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Trends in the Development of the Tank Troops
of the Soviet Army

by

Army General A. Zhadov

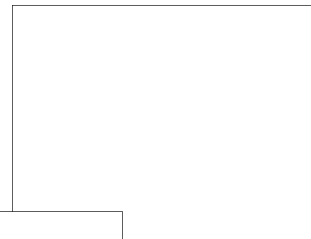
Historically, Soviet military theoretical thought has responded actively and sharply to all problems of military science which have arisen with the appearance of new means of armed combat, technical equipment of armies, change in the organizational structure of the troops, and the methods of employing them in battle and operations.

Recently the pages of our journals on military theory and special research works have carried different opinions on the outlook for the further development of armor technology and on the organizational forms of tank groupings (obedineniye) and large units (soyedineniye) in the composition of the ground forces.

In this respect the article by Marshal of Armored Troops P. Rotmistrov, "Paths for the Further Development of the Tank Troops of the Soviet Army" (Special Collection of Articles of the Journal "Voyennaya Mysl", First Issue, 1951) merits attention. In this article a series of recommendations are made concerning the outlook for Soviet tank construction and the organization of the principal large units of the ground forces which have a definite practical interest.

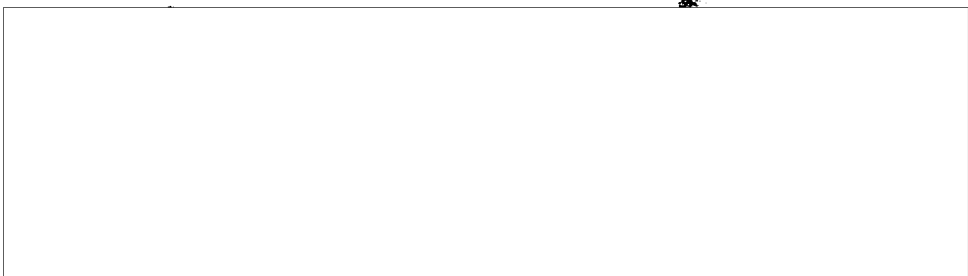
At the same time it must be confessed that the formulation of several questions and the way in which they are elaborated are not convincing.

Marshal of Armored Troops Comrade Rotmistrov gives primary attention in his article to the conditions which determine the further development of tanks, the role of armor protection of tanks in connection with the development of antitank weapons, the significance of heavy tanks, and several questions dealing with the organization of tank troops.



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Let us examine these questions in the same order in which they have been formulated and give our point of view, without claiming to furnish a full exposition of the problems connected with the contemporary development of tanks and the organization of tank troops.

At the present time the basic trends in the development of anti-tank technology have been determined above all by the availability of missile-nuclear weapons and by the nature of a future war as a highly maneuverable one with the broad application of the means of mass destruction. Comrade Rotmistrov speaks about this point correctly in his article.

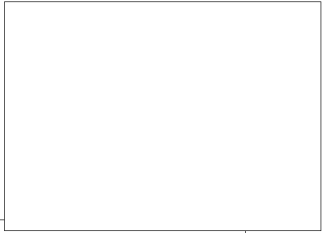
However, it is impossible to agree with his statement that "the tank troops, in close cooperation with missile troops and aviation, will be the deciding power in the ground forces". (p.26)

In our opinion, such a point of view is mistaken.

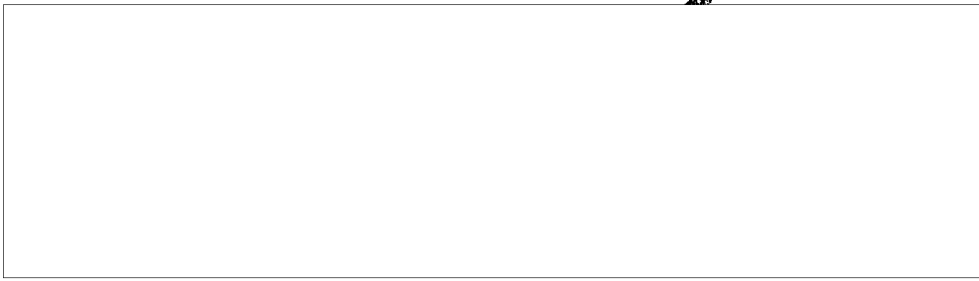
It is well known that large units of combined arms (tank and motorized rifle divisions), other arms of troops, and aviation will, as a rule, successfully carry out their tasks only if the results of missile-nuclear strikes are ably utilized. Specifically, during battles and engagements these strikes will be the main means of destroying the enemy. There is no need to prove the truth of this statement.

