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CENTRAL INTELLIGENCE AGENCY  
WASHINGTON, D.C. 20505

17 January 1978

MEMORANDUM FOR: The Director of Central Intelligence  
FROM : John N. McMahon  
Deputy Director for Operations  
SUBJECT : MILITARY THOUGHT (USSR): Some Points on  
the Status and Development of Small Arms

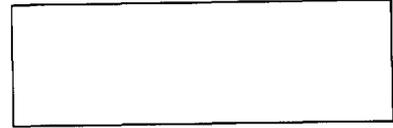
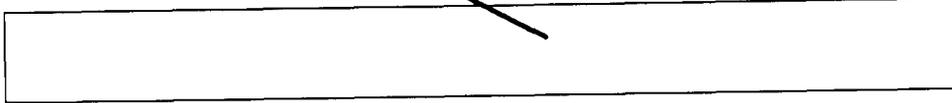
1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". This article sets forth post-World War II developments in the small arms and associated cartridges of the Soviet, US, British, French, and West German armies up to 1965. These developments have consisted in standardizing, increasing the operating reliability, reducing the weight and size, and emphasizing the automatic fire of rifles, machineguns, submachineguns, and side arms and their associated ammunition. The physical characteristics and accuracy of these weapons are compared in tabular form, indicating that Soviet weapons are superior to their counterpart NATO weapons. This article appeared in Issue No. 3 (76) for 1965.

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies. For ease of reference, reports from this publication have been assigned

John N. McMahon

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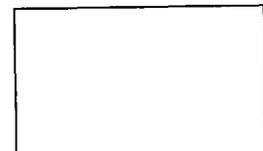
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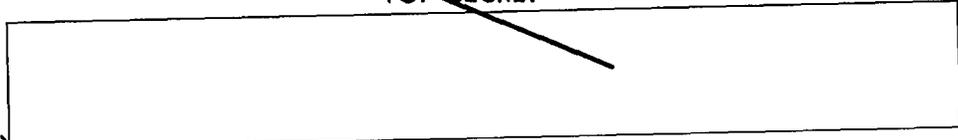
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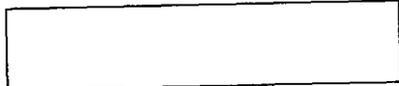
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# Intelligence Information Special Report

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COUNTRY USSR



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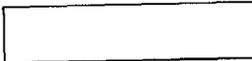
MILITARY THOUGHT (USSR): Some Points on the Status and Development of Small Arms

SOURCE Documentary

Summary:

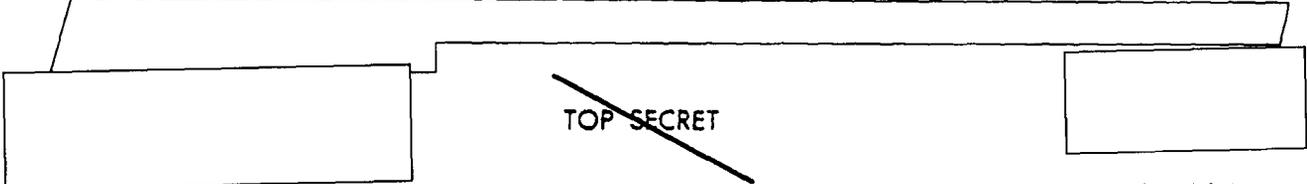
The following report is a translation from Russian of an article which appeared in Issue No. 3 (76) for 1965 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The authors of this article are General-Leytenant of Artillery N. Zhdanov and Engineer Colonel M. Trofimov. This article sets forth post-World War II developments in the small arms and associated cartridges of the Soviet, US, British, French, and West German armies up to 1965. These developments have consisted in standardizing, increasing the operating reliability, reducing the weight and size, and emphasizing the automatic fire of rifles, machineguns, submachineguns, and side arms and their associated ammunition. The physical characteristics and accuracy of these weapons are compared in tabular form, indicating that Soviet weapons are superior to their counterpart NATO weapons.

End of Summary



Comment:

The SECRET version of Military Thought was published three times annually and was distributed down to the level of division commander. It reportedly ceased publication at the end of 1970.



Some Points on the Status and Development of Small Arms

by  
General-Leytenant of Artillery N. ZHDANOV  
Engineer Colonel M. TROFIMOV

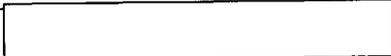
The main function of small arms, as is well known, is to inflict damage on the enemy during close combat, i.e., when the employment of other weapons would entail the risk of striking one's own forces that are in close contact with the enemy forces.

In our opinion, the importance of small arms within the general system of army weapons has changed significantly at the present time in spite of the appearance of new, very powerful means of destruction.

Moreover, the importance of small arms in modern times has even increased because infantry units and battalions, in both offensive and defensive actions, will, much more frequently than before, be forced to operate while dispersed or separated from adjacent units. This, in our view, explains the renewed interest in the development of new models of small arms that we noticed during World War II and throughout all of the postwar years.

