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The Paths of Further Development of the

Tank Troops of the Soviet Army

by

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There have been pronouncements of late on many questions connected with the development of tank technology and the organization of tank troops. One can hear the opinion that it is pointless to have strong armor plating on tanks in view of the appearance of new, highly effective antitank means (above all of guided antitank missiles - snaryad), and also because of difficulties related to the production and use of heavy, tracked combat vehicles.

In connection with the probable re-arming of tanks with guided missiles (upravlyayemyy reaktivnyy snaryad) instead of tube artillery armament, it is also said that it is necessary to re-examine the design of tanks. In particular, proposals are advanced that the production of heavy tanks and the development of prototypes be stopped. In this case there will be only two types of tanks with which our tank troops can be equipped: medium (the basic type) and light (amphibious), instead of the three that now exist.

It is impossible not to admit that the pronouncements and proposals cited touch upon fundamental questions of the further development of armored technology, organizational structure, and of the combat use of tank troops.

A proposal that is no less important, which is also widely discussed and which has its supporters, is the elimination of tank armies and divisions and conversion to mixed organization of an army and a unified division.

We do not share the views of the "innovators", since they are not scientifically founded and are not supported by the experience of the last war. Inasmuch as there are no official decisions concerning these questions as yet, we shall permit ourselves to express our viewpoint.

Conditions that determine the directions of the further development of tanks. A tank is a tracked combat vehicle of high cross-country ability incorporating three basic combat qualities: firepower, armor protection, and mobility. During the existence of the tank these qualities have constantly been improved as regards achievements in the development of armament, armor protection, power transmission, and running gear, as well as by changes in operational-tactical views on the employment of tank troops.

The choice of the directions of development of the basic combat qualities of our modern tanks was made on the basis of the experience of the last war. During recent years further development has been mainly concerned with increasing the accuracy of fire when in motion (stabilizers), of broadening the scope of combat utilization (firing at night and under conditions of poor visibility, the surmounting of water obstacles by floating or by moving along the bottom of the water), and of increasing the reliability of operation of separate assemblies and of the vehicle as a whole.

The correct determination of basic combat characteristics ensured the superiority of our tanks over the comparable types of tanks of the capitalist countries during the last war and in the postwar period.

At the present time the development of new types of weapons, and above all of the means of mass destruction, makes it necessary to determine the paths for the further improvement of the combat qualities of tanks which are applicable to the newly arising conditions of a possible war.

The present period of tank development is characterized by the fact that the decisive factor for further improvement is not so much past combat experience, with all its value, but a scientific forecast of the nature of a future war, the role of tank troops in it, and the methods of their combat employment. In other words, the basic trends in the development of armor technology should be determined now, above all, by the presence of nuclear weapons and missile capabilities, and by the development of tank technology and of the means of defense against tanks.

Proceeding from a thorough analysis of the nature of a future war, it must be considered that the decisive force in the ground troops will be tank troops, in cooperation with

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missile troops and aviation. The basic assignment of tanks in modern combat operations will obviously be: combat with the tanks of the enemy, destruction of missile launchers on the launch sites, suppression and destruction of the various other firing means, the means of control, reconnaissance, and supply, as well as the personnel of the enemy, including those in armored carriers and in shelters. Proceeding from this, it is essential to lay special stress on the multi-purpose assignments of tanks and their armament not only at the present stage, but also in the near future. From the conditions of highly mobile troop operations and of great independence in the employment of tank units (chast), sub-units (podrazdeleniye), and individual tanks, dictated by the use of weapons of mass destruction in a battle and an engagement, arises the need to include in the armament of our troops tanks with high resistance to all the destructive (porazhayushchiy) factors of a nuclear explosion, with great cruising range, and which are also powerfully armed and carrying a significant supply of ammunition for various missions, above all of shells (snaryad) effective against the tanks of the enemy.