The role of tank troops in achieving the goals of a battle, an operation, and of the war as a whole will be great, but this role should be examined from the point of view of effectively utilizing the results of missile-nuclear strikes, for these in the final analysis constitute the principal force for the destruction of the enemy.

At the beginning of his article Comrade Rotmistrov correctly observes that the tank combines three basic combat characteristics: firepower, armor protection, and mobility. However, in the subsequent account, instead of examining all of these questions from the point of view of the nature of a future war, and determining the further paths for perfecting the combat characteristics of tanks, and above all of their armament, the first and foremost promotes the concept of heavy armor plating of tanks.



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Tank armament. The tank is a combat vehicle and its existence is justified if it possesses powerful armament.

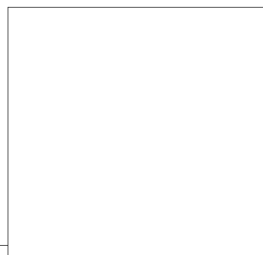
It is well known that during World War II (The Great Patriotic War) the maneuverability of our medium and heavy tanks was significantly superior to the German "Tiger" and "Panther" tanks, but until the middle of 1943 they were inferior in armament. These tanks, which had guns of 75-88 mm., higher muzzle velocity, and greater grazing range, caused great damage to our tanks. However, when our tanks and assault guns (SU) received guns of 85-152 mm. this superiority was practically eliminated.


In the postwar period, with respect to the perfection of tank armament, we have paid more attention to raising the accuracy of fire in motion, armor-piercing capability, and the feasibility of delivering fire at night even under conditions of poor visibility. However, the artillery systems with which our tanks are now armed are not much more powerful than those on our tanks at the end of World War II.

It is true that we have recently developed artillery systems with a muzzle velocity for armor-piercing shells on the order of 1,000 m/sec and greater for rifled guns, and 1,600 m/sec for smoothbore guns. But even these artillery systems, provided for the armament of medium tanks, are only transitional.

An analysis of combat operations and some experience shows that a modern tank should be armed with the most modern (perspektivnoye) missile weapons, which will enable effective destruction at a great distance of any enemy tanks, either moving or stationary. Under contemporary conditions on the field of battle there will also be many other targets, such as self-propelled artillery, protected by armor, armored carriers, armored prime movers, and various targets with light cover which must be annihilated from great distances without expending heavy-caliber artillery shells or missiles in the process. For the destruction of these targets, tanks should have, besides guns or missile systems, other powerful armament, such as heavy-caliber machine guns or small-caliber guns, since the machine guns now on tanks do not enable the destruction of varied and numerous lightly armored and other targets at a distance of 1,500-2,000 m. and more.

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The antiatomic protection of tanks. Together with powerful armament, modern tanks should afford dependable biological protection of the crew from the contaminating elements of nuclear weapons, and mainly from penetrating radiation. Solving this problem only by increasing the thickness of the armor has not proven feasible. The steel armor should guarantee the necessary strength of the hull of the tank against the effects of the blast wave. Dependable biological protection of the crew may be achieved by using a special "lining", which will stop the stream of neutrons, or by building special structures inside the tank into which the crew must be put. The latter require structural changes in the tank, the reduction of the crew to 2-3 men, and the automatization of all processes of the conduct of fire, driving, and communications. The necessary work in this direction is already being carried out.

The armor protection of tanks. In discussing the role of armor protection of tanks, the author strongly attacks those who promote the idea of increasing the maneuverability and transportability of ground forces large units by decreasing the weight and overall dimensions of tracked and other combat vehicles.

Nor do we propose increasing the maneuverability of ground forces large units and units (chast) by sharply weakening the armor protection of tanks and other combat vehicles.

However, in deciding this question there cannot be yet another extreme, which, as a matter of fact, Comrade Rotmistrov advances, defending the necessity of retaining heavy tanks having thick armor.

Ever since tanks became a massive weapon on the field of battle, they inevitably called for the creation of new means of combating them. The competition of armor with projectiles has continued over a period of forty years. In this single combat between armor and antitank fire, as of today the latter has retained the advantage.

