introduction to them. Vereshchaka lists a series of eight booklets issued by the Military Topographic Service between 1958 and 1986 which between them provided tables of conventional signs, examples of scripts, and lists of abbreviations used on the official maps of all the countries of Western Europe and North America together with Japan.[12] Other descriptive publications were also produced. In doing this the Military Topographic Service of the Soviet Army were of course merely preserving the essential symmetry of the Cold War; the United States Army also published a succession of manuals describing in great detail the maps of the Soviet Union and most other countries of the world.[13]

We must therefore appreciate that an examination of the Soviet military topography manuals reveals that the Charles Close Society is not the only organisation to have studied the Ordnance Survey. Indeed, perhaps the membership secretary should be seeking new corporate members in Moscow, St. Petersburg and elsewhere!

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[10] New editions of the official list of topographic symbols were issued in 1921, 1924, 1931, 1934, and 1940.

[11] See Т В Верещака (TV Vereshchaka), *Топографические Карты, Научные Основы Содержания* (*Topographic Maps; the Scientific Principles of their Content*), Moscow: МАИК "Наука/Интерпериодика", 2002; the text is available on-line at http//gis-lab.info/docs.html.

[12] Vereshchaka, op.cit., 274-275. The booklet on British and US maps had 72 pages and was issued in 1966.

[13] Examples include: Tentative Technical Manual – *Use of Foreign Maps* (Washington, Nov. 1942); AMS Technical Manual 17 – *Russian Map Symbols*, (Washington, Nov. 1946); TM 5-248 *Foreign Maps*, (Washington, June 1956); TM 5-248 *Foreign Maps*, (Washington, Oct. 1963); TM 30-548 *Soviet Topographic Map Symbols*, (Washington, June 1958).