The armor protection of tanks. As was mentioned before, one hears nowadays the opinion that, owing to the appearance of new antitank combat weapons, there is no longer a requirement for tanks with thick armor. Among others, a proponent of this viewpoint is Colonel-General A. I. Gastilovich, who writes literally in his article ("The Theory of Military Art Requires Review", Spetsialnyy sbornik statey zhurnala Voyennaya Mysl, First Issue, 1960.) that the ground troops as a whole should be made air-transportable with lightly armored (oblegchennyy) tanks, as any armor can be penetrated anyway.

In this article we do not have the opportunity to examine other questions raised by General Gastilovich. At the same time, it is impossible to bypass the question cited without drawing the attention of the author to the fact that not only are light tanks incapable of engaging independently in battles with tanks of the enemy (General Gastilovich, it should be said, calls upon our tank divisions to do this, on page 13 of the Special Collection), but they will also suffer heavy losses from nuclear strikes by the enemy, and thus our tanks and tank troops as a whole will only lose by these "innovations". Consequently, it is impossible to reject, so rashly, reliable armor protection of modern tanks.

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The complexity of creating proper armor protection for tanks under modern conditions, in relation to the development of powerful means of destruction, is further conditioned by the fact that this

protection must be over-all, i.e., that it is called upon to protect personnel against destruction by various types of weapons that operate on different principles.

Thus, the armor-piercing shell with high muzzle velocity which is used against tanks presents one requirement to the armor material.

Nuclear weapons have introduced other requirements, namely, the need to protect tanks against the shock wave of a nuclear explosion and against penetrating radiation (gamma rays and neutron flux).

In this connection, it must be kept in mind that while steel armor offers good protection against the shock wave of a nuclear explosion (here we take into consideration the strength of the hull and turret) and successfully resists gamma-radiation, which is connected with the heavy specific gravity of steel, it affords slight resistance to the flow of fast neutrons. In regard to radiation of light waves it should be said that the existing armor of tanks eliminates this danger to the crew.

Finally, the use of shaped-charge (kumulyativnyy) shells, as is known, is based upon a different principle of destruction, which is most effective against steel armor. We recall that the first attempts to use shaped charges in combat occurred during the period of the Spanish Civil War (1936). During World War II shaped-charge antitank means were greatly improved (panzerfaust, bazooka, and others) and were quite widely used.

In the postwar period the sphere of employment of shaped charges as a means of combating tanks has widened even more; this is evidenced by the further improvement of shaped-charge shells in conventional tube artillery, the creation of recoilless weapons with shaped-charge shells, and, finally, the appearance of guided missiles with shaped charges.

The highly effective action of shaped charges against steel armor, the widespread possibilities of their use, and also the appearance during the last few years, in many countries, for example, France, England, the USA, West Germany and Switzerland, of various models of antitank guided missiles (PTURS) (See Table 1), have introduced the problem of providing protection for tanks from destruction by shaped charges, which should be gone into in more detail.

Some foreign military experts think that the appearance of PTURS with shaped charges opens a new era in combat with tanks and leads to a fundamental change in the equipment (tekhnika) and tactics of armored troops.

TABLE 1

Various Tactical-Technical Data of Antitank Guided Missiles of Foreign Countries:

	France				USA		England	Switzerland
Characteristics	SS-10 1950	SS-11 1955	"ENTAC"	"LUTIN"	DART 1956	RED EYE	VICKERS - 891 1958	COBRA-4
Guidance (Type) System	Remote control by wire	Remote control by wire and radio	By wire	By radio	Remote control by wire	Homing (samonavedeniye) by infrared ray	Remote control by wire	Remote control by wire
Caliber, mm	164	160	150	130	254	This missile can be used against planes flying at low level as well as against tanks.	114	100
Overall Length of Missile, mm	860	1070	1000	1300	2100		838	870
Launch Weight, kg	15	28	17	18.6	110		18	11
Weight of Warhead, kg*	4.2	5.8	4.8	4	---		3.5	4
Velocity, meters/sec*	80	195	80	125	270		90	80
Distance of Guided Flight, m	1600	3500	1350	5000	4800		1600	1500
Armor-piercing Ability, mm	400	400	450	---	400		400	300

* Collection of Articles "Artillery Journal" (artilleriyskiy zhurnal), No. 43/10 for 1959, pages 46, 47.