Incidentally, this is conceded even in the works of the Academy of Armored Troops which have appeared under the editorship of Marshal of the Armored Troops Comrade Rotmistrov. Thus, in the Collection of the Works of the Academy No. 177, which appeared last year, it is candidly pointed out that the armor protection of tanks lags behind the development of the means of its destruction, and in connection with the appearance of antitank guided missiles, this lag

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has become even greater.

Defending the concept of powerfully armored tanks, Comrade Rotmistrov casts doubt upon the effectiveness of modern antitank guided missiles (upravlyayemy reaktivnyy snaryad - PTURS). Presenting the tactical-technical data of these missiles, which our potential enemies have, he categorically asserts "that their appearance in the family of weapons of mass destruction and tanks does not for the present afford sufficient basis for concluding that it is inexpedient to provide our basic types of tanks with powerful armor protection". (p. 30.)


It is well known that every weapon has its positive and negative sides. For the present even antitank guided missiles have their negative side. However, in appraising these means of combat, Comrade Rotmistrov emphasizes primarily their deficiencies. But this does not detract from the effectiveness of antitank missiles and the broad prospects for their development. They are becoming more and more universal and can be used not only for all types of ground combat vehicles, including tanks, but even against helicopters. It is inconceivable not to reckon with this possibility.

The development of the PTURS, of course, does not mean that tanks have been repudiated. This merely presents us with the problem of searching out new ways of defending tanks from antitank weapons.

It is well known that the KV heavy tank was developed by us before World War II for breaching fortified areas, defense zones, and also for combat with enemy tanks. But in the course of the war our troops usually bypassed fortified areas. Therefore, heavy tanks were used as a means of close support of infantry in breaching strong position defenses, and especially for combat with enemy tanks. As a result of the large amount of metal consumption, the high cost, and their insufficient maneuverability, a very limited number of these tanks were produced during the war. Instead of heavy tanks for combat with assault guns (shturmovoye orudiye) and tanks of the enemy, we began to produce a large number of assault guns (SAU) on the chassis of medium and heavy tanks.

Therefore, our self-propelled and ordinary artillery, and also our heavy tanks, bore the main brunt of combat with enemy "Tiger" tanks and "Ferdinand" assault guns. By virtue of the great weight

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and slight mobility of these enemy vehicles on the field of battle, and in spite of their heavy armor, they were successfully shot up even by our medium tanks armed with 85 mm. guns.

Under modern conditions the problem of breaching enemy defenses will be solved mainly by atomic weapons. And, in general, the type of defense in place used in the last war will rarely occur.

It may now be asked, is there a need for heavy tanks to solve the problem of breaching defenses? Of course not.

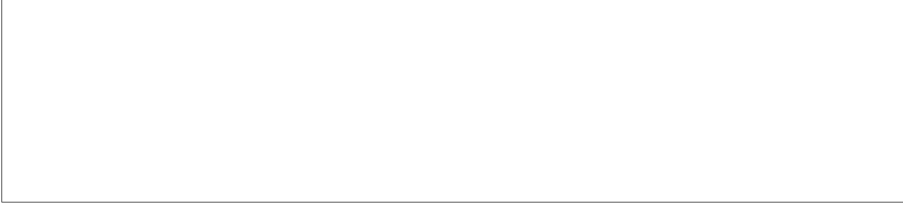
Knowing this, Marshal of Armored Troops Comrade Rotmistrov tries to analyze heavy tanks as a means of qualitatively strengthening medium tanks, reckoning that the latter are inferior in power and armor protection to the medium tanks of our probable adversaries. For this purpose, the American medium tank M-60, the basic tank of the U. S. Army, is compared with our T-55 tank. But the parameters used in this comparison do not give a correct conception of the combat qualities of these vehicles. Nor is it easy to compare an American tank with our T-10M, insofar as the latter is considered a means of qualitative reinforcement of our T-55 tank.

In the case in point, comparisons are made of parameters such as armor protection, unit of fire, engine horsepower, fuel capacity, caliber of gun, and muzzle velocity. For example, the horsepower of the T-55 engine is 580, while the M-60 has a 750 hp engine. However, taking into consideration the relative weights of the two vehicles, the unit power ratings are identical. The fuel capacity of the American tank is twice as great as ours, but the rated cruising range of both tanks is practically identical. As far as the armor protection of our medium tank is concerned, the armor on the turret is significantly thicker than that of the M-60, while the armor protection of the hulls is almost the same.