As early as the prewar period, equipping the Soviet Army infantry with small arms was based on the principle that success in repulsing an airborne landing force requires, first of all, that the airborne force be destroyed as soon as possible by means of mortar and artillery fire, and cut off from the tanks; secondly, that by aimed machinegun fire, the enemy infantry battle formations be broken up, harassed, and forced down to the ground when approaching the assault line, and, thirdly, that by dense multilayered fire from all types of weapons, particularly automatic weapons, maximum losses be inflicted on the infantry pinned to the ground.

From this has come the necessity of having both small arms capable of rapid and assured destruction of targets by dense automatic fire at close range and also small arms capable of effective fire at medium and long ranges (on the order of 1,000 to 1,500 meters).



The trend of supplying troops with highly mobile and reliable automatic weapons, which became manifest during the last world war and early postwar years, has retained its importance today. At present all countries are devising new models of small arms precisely in this direction. Everywhere ways are being sought of making weapons completely automatic, of making them lighter and smaller, of producing mobile models of weapons that have maximum adaptation for use by airborne troops, etc. In the development of new models of weapons particular attention is being given to their maximum standardization.

The vast number of small arms makes it necessary to simplify their design, to seek ways of reducing their cost, and to ensure the interchangeability of units and parts. All of these trends can be easily seen when examining the modern small arms systems of the principal armies of the world.

Small Arms of the Soviet Army

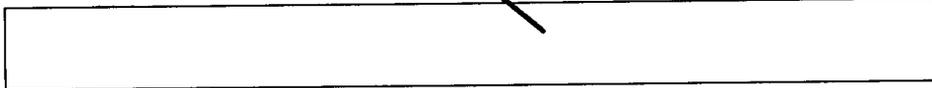
In the development of the weapons system in the postwar period we have assigned major importance to the development of automatic small arms capable of guaranteeing effective automatic fire at the most critical ranges of fire, from 400 to 600 meters. In doing this, we have carefully kept in mind the requirements for weapons standardization, increased operating reliability, and reduction of weight and size.

The modernization of the system of small arms in the Soviet Army was accomplished in two stages, the first stage pertaining to the years 1949-51 and the second to the years 1959-63.

The main problem in the first stage was selecting the cartridge for the future small arms. In 1949, based on combat experience and the results of scientific research work, the new 7.62-mm cartridge, Model 1943, which has a power between that of rifle and pistol cartridges, was accepted for platoon small arms. This cartridge will kill a soldier at ranges of up to 1,500 meters and with full reliability penetrate a helmet or armored vest at ranges of from 600 to 900 meters.

A new cartridge had to be developed because the rifle cartridge had excessive power, which made it difficult to develop for it a new lightweight weapon with good grouping capability.





The insufficient power of the pistol cartridge could not assure effective firing beyond 200 meters. The rifle cartridge would continue to be used for the company and medium machineguns.

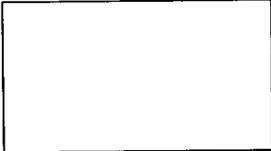
As a result of considerable effort, the Soviet Army as early as 1949 was among the first in the world to have a new small arms system, which at the time consisted of:

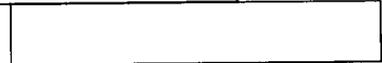
- weapons using the 7.62-mm M1943 cartridge: the Kalashnikov assault rifle (AK), the Simonov semiautomatic carbine (SKS), and the Degtyarev light machinegun (RPD);
- weapons using the 7.62-mm rifle cartridge: the Model 1949 RP-46 company machinegun, the Goryunov modernized medium machinegun (SGM), and the Model 1891/30 sniper rifle.

The side arms developed were the Makarov 9-mm pistol (PM) and the Stechkin 9-mm machine pistol (APS), as well as a new 9-mm cartridge.

After 1949 the development of the small arms system for army platoons proceeded by way of the standardization of models, automation, and substantial weight reduction. In the rifle subunits the Simonov semiautomatic carbine was replaced by the Kalashnikov assault rifle, which has become the principal and sole model of individual weapon in the Soviet Army.

From 1959 to 1963, as a result of modernization, the weight of the assault rifle was reduced to 3.21 kilograms, without sacrificing its high combat and operating qualities. The RP-46 company machinegun and SGM medium machinegun with weights of 13 and 37.5 kilograms respectively, were replaced by the new Kalashnikov machinegun, which uses the same rifle cartridge but weighs only nine and 16.7 kilograms (PK and PKS). It was found to be possible and expedient to replace the RPD light machinegun with the new Kalashnikov (RPK) light machinegun, which is compatible with the Kalashnikov modernized assault rifle (AKM). This RPK machinegun, with the same combat characteristics as the RPD machinegun, is more reliable and weighs much less than the latter. A new Dragunov semiautomatic sniper rifle (SVD) was developed, which uses the rifle cartridge, has a new optical sight, and provides a high rate of combat fire and excellent grouping capability.





Thus, at the present time, the Soviet Army has in service: the Kalashnikov AKM modernized assault rifle and Kalashnikov RPK light machinegun which use the Model 1943 cartridge, and the PK (PKS) machinegun and Dragunov SVD semiautomatic sniper rifle which use the rifle cartridge. The side arm used is the PM 9-mm pistol.