Note: The date on missiles SS-10, SS-11, "Dart", "Vickers-891" and "Cobra-4" are from the book, "Missile Weapons and Their Combat Use", Part I, Voyenizdat 1960, page 186. Data on "Entac" and "Lutin" -- from the collection of articles, "Artillery Journal", No. 43/10 1959, pages 46, 47. On Red Eye, from the collection of articles of the journal "Tankist", No. 47, 1959, pages 36, 37.

With all the diversity of known PTURS, they can be differentiated basically by the type of rocket engine (solid - porokhovoy - or liquid) and by the system of guidance (navedeniye) to the target. Guidance (upravleniye) is by wire, radio, or by means of an infrared homing head.

The firing of antitank guided missiles is done from ground launching mounts (puskovaya ustanovka) installed on vehicles, armored carriers, and other mobile means.

In comparison with other antitank means, these missiles have a number of advantages. They are easy to handle and, being guided in trajectory, display great accuracy in tests. Unlike conventional antitank weapons, the operator does not have to determine distance to the target and its rate of movement when firing a guided missile. And finally, the main thing, which allowed some experts to speak of the onset of a new era in combat against tanks, is the great depth of penetration of steel armor, equal to 400-450 mm or more for a normal hit.

These positive qualities of antitank guided missiles predetermine their widespread use in battle. But one must not go to extremes and draw hasty conclusions, which often happens when technical achievements are evaluated from only one standpoint.

Our creation of antitank guided missiles, of which the tactical-technical characteristics are on a level with foreign models, apparently served as one of the main grounds for the pronouncements on the inexpediency of using heavy armor on tanks, inasmuch as it is allegedly practically impossible to install armor protection of tanks that could withstand the modern means for their destruction.

The mistake in such reasoning lies in its one-sidedness, and arises from an inadequate appraisal of many factors connected with the conditions of employment of these means, and also from forgetting the powerful combat characteristics of tanks.

The launching mounts of antitank guided missiles are basically a means of defense; they cannot be used in a tank meeting engagement and have absolutely no protection from the effects of nuclear weapons, which seriously limits the possibilities for their combat employment. Even in the defense these launching mounts are easily destroyed by tactical nuclear weapons. Besides, they will be unable to move over contaminated terrain right after a nuclear explosion, while tanks will operate without delay, exploiting the success after the use of a nuclear weapon against the enemy.

Data on the great firing accuracy of PTURS were obtained under firing range conditions, in other words, without interference by the enemy.

The receiving apparatus of an antitank guided missile is highly sensitive to the signals of the operator. It is enough to force the operator, who works under conditions of direct contact with the enemy, to commit any unintentional movement of the binocular sight (visor) at the instant the missile is being laid on, even to start at the explosion of a hostile shell, and the PTURS will change its flight course and miss the target.

PTURS mobile launching mounts on light transport equipment can be suppressed effectively by modern means of mass destruction.

Besides this, the known models of antitank guided missiles have the following substantial faults:

- during the intitial stage of flight, for a sizeable part of the trajectory (up to 500 meters), they are still unguided, i. e., they have a sizeable "dead" (mertvaya) zone in which they present no danger to tanks; for the same reason they are of little use for combat operations under city conditions;

- when firing from launching mounts, located on the ground, or on vehicles, they have a limited shift of fire;

- with instantaneous-action fuses, if the missiles meet even the slightest resistance in their trajectory (bushes, fences, etc.) they may explode before reaching the target;

- they have a low velocity, so that it takes 15-30 seconds for them to travel 2-3 km; during this time the enemy can destroy the operator or his guidance instruments with counterfire, after which the missile becomes unguided.