Despite the somewhat greater caliber and muzzle velocity of the armor-piercing shell of the American tank, in comparison with the armor-piercing shell of the gun on our medium tank it does not enjoy any particular advantage with respect to effectiveness.

In comparing our T-10M heavy tank with the M-60, we see that the armor protection of their hulls is the same, with the exception of the armor on the turrets, where our tank has much thicker armor. In terms of armament, the muzzle velocity of the armor-piercing shells of both

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tanks is identical, and differ only in their caliber. But the presence in the unit of fire of the American tank of a subcaliber projectile (and possibly a shaped-charge shell too) renders it a sufficiently strong weapon for combating our heavy tank. The cruising range of the M-60 is almost twice that of our tank. Both tanks have power plants of identical unit power rating. Consequently, their mobility on the field of battle in moderately rugged terrain is about equal.

As is evident, it is hardly proper to speak of specific advantages of our T-10M heavy tank over the American medium and heavy tanks.

The necessity for having heavy tanks is also based on the fact that the Americans have at their disposal different systems of artillery of 150-240 mm. on tracked chassis, which is a means of reinforcing their medium tanks. Combat with this artillery is supposed to be waged by heavy tanks with the thickest armor protection, as though our medium tanks were not capable of carrying out this combat over great distances. Such claims have hardly any basis.

It seems to us that in order to achieve superiority over the enemy we do not require the production of heavy tanks, which are three times more expensive than the medium tanks and only slightly superior, but rather a sharp improvement of the combat qualities of our medium tanks, primarily the power of their armament.

As we pointed out above, this problem in tank construction has basically been solved successfully already. We now have a medium tank which is not inferior to, and even surpasses, the modern heavy tank in terms of armament, armor protection, and protection against the contaminating elements of nuclear blasts. Moreover, it has a higher rated cruising range and greater maneuverability. New models of such tanks will be armed with artillery systems with a muzzle velocity for armor-piercing projectiles of 1,015 - 1,600 m/sec, which will be capable of piercing the front armor on the American M-60 tank at a range of more than 1,000 m, and the side armor at a distance of 3,000 m.

These tanks are not only not inferior to, but significantly outclass, all known models of foreign tanks with respect to the parameters of rated cruising range, maneuverability, armor protection, and weight.

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Therefore, there is no reason to fear that the repudiation of heavy tanks may entail the loss of our present qualitative superiority over enemy tanks.

But this certainly does not mean that we should immediately remove our modern heavy tanks from the arsenal and have them melted down. In case war should break out, they can be used successfully for fulfilling many combat tasks.


Having called for a scientific approach to the solution of the question of heavy tanks, as we have seen, Comrade Rotmistrov does not propose anything new in the field of tank construction to correspond with the requirements of a possible war, but merely defends the old trend in the development of tanks, leaning solely on the experience of World War II.

Considering exclusively the mobile nature of a future war, the increased role of airborne troops, and the necessity of transferring motorized rifle divisions by air over significant distances for fulfilling combat missions which may arise in the course of an operation, we will require, besides a basic type of medium tank, a light tank with powerful conventional and missile armament.

Our present light tank, the PT-76, has for the present only one quality - it is amphibious. But this tank has such weak armament and large dimensions that it cannot be transported by air. Therefore our efforts should be directed toward designing a light tank which would be powerfully armed and whose weight and dimensions would allow it to be transported by air. At the same time, such a tank should possess tactical mobility which would enable it to cross water barriers afloat, and high speed on the field of battle. Such a tank is highly necessary both for fulfilling reconnaissance tasks and for other types of combat support.

Under modern conditions, a high and reliable degree of destruction of the enemy with missile-nuclear weapons will often permit an attack to be carried out without the infantry having to dismount. This circumstance means that we must have a highly maneuverable armored carrier with a powerful antitank missile weapon and a small-caliber gun or large-caliber machine gun. The design of such an armored carrier should have the necessary antiatomic resistance and should assure biological protection of the personnel inside. Its dimensions should afford the simultaneous transportation of a 10-12 man rifle squad. In connection with this, it is advisable at the

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present time to have a rifle platoon consisting of two squads so that its organizational structure will not be disrupted in movement by armored carriers. It should be emphasized that even in peacetime such a squad would be more spunky and lively.