Based on the AKM assault rifle and the RPK light machinegun, models with folding stocks were developed as weapons for the airborne troops.

Modern tanks and other combat vehicles have as their weapons the 7.62-mm Kalashnikov PKT tank machinegun, based on the PK machinegun, and the 14.5-mm Vladimirov KPVT tank machinegun, based on the KPV antiaircraft machinegun.

In their basic characteristics, the new models of small arms in the Soviet Army are considerably better than the small arms of the period of the last war and also better than those of our army in the early postwar years.

Small Arms of the Principal Armies of  
the Capitalist Countries

Considerable work on the improvement of small arms has also been done in the postwar period by the principal capitalist armies. The main problem has been the development of a cartridge for the new small arms.

In England, and then in Spain, attempts were made in the early postwar years to develop for individual types of automatic weapons new cartridges having less power than that of the rifle cartridge (7.11-mm cartridge in England and the SETME cartridge in Spain). However, these cartridges were not accepted into service, apparently because of pressure by the USA, which approximately at the very same period developed its own new cartridge, which subsequently was standardized for all the armies of the NATO countries.

In the US Army, the basis for the development of the new cartridge was that it must be standard for both individual small arms and also for machineguns. In its ballistic and energy characteristics, this cartridge could not be inferior to the old

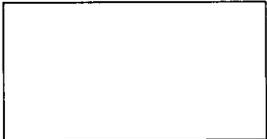




M1 rifle cartridge, but still had to be lighter in weight and smaller in size. In 1953 the USA completed the development of the new 7.62-mm T-65 cartridge, which was named the 7.62-mm NATO cartridge. This cartridge is a rifle cartridge, but is 12.5 millimeters shorter and somewhat lighter than the old American rifle cartridge. This was accomplished primarily by employing spherical-grain powder and by a general improvement of the cartridge design.

The acceptance of the NATO cartridge, which was widely distributed in the armies of the capitalist countries, to a considerable degree determined the subsequent development of small arms in these countries. Two main trends were immediately noticed. The first was to develop new models of small arms of standard caliber using the same NATO rifle cartridge. This was the trend of development in the design concept in the USA, West Germany, and, most recently, even in Japan, where all the main types of small arms have been produced using the NATO cartridge. The second trend involved the development of a small arms system based on two cartridges, the rifle cartridge and the 9-mm Parabellum pistol cartridge, which was accepted into the armies of the NATO countries as the standard pistol cartridge (except in the USA, where the 11.43-mm pistol cartridge has been kept). This trend was followed in the development of the small arms systems in England, France, and a number of other European countries, in which the submachinegun continued to be used as the principal individual weapon together with semiautomatic rifles using the NATO cartridge.

The noticeable principal differences in the development of small arms in the armies of the capitalist countries are evidently due to the fact that the NATO cartridge developed by the Americans, as our studies indicate, has too much power for the individual models of small arms of the automatic rifle type, as a result of which it has not been possible to obtain a rifle with an acceptable grouping capability. As a result of this, and in spite of the fact that the NATO cartridge has been accepted as the standard, a number of countries are continuing to work on cartridges with reduced power and on weapons to use them. In particular, the USA has developed and accepted the new 5.6-mm Remington cartridge and the M16 rifle that uses this cartridge.





Thus, with the acceptance of the NATO cartridge, the problem of developing a single cartridge that is suitable in equal degree for individual automatic weapons as well as for machineguns has not been solved.

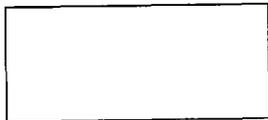
The main characteristics of the foreign cartridges (except the large-caliber cartridges) compared to those of the domestic cartridges are shown in Table 1.

The adduced data show that the 7.62-mm NATO cartridge, in its characteristics, is practically equivalent to our rifle cartridge and differs from it only by its somewhat shorter length (5.5 millimeters shorter) and greater weight (two grams heavier). The new American 5.6-mm Remington cartridge is somewhat inferior to our model 1943 cartridge in muzzle power, but because of the smaller caliber of its bullet, it has less recoil during firing. The 9-mm Parabellum pistol cartridge has nearly the same power as our 7.62-mm pistol cartridge, which was widely used during the last war for firing from the PP-41, PP-43 submachineguns, and the TT pistol.

Small Arms of the American Army

Having accepted the NATO cartridge as a standard for all types of infantry subunit small arms, the Americans in 1956-57 developed and accepted the M60 7.62-mm standard machinegun, the M14 automatic rifle and the heavier variant of this rifle, the M15. With the development of the new models of small arms, the Americans have succeeded in drastically reducing the number of types of weapons in their subunits and substantially reduced their weights, particularly that of the machineguns (by a factor of 1.5 to two).

However, experience in the operation of the M14 rifle has shown that it has extremely unsatisfactory grouping capability during automatic firing, as a result of which it is assigned to US troops only in the semiautomatic variant. The heavier M15 rifle also has not proved itself because of its small magazine capacity. For this reason, in 1962, it was removed from service and, in order to increase the density of fire, it was replaced in each infantry squad by two M14 automatic rifles on bipods. Even today the sniper rifle used in the US Army is the old semiautomatic Garand M1 rifle with an optical sight, and the side



arm used is still the old 11.43-mm Colt pistol.