For wire, radio, and infrared ray guidance it is necessary for the operator to see the target during the entire flight time of the missile in order to keep the missile on the line of sighting. As a rule, in cases when the target is lost for a few seconds, the missile will also be lost.

Firing by tanks at guided missile launching mounts, the laying of smoke screens, and also the utilization by tanks of folds in the ground, features and structures, trees, and bushes when approaching the enemy will lead to a considerable reduction in the effectiveness of guided missiles used against tanks.

The analysis of the qualities, possibilities, and conditions of combat use of recently developed models of antitank guided missiles with shaped charges, possessing high armor-piercing capability, allows us to state with full responsibility that their appearance in the presence of means of mass destruction and tanks does not give us sufficient basis to conclude that it is inexpedient to use a strong armor protection on the basic types of Soviet tanks. Besides, it should not be forgotten that a tank with strong armor, moving rapidly over the battlefield and firing simultaneously, has always had superiority over antitank weapons. Of course, it is necessary to consider the possibility that the antitank weapons mentioned may be improved or that new, more effective ones will appear. However, tanks will not remain at their present stage of development either.

In examining the question of the necessary armor protection of the basic types of tanks, we consider that it must be over-all, i.e., capable of giving the tank great resistance, protecting the crew from weapons of mass destruction and enemy tanks, and also from various modern antitank weapons.

Therefore, we must not slacken our efforts to perfect the strong armor protection of the basic types of tanks, which must be strengthened supplementarily for the biological protection of the tank crew from penetrating radiation by the use of special "linings" (podboy) which inhibit the flow of neutrons. But, again, it must be remembered that the "lining" will be of use only in conjunction with dependable armor.

Improvement of the armor protection of tanks from all types of shaped-charge weapons (and not only from PTURS) must be carried out by using large angles of inclination of the armor details, the differential distribution of armor in relation to the probability of damage to the tank on the battlefield, the use of shields of various designs to induce activation of the fuse of the missile before it reaches the main armor, and, finally, by creating a combined armor consisting of armor steel and glass plastic (stekloplastik) which resists the shaped-charge effect well.

Nor should it be forgotten that the presence of weaker armor protection on tanks on one belligerent side puts the tank troops of that side at a disadvantage in advance, especially in carrying out a meeting battle and engagement. But this type of combat action will be basic, as we know, especially in the initial period of a war.

As regards the position taken on the need to increase the armor protection of the basic types of tanks, one must not conclude that it is inevitable that their weight will be increased thereby. Even now we should strive to reduce the weight of tracked combat vehicles, but not at the expense of their combat qualities, because weight still adds to their great resistance to a nuclear explosion, which leads to the broadening of the sphere of their combat utilization.

When we speak of resistance, we mean not only resistance to overturning, but also the ability to withstand all the other factors of a nuclear explosion.

The possibility of increasing the armor and still retaining the same weight of a tank can be illustrated by an example of Soviet tank construction.

Thus, the T-34 tank, which was the best tank of its day, has been replaced by the T-55 medium tank, which has armor and armament more than twice as powerful, with only a 12 percent increase in the weight of the vehicle.

Even now there are certain opportunities to increase further the combat qualities of tanks under conditions of their use in a war employing nuclear weapons without increasing their weight. At the same time, however we strive to reduce the weight of tanks, we should not do so under any circumstances at the cost of weakening the hull of a tank.

The heavy tank: Up to the present some comrades have expressed the thought that it is pointless to produce heavy tanks. We hold a different opinion indeed.

First of all it should be noted that the concept of a "heavy tank" is quite relative. Our T-10 and T-10M tanks with a weight of 50 tons are called heavy, while the American tank M60 that weighs 47 tons is medium. The British 50-ton "Centurion" tanks are also considered medium. The latest models of American and British heavy

tanks weigh 57 tons and 65 tons, respectively, and the well-known heavy "Tiger-B" tank of the former German-Fascist army weighed 68 tons.

