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TRENDS IN THE DEVELOPMENT OF ARMORED TANK TECHNIQUES ON THE EVE AND DURING WORLD WAR 2 (1939-1945) AND AFTER THE WAR

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Annotation. The article examines the issues of the period of creation of a full complex of development of armored vehicles on the eve and during the Second World War (1939-1945). An analysis of a complex of armored weapons and tank equipment of the post-war period is shown.
Key words: tank, motor transmission, machine gun, trench, armor, designer, cannon, turret, armor-piercing projectile, self-propelled artillery, trench cleaner, mechanized.

Armored tank techniques on the eve and during the 2nd World War (in 1939-1945). This period is characterized by the creation of one-bashnyali (turret) tanks with anti-projectile armor and powerful weapons.

On December 19, 1939, M.I.The T-34 medium tank, developed under Koshkin's direction, was put into use. For the first time in the world, a powerful, long-barreled (for that time) 76 mm cannon with an initial speed of 662 m/s was installed on an armored piercing projectile.

Figure 1. T-34 tank

The armor-piercing Cannon outperformed all foreign tank cannons of the time. The powerful armor of the tank is reliably protected from small-caliber anti-tank artillery shells and tank guns from all distances. The Tank was distinguished by its original body shape, large corners of the armor plates, the installation of a new high-speed V – 2 diesel engine, a four-speed gearbox and turning mechanisms-on-board frictions. To ensure the good permeability of the tank, it had wide chains and a suspension with a separate spring. The mechanisms and aggregates of the tank are well designed and differ in Ease of production. This situation made it possible to quickly establish the production of large-scale tanks during the war years.

In 1939, at the same time as the T-34 tank, J.Ya.The KV heavy tank, created under the command of Kotin, was incorporated into the armament. The first example of the KV-1 tank was a 76 mm cannon, in early 1940 the second example of the KV – 2-a 152 mm gaubitsa-was installed. The KV tank was

significantly superior to the T-34 tank in terms of armor protection and had sufficiently high mobility (maximum speed of 35 km/h) parameters for its weight (47.5 tons).

Production of T-40 light floating tanks began in 1940, with the adoption of the T-50 light tank in April 1941, followed by the T-60 and T-70. These light tanks were rated at.A.Developed under Astrov's direction. The T-40 tank was armed with machine guns, a 45 mm cannon was mounted on the T-50 Tank. The production of the T-60 and T-70 tanks was developed using extensively the conclusions tested on the T-40. Unlike the floating T-40, they were not floating. The T-60 tank was armed with a 20 mm automatic pusher while the T-70 tank was armed with a 45 mm pusher.

As a result of the modernization of anti-tank artillery and tanks carried out by Germany during the war, there was a need to increase the firepower and armored protection of Soviet tanks.

In late 1942, production of SU-122 self-propelled artillery pieces with 122 mm gaubits was launched, and in the summer of 1943, SU-85 with 85 mm cannon was launched.

In December 1943, a T-34-85 tank with a caliber of 85 mm and an initial velocity of about 800 M/s of the projectile was put into use. The armor thickness of the tank (45-90 mm) was increased, the crew was 5 people.

In 1944, production of the SU-100 Self-Propelled Gun with a 100 mm cannon began at the T-34 base.

At the end of 1943, an IS-1 Heavy Tank with an 85 mm cannon, as well as its overall.

at the base, the IS-2 tank and the ISU-122 self-propelled artillery unit were prepared for production with a 122 mm cannon and began production.

Figure 12. SAU ISU-152

From 1943, a 152-mm gaubitsa-Cannon began to be installed on the SU-152 and ISU-152 self-propelled artillery units at the base of KV-1 and IS-2 tanks for tracking tanks and produced.

Figure 13. T-44 tank

In 1944 a new medium tank T-44 with 85 mm cannon and transverse engines was developed. This made it possible to increase the thickness of the armor and made it possible to further increase the caliber of the weapon and have more ammunition reserves.
At the end of the war, an IS-3 Heavy Tank with two machine guns (one anti-aircraft gun) 122 mm cannon was put into use.

Figure 14. Is-3 tank

The nose shape of the hull, the enlarged thickness of the armor, ensured its high safety. The constructors were able to reduce tank height, improve driving fluidity, increase permeability and maneuverability. The IS-3 tank became a model for many years along with the T-34 tank.

Main indicators of Tanks 1939-1945

Main display of Tanks	T-70 Light tank	T-34-76 Medium tank	T-34-85 Medium tank	KV-1 Auger tank	KV-2 KV-1 Auger tank	IS-2 KV-1 Auger tank	SAU ISU-152
Combat weight, t	9,8	28,5	32	47,5	52	46	46
Crew, Man	2	4	5	5	6	4	5
Weapons: - ball, mm	45	76,2	85	76	152,4	122	152
- number of machine guns	1	2	2	4	3	3	–
Armor, mm	25-40	20-65	20-90	30-75	30-75	20-160	60-90
Max. speed, km / h	45	55	55	34	35	37	35

Post-war tank construction period:

Three stages can be observed in the development of post-war tank construction, each characterized by its own generation of Tanks.