At the end of 1963, the US Army accepted into service the 5.6-mm M16 automatic rifle for airborne troops and special-purpose units. For the very same purposes, the USA in 1962 had developed the 7.62-mm AR16 and the modernized M14 rifle in which the wooden stock had been replaced by a metal folding stock.

New machineguns were developed in the USA for tanks and armored vehicles. In 1962 the 7.62-mm M73 tank machinegun was accepted into service and replaced the Browning machinegun. The M73 machinegun has a short barrel housing, making it easier to mount the machinegun on the tank; rounds may be fed into the machinegun from either the right or left side; the machinegun barrel can be replaced without removing the machinegun from the vehicle. In 1963 the new 12.7-mm M85 tank machinegun replaced the old Browning M2NV machinegun.

Thus, in recent years the American army has renovated nearly all of its small arms. However, it should be pointed out that with the NATO cartridge as a basis, the USA has failed to solve the problem of developing a mobile and effective automatic individual weapon that satisfies the requirements of modern combat. For this reason the Americans have taken measures to modernize the M14 rifle, to explore other rifle designs, to develop a new 5.6-mm cartridge with reduced power, and to develop a rifle that will use this cartridge. Other work being done with small arms on quite a wide front in the USA is directed toward the same end.

The 11.43-mm M3A1 submachinegun is still being used as an auxiliary weapon for the crews and teams of armored and reconnaissance subunits of the American army.

#### Small Arms of the British Army

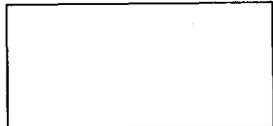
Immediately after the end of the war the great number of different types of weapons, including clearly obsolete and cumbersome models, which used different types of cartridges, compelled the British to engage in serious work on the development of new small arms.

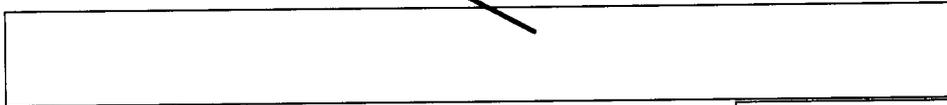


The British-made "intermediate" 7.11-mm caliber cartridge (very similar to the rifle cartridge) and the EM2 rifle developed to use this cartridge were recommended by the British for introduction into service in all NATO countries but met with sharp objection from US specialists, since this cartridge had ballistic characteristics inferior to those of the NATO cartridge.

As a result of this, the British were compelled to give up the trend that they had established in the development of small arms. In 1954 they put into service in their army the Belgian FN-30 rifle (now designated the L1A1), which was developed as an automatic weapon but which, because of its very dispersed bullet grouping pattern, was accepted into service in the semiautomatic variant. For this reason, the British were faced with the necessity of finding ways of providing their infantry subunits with dense automatic fire at short ranges. For this purpose the British kept in use in their army the submachineguns that use the 9-mm Parabellum cartridge, having continued to work on the improvement of these guns. The Sterling L2A3, a new 9-mm submachinegun, was accepted into service in England in 1958. The end result was that the new individual weapon of the soldier in the British Army consisted of the semiautomatic L1A1 rifle, using the NATO cartridge, and the 9-mm L2A3 submachinegun using the pistol cartridge, which in their characteristics are close to the weapons of the World War II period. The same L1A1 rifle, with an optical sight, is used in the British Army as a sniper rifle, and the side arm is a new 9-mm pistol, accepted in 1962, called the High Power (made by Browning), which, under the designation N2MK1, has replaced the 9-mm Browning pistol and the 11.43-mm Colt pistol.

For a long time during the postwar period machineguns in the British Army were not updated. Not until 1962 was the Belgian MAG standard machinegun accepted into service under the designation X15E1. As the fixed weapon for tanks and armored personnel carriers the British Army uses the new X15E1 (MAG) machinegun and the obsolete American 7.62-mm and 12.7-mm tank machineguns.





Small Arms of the French Army

At the end of World War II the French Army had in service a great number of different types of French, British, American, and captured German small arms that used more than 10 different types of ammunition. In the postwar period the French sharply reduced the number of types of small arms and standardized them in every way.

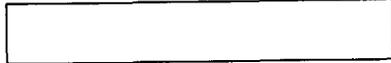
In 1949 the French Army accepted the M49 semiautomatic rifle, which was further modernized in 1956. In 1958 the French accepted the new M58 semiautomatic rifle which, with an optical sight, was used as a sniper rifle.

In 1949 the French Army accepted the new 9-mm MAT49 submachinegun using the Parabellum cartridge. In 1950 the new Saint Etienne M50 pistol, using this same cartridge, was accepted into service.

In 1952 France accepted into service the new M52 standard machinegun (weight 9.5 kilograms with bipod, 20.8 kilograms with mount). In addition, the infantry subunits, from platoon and up, have the 12.7-mm American Browning machinegun. Tanks and armored personnel carriers have the 7.5-mm AA52 machinegun, which is the tank variant of the standard M52 machinegun, and the American 12.7-mm M2NV machinegun.