Therefore, it seems to us that it is not a question of the name, but of whether we need a type of combat vehicle such as our T-10M tank, or not?

When this question is examined it is helpful to recall the relationship between our tank types during the last war. Statistics show that during World War II we had about 55 percent medium tanks and assault guns (SAU), up to 25 percent light tanks and SAU, and about 20 percent heavy tanks and SAU. Of course, such a high percentage of light tanks existed because of the well-known conditions, and, in particular, because it was possible to build them in ordinary automobile plants.

So far as the production of heavy tanks is concerned, they were produced only out of necessity, because of the harsh demands of war. They were produced despite all wartime difficulties and, as the experience of the last war showed, their production was fully justified.

In our opinion, it is impossible to go only on economic considerations in evaluating the significance of heavy tanks under the new conditions. It is really hard to produce heavy tanks; they require a lot of metal, but for defeating an enemy one cannot skimp with metal. Apparently, in this case, when examining the question of heavy tank production, it is necessary to approach it not only, and not mainly, from a purely economic standpoint, but above all by evaluating military necessity and expediency.

Let us note here that at the present time the percentile relationship of heavy tanks to medium ones (if we consider only the T-10 and T-10M tanks) is in all only about 4 percent. In other words, we actually have only one type of tracked combat vehicle, since the light, reconnaissance amphibious tank is not suitable, it seems to us, for conducting tank battles, and in reality we have so few heavy tanks that any restrictions on their production will reduce their significance in our troops to zero.

The question arises: Do we actually have to limit ourselves to one type of tank and to consider this a normal phenomenon in the development of armored technology?

In our opinion, this must not be done, not only from considerations of ensuring qualitative superiority over the enemy, but also on the grounds that it is essential to broaden the development of designs of tracked combat vehicles.

It is known that the U.S. Army, our probable enemy, has accepted the M60 tank into its armament, and it not only concedes nothing to our medium tank in most respects, but is even superior to the latter in some. For example, the armor protection of the frontal (lobovaya) armor of our T-55 tank hull is 100 mm, and of the American M60 tank, 120 mm. Our tank is armed with a 100 mm gun, and theirs with a 105-mm gun. The muzzle velocity of an armor-piercing shell from our gun is 900 m/sec, and from theirs - 975 m/sec. Our unit of fire is 43 rounds, and theirs - 57. The engine power of the T-55 tank is 580 h.p., and the M60 - 750 h.p. The capacity of our main fuel tanks is 680 liters, and theirs - 1,300 liters.

Our T-55 tank has an advantage over the M60 tank, for example, in the dimensions and weight of the vehicle. This, however, does not give us the right to disregard the definite progress attained by the USA in the construction of medium tanks.

At the same time our T-10M heavy tank is superior to the latest models of foreign medium tanks, including the M60, in a number of basic combat features, especially in firepower and armor, and is equal to them in maneuverability.

Consequently, if we reject the T-10M tank at the present time it can lead to the loss of our qualitative superiority over the tanks of the enemy. Therefore, we should not reject heavy tanks at the present time, particularly the T-10M tank, but on the contrary, it is necessary to arrive at a decision that would again ensure our superiority over the tank technology of the enemy, especially in tank battles and engagements.

It follows that an incorrect selection of the necessary types of tanks will do serious damage to the army. This problem assumes special significance at certain stages in the development of tanks, as the result of general technical progress and the appearance of new methods of conducting combat operations.

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We consider that the main purpose and meaning of the existence of heavy tanks in our army consists of the fact that, having stronger combat characteristics than medium tanks, especially in

firepower and armor protection, they ensure our qualitative superiority over the tanks of the enemy, which is impossible to achieve with medium tanks alone.

The M60 tank that the U.S. Army has adopted is called the "basic combat tank". At the same time, despite its extremely powerful armament and armor, the Americans, as a reinforcing measure, have created numerous tracked assault guns of large calibers (from 155 to 240 mm), with armor giving full protection from bullets and with a special system of anti-atomic defense.