Marshal of Armored Troops Comrade Rotmistrov very sharply criticizes those comrades who propose new organizational forms of the basic large units of the ground forces. In particular, those comrades who propose the creation of a unified organization of the basic large units of the ground forces are just about viewed as dangerous people who have encroached on such concepts as "tank troops", "tank formations" (gruppirovka), tank armies, and tank divisions. It seems to us that it is incorrect to speak from such positions about people who propose new forms of organization of our troops. Life itself raises problems of perfecting the organization of the troops.

Alluding to the experience of the Second World War, Comrade Rotmistrov declares "that not rifle divisions, reinforced by tanks, decided the success of an operation, as French military theorists thought, but rather tank divisions, tank corps, and tank armies" (p. 34).

It must be stated that Soviet military theorists and practitioners have never propounded the role of tank and combined arms large units during the past war in such a way.

Everyone knows that during the Second World War the success of offensive and defensive operations was decided by precise coordination of rifle large units and groupings, reinforced by artillery and tanks, with tank corps and armies, along with the massive utilization and support of artillery and aviation, and also the constant support of operations by special branches of troops and by the rear area.

Incidentally, neither the Germans nor the Americans, and the French even less so, ever succeeded in achieving such harmonious coordination. On the whole, German reliance on tank troops and aviation proved to be unsound.

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Unfortunately Comrade Rotmistrov's discussions of the experience gained in World War II neglect this side of the question. Ascribing an exclusive role to the tank troops, he introduces as an example the meeting engagement at Prokhorovka on 12 July 1943.

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In his opinion, during this engagement the strikes of the German tank forces were countered only by our tank troops, and specifically by the Fifth Guards Tank Army under the command of Comrade Rotmistrov. The Fifth Guards Army, as he writes, not only did not follow the order of the commander of the Voronezh Front on the joint delivery of a counterthrust, but did not withstand the enemy onslaught, and left the line being held.

It is impossible to agree with such an appraisal of the events. For the delivery of a powerful counterthrust at Prokhorovka, General Headquarters (Stavka) had reinforced the Voronezh Front significantly at the expense of the strategic reserves. In this counterthrust there participated powerful forces of all branches of the troops composing this front, and by their joint efforts (and not merely by the Fifth Guards Tank Army) halted and then threw back to their original position the tank corps of the enemy. We render due credit to the performance of the Fifth Guards Tank Army, which played an important role in delivering the counterthrust. But other armies of the front also played an important role in the execution of this action. To ignore this fact will lead to excessive exaggeration of the role of the tank troops and, in particular, of the Fifth Guards Tank Army.

It is well known that the forces on the Voronezh Front were not able to develop a counterthrust on 12 July because of the extremely complicated situation on the southern face of the Kursk Arc. And in this respect, the task posed to the troop commanders of the front was not fulfilled. Among those who did not fulfill their mission of 12 July was the Fifth Guards Tank Army. Therefore, a one-sided accusation of only the Fifth Guards Army for non-fulfillment of the order sounds clearly unconvincing and unobjective.

As far as the performance of the left flank corps of the Fifth Guards Army is concerned, which Comrade Rotmistrov writes about, it must be stated that on 12 July large units of this corps repelled the blows of superior enemy forces from the line being held. Only towards evening did the enemy succeed, by employing its superiority in tanks, in forcing back one division of the corps a fairly short distance.

In his article Comrade Rotmistrov time and again emphasized the necessity for a scientific approach to the utilization of the experience gained in the last war. At the same time, in discussing the

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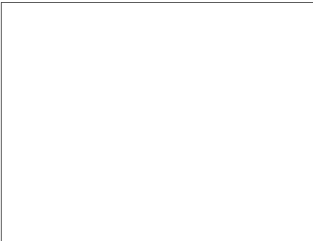
events at Prokhorovka, he definitely digresses from this criterion and attempts to compare incomparable quantities. It is well known that the Fifth Guards Army in the engagement at Prokhorovka did not have tanks and that this substantially limited their combat capability in a battle with a strong tank formation of the enemy. Quite different was the situation of the Fifth Guards Tank Army, which had (together with the attached tank corps) around 850 tanks and assault guns. In evaluating the role of tank corps and armies in operations during the last war, it is impossible to compare mechanically their combat capability with the combat capabilities of rifle divisions, corps, and combined arms armies. Every comparison which lays claim to being scientific should be based on a deep analysis of these and other large units and groupings of troops.