Thus, the small arms system of the French Army, like the British, is at present based on two cartridges, the rifle cartridge and the pistol cartridge. The submachinegun is retained along with the semiautomatic rifle as the basic individual weapon. The French also have not solved in the postwar period the problem of producing a standardized automatic weapon. The presence in the small arms system of the French Army of the 12.7-mm machineguns (six to a company) which weigh 58 kilograms, reduces the movement capabilities of these subunits. It should be pointed out that, unlike the other NATO countries, France, up to the most recent time, has produced small arms that use the French 7.5-mm rifle cartridge, even though the Army has formally accepted the NATO cartridge.





Small Arms of the West German Army

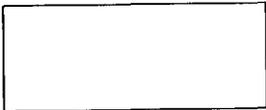
Initially the West German Army used American small arms, but as early as 1960 it began to develop its own system of small arms.

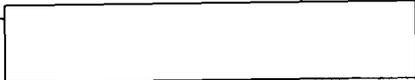
At present the West German Army's small arms system, like that of the US Army, is based on the NATO cartridge. In so doing, the MG-42 of the former German Army remained as the standard machinegun; after it was altered to take the NATO cartridge and somewhat modernized, it was accepted into service in 1959 designated as the MG-42/59 or MG-1. As the principal individual weapon, the Belgian FN-30 automatic rifle was accepted into service in West Germany in 1959. However, in 1960 it was replaced by the new SETME automatic rifle designated as the G-3. This rifle has a bipod and is actually a light machinegun. The attachment of the bipod to the rifle was a necessary measure for the purpose of increasing the grouping capability and effectiveness of fire during automatic firing. The G-3 rifle with optical sight is also used as a sniper rifle. This same rifle, with folding metal stock, is also in service with the airborne troops. The standard side arm in the West German army is the 9-mm R-1 pistol made by the Walther firm; it had formerly been in service in the German Army under the designation of the R-38. The 9-mm MR-2 submachinegun (Israeli model UZI) is used as a weapon for the crews of the armored troops, and for artillery crews and other crews, as well as an auxiliary weapon.

Tanks and armored personnel carriers are armed with the 7.62-mm MG-1 machinegun and the 20-mm HS-820 Hispano-Suiza gun, which was accepted into service in the West German Army in 1959.

Thus the basic small arms system of the West German Army consists of two models, the G-3 automatic rifle on a bipod and the MG-42/59 machinegun, which use the 7.62-mm NATO cartridge. Unlike the American weapons system, consisting mainly of M14 rifles in the semiautomatic variant, all the G-3 rifles in the West German Army are automatic, which emphasizes this army's clearly expressed striving (as with the Hitler army in its time) for mass automatic fire.

It should be noted that the majority of other capitalist countries are also replacing old models of small arms with new,





more modern models. The main trends in the re-equipping of these armies involve the replacement of heavy and light machineguns by standard machineguns, of magazine rifles by semiautomatic or automatic rifles, and the modernization of existing, or development of new, submachineguns and pistols.

In the development of small arms in the armies of the capitalist countries we can distinguish several general and principal features, namely:

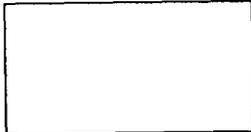
-- the modern systems of small arms of the majority of countries are based on two cartridges, the 7.62-mm NATO rifle cartridge, for which standard machineguns and semiautomatic or automatic rifles have been developed, and the 9-mm Parabellum pistol cartridge, used for submachineguns and pistols. Only in the armies of the United States and West Germany are the basic small arms based on the same NATO cartridge. In so doing, the United States recently has been forced to accept into service a new 5.6-mm intermediate-power cartridge in order to develop a lightweight individual weapon;

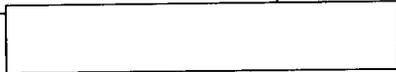
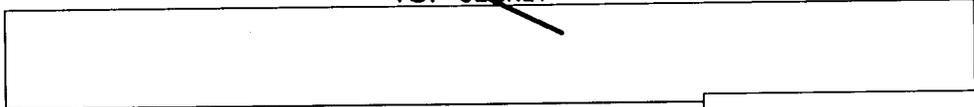
-- all the countries have replaced the cumbersome heavy machineguns, and even the light machineguns with magazine feed, with new standard machineguns with belt feed, which combine the qualities of heavy and light machineguns (on a mount and on a bipod);

-- all the armies of the world have made extensive use of semiautomatic or automatic rifles that use the rifle cartridge, and have completely supplanted the old magazine rifle. In so doing, in order to have completely automatic fire at short ranges, a number of countries have been compelled to keep in their armament, along with the rifles, the 9-mm submachineguns;

-- a characteristic in the development of semiautomatic and automatic rifles is the adaptability of these weapons to fire antitank and HE fragmentation grenades;

-- submachineguns, in spite of the insufficient power of their cartridges to provide the required range of fire, are retained in the weapons systems of a number of capitalist countries, which continue to modernize these weapons by reducing their weight and size.