The armament of the newest models of these assault guns is installed in revolving turrets: it has mechanized loading and a fairly large unit of fire. Some of them are so adapted that they can cross water obstacles afloat.

Consequently the American "basic combat tanks" have various and powerful means of reinforcement which have great mobility and cross-country ability, adapted for crossing terrain that is contaminated with radioactive substances. However, the weak armor of the assault guns limits their use in certain types of combat.

Under prevailing conditions our basic (medium) tanks also need means of reinforcement that would be capable of destroying the enemy's tanks at great distances, firing by direct laying and without reducing the maneuverability of the tank troops.

These methods for the qualitative reinforcement of medium tanks can be:

- heavy tanks, greatly superior to medium tanks in firepower and armor;

- assault guns, created both on special chassis and on the chassis of a medium tank, which would have more powerful armament than the latter.

The first way is preferable. The presence of strong armor protection on the heavy tanks increases the possibilities for their combat utilization, compared to the SAU mounted on the chassis of medium tanks, not to mention the assault guns with only bullet-proof armor, especially in a meeting engagement.

Besides, if the final design of a heavy tank exists, new combat vehicles for various purposes can be created on this basis in a relatively short time if the need arises (missile carriers, powerful assault guns, including those using nuclear weapons and others).

Thus, bearing in mind that the enemy has the 47-ton M60 tank and various reinforcing means, we come to the conclusion that in order to ensure superiority over the tanks of the enemy and to strengthen our medium tanks qualitatively, it is necessary for us to have heavy tanks or some other vehicles which have firepower superior to that of the basic tank of the enemy.

The aspiration to reject heavy tanks and to reduce the weight of tanks by reducing the thickness of the armor, will lead inevitably to a sharp decrease in the combat capabilities of tanks and will place our tank personnel in an unequal position in the conduct of a battle with the tanks of the enemy. As has already been pointed out, the weakening of tank armor does not conform with the requirements for anti-atomic protection.

In consequence, if we examine the heavy tank question scientifically, it is essential to study many conditions. Therefore, the decision which is adopted has to be deeply founded to eliminate any possibility of making a mistake in this important question.

Some questions of the organization of tank troops: Lately, as we have already mentioned, there have been statements on the necessity of reviewing the organizational structure of the tank troops. More than that, there are even suggestions that we should reject the concept of "tank troops".

The supporters of the views indicated consider that the mechanization of modern ground troops and their saturation with tanks has somehow led to the fact that there is little difference in the ground troops between motorized rifle divisions and tank divisions, with the result that tank troops nowadays lose their independent significance. For this reason there are proposals to abolish tank divisions, tank armies and the concept of "tank formations".

In stating the concept of creating unified divisions as the basic tactical large unit (soyedineniye) of the ground troops, its proponents have foremost in mind the rejection of tank divisions.

In examining this question the experience of the last war and the economy of the country must be taken into consideration. It appears to us that unified divisions, saturated with tanks, will not be needed everywhere. In many cases, in some theaters of military operations, and in many areas of the West European theater, it will also be possible to have standard motorized rifle divisions with a limited number of tanks, or even without them. If all the divisions are thoroughly saturated with tanks, the economy of the country will be unable to support such a huge tank park. Moreover, the opportunity to mass tanks where it is deemed to be operationally expedient always remains, without their organizational disintegration.

These concepts oblige us to have at least two types of divisions.

It is well known that nuclear weapons have brought about many corrections, not only in combat tactics, but also in military art as a whole. Under conditions of the use of weapons of mass destruction, war will be more mobile with higher rates of advance than formerly, and operations will attain a large scale. All this will call for more frequent and more intensive troop movements than before.

Proceeding from this, some comrades consider that tank divisions do not fully meet specified requirements, and that they are inferior to the motorized rifle divisions in mobility except on the battlefield. In particular, they assert that the motorized rifle division is superior to the tank division on the march, because it is necessary to have strong bridges, heavy ferries, and pontoon bridges for tanks to cross a water barrier, and tanks are supposedly slower than wheeled vehicles and armored carriers, etc. Therefore, in their opinion, all the advantages remain with the motorized rifle division, in a given case.