Production of the first generation tanks spans the period from 1945 to 1960. At this time, tank manufacturers made extensive use of the experience of the production of tanks of the Second World War.

Tanks were produced in the light (PT-76), medium (T-54, T-55) and heavy (T-10) weight classes.

Figure 15. First period tanks
a-PT-76; B-T-10; V-T-54; g-T-55

These tanks did not fully meet the requirements imposed on them in connection with the appearance of the Swan.

The concepts of “medium” and “heavy” in relation to the first generation characterized not only the weight of the tank, but also, to some extent, the level of its combat characteristics and, accordingly, the range of combat tasks. For this reason, medium tanks differed greatly in weight. Thus, the weight of the Soviet T-54/55 tanks was 36-37 tons, the British “Centurion” and the American M46, M47, M48 – tanks were about 50 tons. In the Soviet Union, the following classification was adopted by weight: light tanks – up to 20 t, Medium – up to 40 t, Heavy – more than 40 t. Medium tanks had good mobility but no necessary safety and firepower, while heavy tanks, had high firepower and safety, but were less mobile than medium tanks. However, the development of design ideas and advances in tank production technology led to the fact that the difference in all indicators of medium and heavy tanks was significantly reduced and gradually disappeared. This happened in the creation of the post-war second generation tanks. A new type of tank appeared – the main tank.

A main battle tank is a multi-purpose combat vehicle capable of conducting combat operations under the influence of direct artillery fire and enemy anti-tank guided missiles, embodying high firepower, safety and mobility. Tanks that differ from the main ones in their special indicators are called Special (Command, flamethrower). The production of the second generation tanks (1960-1990) is characterized by the production of tanks T-62, T-64, T-72, T-80.

Figure 16. Tanks of the bicentennial
a-T-62; B-T-64; V-T-72; g-T-80

The T-64, T-72 and T-80 tanks are distinguished from the previous tanks by the presence of automatic firing (mechanism) and, accordingly, the reduction of the crew to three people. Automatic firing (mechanism) allowed the rate of fire of the cannon to be increased to 8 rounds per minute. Laser rangefinders and electronic ballistic counters began to be used in fire control systems. Guided projectiles were created for firing from the ball table. Around 1980, production of the third generation tanks began. The Russian T-90 tank is a deep modernization of the Soviet T-72B and T-80UD tanks.

In addition, the latest modifications of the T-80 series tanks may belong to the third generation. According to their tactical and technical characteristics, the last Soviet tanks of the second generation (T-64, T-72, T-80) are not inferior to foreign tanks of the third generation and are superior to them in some indicators.

Main indicators of tanks of the post-war period

Main display of Tanks	**PT-76**	**T-55**	**T-62**	**T-64**	**T-72**	**T-80**	**T-90**
Combat weight, t	14	37,4	37,5	42,4	44,5	46	46,5
Crew, Man.	3	4	4	3	3	3	3
Weapons: ball, mm	76,2	100	115	125	125	125	125
number of machine guns	1	2	1	1/1	1/1	1/1	1/1
Armor, mm;	6-20	100-200	46-246	30-450	Combined	Combined	Combined
Max. speed, km / h	44/12	50	50	60	60	70	60

Tanks of this type were successfully embodied in the mobility and adaptation of medium tanks to mass production, high level of protection and firepower of heavy tanks.

References:

1. Танк Т-72А. Техническое описание и инструкция по эксплуатации / Под ред. М.Н.Розанова. – М.: Воениздат, 1986. – Кн. 1. – 112 с.
2. Танк Т-72А. Техническое описание и инструкция по эксплуатации / Под ред. И.М.Голощапова. – М.: Воениздат, 1989. – Кн. 2, ч. 1. – 512 с.
3. Танк Т-72А. Техническое описание и инструкция по эксплуатации / Под ред. И.М.Голощапова. – М.: Воениздат, 1989. – Кн. 2, ч. 2. – 368 с.
4. Танк Т-72 и его модификации: Инструкция по эксплуатации / Под ред. А.Г.Евграфьева. – М.: Воениздат, 1991. – 272 с.
5. Бронетанковое вооружение / Под ред. Е.И.Крылова. – М.: Воениздат, 1991. – 576 с.
6. Дизель В-84М (В-84, В-84-1). Техническое описание / Под ред. А.Г.Евграфьева. – М.: Воениздат, 1991. – 128 с.

7. Сборник нормативов по боевой подготовке сухопутных войск / Под ред. Ю.А.Чичова. – М.: Воениздат, 1991. – 256 с.
8. http://saper.ru – сайт военных професионалов.