Comparative Appraisal of Soviet and Foreign Small Arms Models and Systems

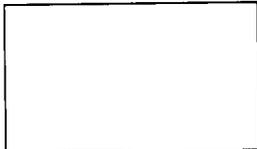
It is very interesting to compare the basic models of Soviet and foreign army small arms. We have specifically compared the American M14 and AR-10 rifles and the M60 standard machinegun, the FN-30 rifle, 9-mm UZI submachinegun, as well as the new 7.62-mm NATO rifle cartridge.

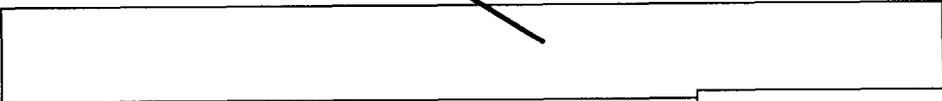
To be sure, the above-mentioned weapon models are far from exhausting the variety of new small arms that have been developed in the different armies in recent years; nevertheless, they can to a certain degree be considered typical of all the modern small arms of the foreign armies, and a comparison of them with our own is of unquestioned interest.

A comparative appraisal of small arms models should best be done according to the types of weapons, namely: standard-caliber machineguns, rifles, automatic rifles, submachineguns, etc. The basic data on these models are given in Table 2.

The modern standard machineguns found in service in the principal armies of the world are quite close to one another in weight and size. Machineguns weigh from nine to 13 kilograms (on bipods) and are 1,100 to 1,250 millimeters long. Keeping in mind the practically equivalent ballistic and energy characteristics of rifle cartridges, we find that in this respect modern common machineguns are virtually equal. Our PK (PKS) machinegun using the rifle cartridge, particularly in the heavy machinegun variant, is three to six kilograms lighter, simpler in construction, and is more reliable in operation, particularly under difficult conditions, than the foreign machineguns. For example, the American M60 machinegun has 37 parts in complete field stripping and there are a total of 390 parts in the entire gun, whereas the Soviet PK machinegun has respectively 17 and 221 parts.

A comparison of the effectiveness of fire of Soviet and foreign machineguns shows that the Soviet PK machinegun is equal to or even somewhat superior to the same type of foreign machinegun, particularly the M60.





A practical concern in the design of foreign machineguns is the use of a lighter chest by making the belt of fabric, the use of an optical sight, and reducing the weight of the belt. All of this is conducive to a general reduction of the weight of the machinegun together with its unit of fire.

Rifles, Automatic Rifles, and Submachineguns

The M14 and FN-30 rifles have a poor grouping capability in automatic fire because of the high power of the NATO cartridge for such a comparatively light weapon. This circumstance forces the armies of the capitalist countries to use these rifles primarily in the semiautomatic variant (England, France), which does not provide the required density of fire at close firing ranges, or to attach bipods to the automatic rifles (West Germany, USA, Japan), which converts them, actually, into light machineguns, thus making them into heavy individual models of weapons.

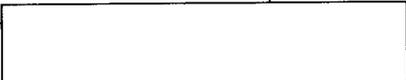
The Soviet AKM assault rifle with the Model 1943 cartridge, when compared to the foreign semiautomatic rifles and submachineguns, more fully satisfies modern requirements both with regard to mobility and density of fire and to providing the required range of effective fire, and, as a whole, is superior to the foreign types of individual small arms.

In weight and size our assault rifle is close to the submachineguns, and much lighter and shorter than the rifles. Comparative data on the effectiveness of fire of our assault rifle and the semiautomatic and automatic rifles and submachineguns of foreign make are given in Table 3.

This table shows that, at 600 meters, the effectiveness of fire of the AKM assault rifle is superior to that of the semiautomatic rifles by a factor of 1.2 to 1.4; up to 400 meters it is equal to that of the automatic rifle with bipod; and is inferior to that of the automatic rifle with bipod only at 600 meters.

The submachinegun, in firing up to 200 meters, has an effectiveness of fire close to that of the semiautomatic rifle, but is considerably inferior to that of the AKM assault rifle and of the rifles when firing at ranges beyond 200 meters.





The Light Machinegun

The RPK light machinegun, using the Model 1943 cartridge, has no counterpart model in foreign armies. For this reason it must be compared to the standard machineguns (on bipods) or to the automatic rifles, which, when mounted on bipods, are essentially light machineguns.

In such a comparison, the advantage of our light machinegun over the standard machineguns with respect to weight and mobility characteristics becomes immediately apparent. With the same units of fire, the RPK is equal in this respect to the foreign automatic rifles. Comparative data on the effectiveness of fire of the RPK machine gun and the standard machineguns and automatic rifles are given in Table 4.

The data in the table show that the RPK machinegun is close to the automatic rifles in effectiveness of fire when firing at ranges of up to 500 to 600 meters, but is inferior to them at greater ranges. If we compare the RPK light machinegun with the PK machinegun and with the standard machinegun of the foreign armies, we see that the RPK is inferior to the others in effectiveness of fire beginning at a range of 400 meters. This is not due to design deficiencies of the machinegun, but rather to the ballistic characteristics of the Model 1943 cartridge which, while providing a great advantage to the individual weapon, reduces the effectiveness of fire of the light machinegun at the longer ranges.