It is entirely obvious that none of these conclusions is sound. On the march the motorized rifle division has no advantages, and cannot have any, over the tank division, because it has tanks of its own and moves at the speed of the tanks. Because of the presence of tanks in the motorized rifle division it needs bridges just like the tank division, so even in this sphere the motorized rifle division has no advantages of any kind.

Indeed, in battle, as soon as the motorized infantry (motopekhota) leaves the armored carriers, the motorized rifle division will be forced to advance at the speed of infantry (this will sharply curtail its maneuverability and rate of advance), while tank units and sub-units

will have to operate without infantry, because on the battlefield it is impossible to combine the speed of tanks -- 20 km/hr -- with the speed of infantry -- 4 km/hr -- and the power of a protected engine -- 500 hp -- with the strength of a man without any protection.

All combat experience of World War II points to the fact that it was not rifle divisions reinforced with tanks that determined the success of operations, as, for example, French military theoreticians believed, but tank divisions, tank corps, and tank armies.

All those who maintain that the organization of a unified division is more progressive than the organization of our tank divisions, are, in our opinion, bearers of old-fashioned ideas.

The tank division fully justified itself in the last war, and it will justify itself even more under the conditions of a war conducted with the use of nuclear weapons. In examining current problems, one should proceed first of all from the effects of the employment of nuclear weapons. This must be taken as the basis of the organization of the troops. If this is so, and if it seems that no one takes issue with this thesis, then we have to create an organization that will meet all the modern requirements.

Upon thorough examination of this question, one may assert that the inadequacy of the proposed organization of a unified division will be proven by every nuclear explosion. A nuclear explosion will put everything that is on the battlefield out of commission, except the tank crews, who are covered by thick armor. It might be asked, why build illusions and create an organization of troops that is known beforehand not to meet the requirements of modern warfare?

More than once, the Minister of Defense, Marshal of the Soviet Union R. Ya. Malinovskiy, pointed out that in the next war, as never before, there will be an increase in the number of tank meeting engagements and battles. He did not forget to remind us of this during this year's critique of exercises, by pointing out that "meeting battles and engagements will be the most common phenomenon". This is understandable. These battles and engagements will have to be carried out, above all, by our tank troops against the tank troops of the enemy; this is borne out by the fact that they are best adapted for the conduct of battles under nuclear warfare conditions, and that they can engage, most successfully, the enemy tanks. This thesis is upheld by the entire course of World War II, and especially during the engagement at Prokhorovka on 12 July 1943.

During this meeting engagement the blows of the German tank troops were sustained only by our tank troops. It is a fact that the fresh, battle-tested 5th Guards Combined Arms Army under the command of such an experienced warrior as Lieutenant General A. S.Zhadov, not only did not fulfill the order of the Commander of the Voronezh Front, General of the Army N. F. Vatutin, and member of the Military Council N. S. Khrushchev to carry out a joint counter attack with the 5th Guards Tank Army, but did not even hold the lines being occupied. Its corps on the left flank, unable to sustain the onslaught of the German tanks, withdrew quite a distance to the east, and exposed the right flank of the 5th Guards Tank Army, which was already in a difficult situation without this. Despite the conditions that arose, the 5th Guards Tank Army not only closed the right flank with its own tank units, but also detached one brigade to the assistance of the 5th Guards Combined Arms Army. How can we forget these lessons of history now, and propose without foundation or due analysis a new universal division whose combat value appears highly dubious, and reject the tank division which proved itself throughout all of World War II and has not compromised itself yet?

It is perfectly apparent that the conversion to a universal division will lead to the rejection, not only of the tank division, but also of the tank army, and this will lead inevitably to the extensive dispersal of tanks and to the loss of all the advantages which they possess when they are organizationally massed.