It is generally necessary to state that it is impossible to take isolated examples from the experience of combat operations of the troops during World War II and on the basis of these to draw conclusions about the organization as of the present and the possibilities of basic large units and groupings of the ground forces.

It is quite clear that the most serious and dangerous error which can be committed in using examples from military history for the development of military theory is to attempt to transfer mechanically the experience of the past to the present. In spite of his great experience in military-theoretical research, it seems to us that Comrade Rotmistrov has committed just such an error.

Modern trends in the development of the ground forces consist of continuously equipping them with new technical means of combat. In this respect the relative preponderance of tanks is growing particularly fast. Under these conditions there can be no question of diminishing the role of the tank troops. We can merely consider their most purposeful organizational development.

At the present time we have two types of divisions - motorized rifle and tank - and these afford the requisite maneuverability and the introduction of vigorous and decisive actions into battles and operations. Tank divisions possess great penetrating power which increases their independence in conducting combat operations. They are more mobile and maneuverable and have very high cross-country ability off roads, better resistance against nuclear weapons, and less cumbersome organization than motorized rifle divisions.





However, the experience of many exercises shows that the presence of heavy tank regiments in these divisions reduces their operational maneuverability and complicates the supply problem in the course of battle. Therefore, army tank commanders have made what we believe to be correct proposals on replacing these regiments with medium tank regiments. Heavy tanks would then be placed most purposefully in heavy tank divisions or in separate tank regiments.

Our motorized rifle divisions have fewer tanks than tank divisions, but are superior to them in artillery, and particularly in antitank weapons. Therefore a question arises regarding further perfecting of the organizational forms of both divisions in order to achieve a successful combination of the positive qualities in both.

Nor is it possible to agree with Comrade Rotmistrov concerning the advisability of creating a light motorized rifle division. Judging by the type of missions which are assigned it, and also by its technical equipment, such a division would not differ particularly from the present airborne division.

And now several words about our armies. We do not know who has raised the question of abolishing our present tank armies, as Comrade Rotmistrov conjectures. At the same time, an analysis of the combat capabilities of modern armies and the experience derived from large command staff and army exercises show that a combined-arms army with a composition of two tank and three or four motorized rifle divisions with appropriate missile and special weapons (considering that this army operates in the direction of the main efforts of a front) is not inferior in the number of tanks to a tank army composed of four divisions, and in other factors will be significantly stronger.

A tank army has great penetrating power and great mobility and maneuverability, particularly in operations in areas with a limited number of roads. But under modern conditions the development of an attack at a high tempo creates an extremely difficult situation with respect to the deployment and introduction into an engagement of a tank army. Often a tank army cannot break away from a combined arms army, which also has tremendous mobility. Moreover, the enemy, knowing of the presence of a tank army in a front, searches it out, and having detected it will attempt to destroy or weaken the army principally by strikes of missile-nuclear weapons. This is why we should seriously study the organization and means of combat employment of modern armies in operations. Owing to these and other circumstances,

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we should study profoundly the organizational forms of modern armies.

It is incomprehensible why Comrade Rotmistrov places the necessity for the existence of the tank division, when no one doubts this, in direct dependence on the existence of the tank army. These are two different questions and should not be confused.

There is no doubt that in the last war tank armies and tank corps basically played a fundamental role in the development of operations at high tempos. Under modern conditions high tempos of development of operations will depend mainly on the skillful utilization of nuclear weapons and missile troops. In this respect, not only tank, but also combined-arms armies, must develop high rates of advance. In a number of cases, the latter will have more, not less, tanks than tank armies of four divisions.

In meeting engagements, principally nuclear weapons will play the major role. The success of operations by tank and motorized rifle large units will depend on the skillful utilization of these weapons. Therefore, there is no need to speak of some special exception of tank large units and groupings.

Life goes forward, and our armies are being equipped more and more with the latest means of armed conflict, which requires corresponding organizational development, and we should welcome all generals and officers who work at the solution of this complicated and serious problem.