Sniper Rifles

In basic combat characteristics, including their effectiveness of fire, the sniper rifles of modern armies are very close to each other. In contrast to the magazine rifles employed as sniper rifles during World War II, at present all the principal armies of the world have in service a semiautomatic sniper rifle which provides greater convenience for sniper firing.

In comparing the average weight loads per soldier for small arms in the various armies, we are forced to make the associated calculations based on the units of fire of our army, since, in a number of cases, the actual units of fire carried in the foreign



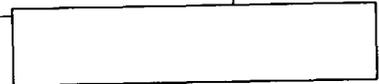
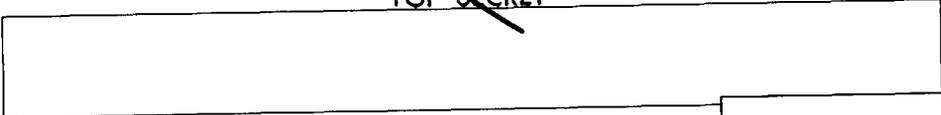
armies are not known to us. With allowance made for what has been said, the average weight load (weapon plus unit of fire of cartridges being carried) per man amounts to: in the Soviet Army -- 7.2 kilograms, in the US Army -- 9.3 kilograms, in the West German Army -- 10.9 kilograms, and in the French Army -- 8.5 kilograms.

Judged on the basis of these data, the weaponry of the Soviet Army is the lightest. This has been achieved by the use in our army of the 7.62-mm Model 1943 cartridge and the development for it of an automatic rifle and a light machinegun, which have made it possible to substantially lighten the weight of both the individual weapon itself and also the unit of fire carried with it.

In an appraisal of the small arms of one army or another, a comparison of just the different models of a weapon is not enough, even though it may be carried out involving a great number of characteristics. In addition to the types of weapons and their combat and operating characteristics, we must take into account the quantitative relationships of the different types of weapons in the subunits of this or that army. Only the integrated consideration of these matters will give us the total picture of the positive and negative features of the small arms system of an army. This question is best solved by the appropriate specialists.

#### Main Trends in the Development of Small Arms

Those automatic and semiautomatic rifles that have been issued in foreign armies are relatively heavy and cumbersome. Moreover, the automatic rifles do not have the required grouping capability during automatic fire, and the semiautomatic rifles do not provide the necessary rate of fire. For this reason the foreign armies, particularly the US Army, are conducting intensive work on the improvement of the existing rifles, the development of new cartridges, and the designing of weapons to use these new cartridges. One particular effort is the development of a cartridge and weapon with 5.6-mm caliber. In addition to the 5.6-mm M16 and AR18 rifles, in 1963 a standardized small arms system, designated the Stoner 63, was developed for this cartridge.



The press mentions research in the USA on a new type of individual weapon which has been designated the SP1W and combines the properties of the rifle and the grenade launcher. Among the radically new trends of work abroad, we can point out the attempts in the USA to use lasers for these purposes.

The Soviet Army is also conducting work on the further improvement of small arms. This work is aimed at increasing the effectiveness of fire (particularly of assault rifles), improving the mobility of the weapon, and also the further standardization of weapons and improving the technology of their industrial production. These problems are being solved both by developing new models of small arms using the existing cartridges and also by seeking new designs for cartridges which would afford the possibility of developing small arms with superior combat characteristics.

The rapid progress of technology and the associated changes in the tactics of modern warfare necessitate a constant attention to the problems of improving and developing small arms.

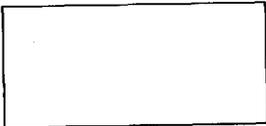
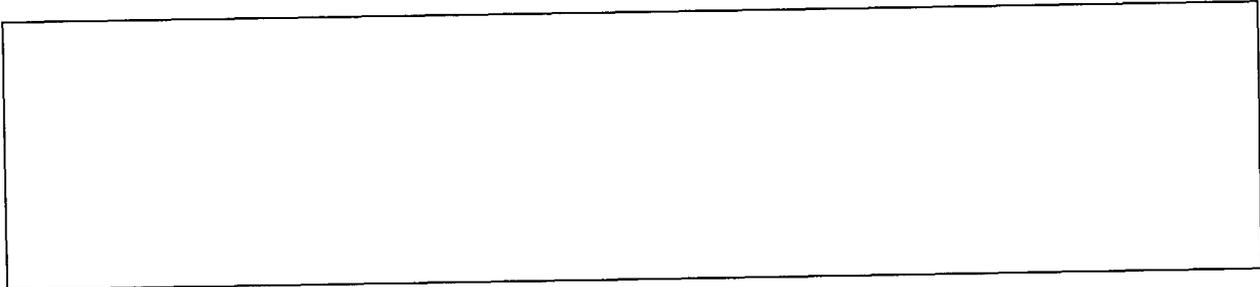