In this respect, we consider it quite proper that a lot of attention is directed to the question of a new organization of the troops.

In modern conditions military art does not at all presuppose a universal organization of the basic large units of the ground troops, for it would be hard to combine the combat qualities of the various new types of weapons and combat equipment. On the contrary, it is necessary to create an organizational structure which will provide the most effective ulitization of combat equipment.

Thus, it seems advisable to us to have not one universal type of division, but three types of divisions:

First - a tank division to conduct combat operations under conditions when nuclear weapons are used, to conduct meeting battles with enemy tanks, and as the basic means for carrying out deep strikes on the offensive and repelling enemy strikes on the defensive. Its

organizational development must tend toward the further reduction of personnel not protected by armor and saturation with heavily armored tanks.

Second - a motorized rifle division which should be more or less the same as it is now, maybe even with some reduction in the number of tanks, or else in wartime we may not be able to maintain all motorized rifle divisions at TOE strength in tanks. Besides its general missions that were pointed out in the order of the Minister of Defense for 1961, it can be used to secure general success in the main direction, for performing basic missions in minor directions, and for effecting a firm defense.

Third - a light motorized rifle division without tanks. In our opinion, a division of this type could carry out fast marches in armored carriers over light bridges and crossings, cross contaminated zones without engagement, move by air into the enemy rear or into an area of our strong tank formations to consolidate their successes, conduct stubborn defense of terrain that tanks cannot reach easily, etc. If a division of this type is armed with modern antitank weapons, under favorable conditions it will be able to hold an area or line securely and repel enemy tank attacks. In cases when a division of this type is thrown into an area where we have strong tank formations it can be reinforced with tanks if the necessity arises.

It seems to us that the presence of three types of divisions in the organization of the ground troops will fulfill the requirements presented by modern warfare better than one unified division.

The pronouncements of some of our military leaders that the tank army has outlived itself, and that the time has come to shift to an army of unified organization, are not new. Such conclusions are a direct consequence of the rejection of the tank division and the creation of a single, unified division.

In this connection, it is pertinent to remember that in the history of the development of armored troops there was a sad day when the tank and mechanized corps found themselves disbanded. Everyone knows what consequences this led to.

At the root of such views on the modern tank army is the assertion that it does not differ in any way now from the combined arms army, that in operations, exercise experience shows, it cannot break away from the other forces of a front, and its existence is, therefore,

supposedly not justified in any way.

Such pronouncements are, to say the least, unfounded. The experience of World War II testifies to the fact that all of the most successful operations, not only offensive but also defensive, were won by our troops largely with the participation of tank armies. Tank armies provided the front with wide mobility, power, and depth of strike, developing operations at high tempo.

It is permissible to pose this question to all comrades who espouse the concept of abolishing tank armies: Do they now reject the concept of massed strikes, or is this method of defeating the enemy also obsolete?

If we consider that even now, in the age of nuclear weapons, it is necessary to fight with the fist, then how can we come out against the tank army if its organization already incorporates the principle of massing tanks. We do not wish to go into this question further and introduce other arguments of the superiority of the tank army over the combined arms army in offensive operations, but it seems to us that, to any person capable of objective evaluation, it must be clear that if tank armies played a leading role in the success of operations carried out during the last war, then their role in a future war, more mobile than the last, will increase more and more. The tank army was and will remain the most menacing force to the enemy, especially in a meeting engagement against his tank formations.

The experience of World War II teaches that the utilization of tank troops differed, and will continue to differ, from the use of rifle troops reinforced with tanks. Therefore, the various proposals directed, in actuality, toward abolishing tank troops in their present organization, do not strengthen the ground troops in any way, but push us towards the French tactics which failed completely in the last war. We need powerful and well-organized tank troops - all the experience of the last war speaks eloquently of this, and it is demanded by modern conditions of carrying out combat operations arising as a result of the appearance and development of missile troops and nuclear weapons.