Table 1

Country	Type of Cartridge	Caliber, millimeters	Cartridge length, millimeters	Weight of cartridge, grams	Weight of bullet, grams	Muzzle velocity, meters/second	Muzzle energy, <sup>2</sup> kilogram/meter
NATO Bloc Countries	NATO rifle cartridge	7.62	21.0	24.8	9.3	810	314
	Parabellum pistol cartridge	9.9	29.0	12.4	8.0	310/320	48/59
USA (besides the NATO cartridge)	Remington cartridge	5.6	57.3	11.7	3.55	1006*	182
	Pistol cartridge	11.43	32.4	21.4	15.2	250/275	48/59
USSR	Rifle cartridge	7.62	76.5	21.5	9.8	825	333
	Model 1943 cartridge	7.62	55.5	16.4	7.9	715	206
	New pistol cartridge	9.6	25.1	9.7	6.1	315	31
	Old pistol cartridge	7.62	34.8	10.6	5.5	300	70

\* According to other data, 900 meter/second

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Table 2

Country and Model of Weapon	Caliber, millimeters	Weight of Weapon, kilograms	Magazine Capacity, rounds	Length of Weapon, millimeters	Muzzle Velocity, meters/sec	Horizontal Range, meters
USSR						
AKM Assault Rifle . . . . .	7.62	3.1	30	870	715	1,000
RPK Light Machinegun . . . . .	7.62	5.6/5.0*	75 and 40	1,040	745	1,600
PK(PKS) Machinegun . . . . .	7.62	9/16.7**	100 and 200	1,200	825	1,500
Sniper Rifle . . . . .	7.62	4.3	10	1,225	830	1,300
USA						
M14 Rifle . . . . .	7.62	4.15	20	1,127	840	1,000
M60 Standard Machinegun . . . . .	7.62	10.8/19.6	100	1,100	840	1,400
Sniper Rifle M1C and M1D . . . . .	7.62	4.65	8	1,171	853	1,000
M16 Rifle . . . . .	5.6	2.9	20	990	1,006(960)	460
Great Britain						
L1A1 Rifle . . . . .	7.62	4.2	20	1,125	830	600
L1A2A3 Submachinegun . . . . .	9.0	2.7	34	710/482	390	150
X15E1 Standard Machinegun . . . . .	7.62	10.8/22.8	50 and 250	1,250	840	1,800
France						
M58 Rifle . . . . .	7.5	4.1	10	1,020	820	400/500
MAT49 Submachinegun . . . . .	9.0	3.5	32	660/450	390	200
M52 Standard Machinegun . . . . .	7.5	9.5/20.6	50 and 200	1,166	820	1,200
12.7mm M2HB Machinegun . . . . .	12.7	58	110	1,650	895	1,800
West Germany						
G-3 Rifle . . . . .	7.62	4.38	20	1,020	800	1,000
MP-2 Submachinegun . . . . .	9.0	3.7	25	650/468	390	200
MG-1 Standard Machinegun . . . . .	7.62	9.2/21.6	50 and 250	1,095	820	1,200

Notes:

- \* With magazines holding 75 rounds and 40 rounds, respectively.
- \*\* Weight of standard machineguns with bipod and mount, respectively.

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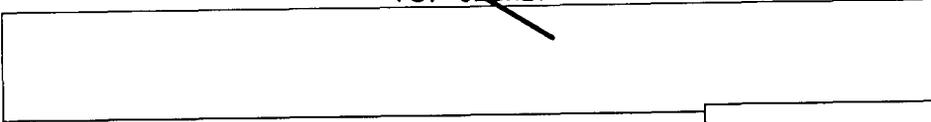
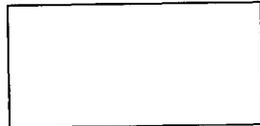


Table 3

Country	Weapon	Mathematical Expectation of Number of Target Hits (No. 7 Target) At Various Ranges Per Minute		
		200 meters	400 meters	600 meters
USSR	AKM Assault Rifle . . . . .	12.3	4.1	1.2
USA	M14 Semiautomatic Rifle . .	10.1	3.0	1.0
	M14 Automatic Rifle . . . . .	10.8	4.1	1.6
West Germany	Automatic Rifle . . . . .	10.5	4.0	1.5
France	M58 Semiautomatic Rifle . .	9.3	2.7	0.9
	MAT49 Submachinegun . . . . .	8.8	0.4	---



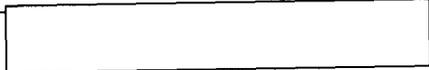
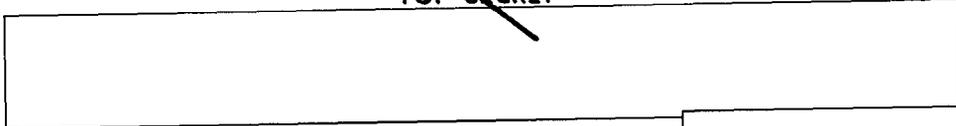


Table 4

Country	Weapon	Mathematical expectation of number of target hits per minute (No. 2 Target) firing at various ranges				
		200 meters	400 meters	600 meters	800 meters	1,000 meters
USSR	PK Machinegun . . . .	13.4	6.42	2.78	0.99	0.382
	RPK Light Machinegun	13.5	4.75	1.42	0.58	0.132
	M60 Standard Machinegun	13.0	6.23	2.7	0.96	0.35
	M14 Automatic Rifle On Bipod	10.8	4.1	1.6	0.63	0.204

