Chapter IX

CONDUCT OF FIRE WITH THE RIFLE

General instructions

140. For successful accomplishment of the mission in combat, you must:
— continuously observe the battlefield;
— quickly and correctly prepare data for firing;
— skillfully conduct fire at all possible targets in various conditions of the combat situation, both day and night. Use concentrated, sudden fire to defeat group targets and the most important individual targets.
— observe the results of firing and skillfully adjust it;
— monitor ammunition expenditure in combat and take measures to be resupplied in a timely manner.

Observing the battlefield and target designation

141. Observation is conducted for the purpose of timely detection of the disposition and activities of the enemy. In addition, in combat it is necessary to observe for the commander's signals and signs, and for the results of one's own fire.

If the commander has not issued special instructions, soldiers conduct observation in their assigned firing sector to a depth of 1000 meters.

142. Observation is conducted by the unaided eye. Pay special attention to covered approaches during observation. Examine the terrain from right to left, from near objects to far objects. Conduct the inspection carefully, since insignificant indicators can facilitate detection of the enemy. Such signs might be a flash, a noise, the rattling of the branches of trees or bushes, the appearance of new small objects, changes in the location and form of local objects, and so on.

If binoculars are available, use them only for a more careful study of individual objects or sectors of terrain. Take measures to ensure that the reflection of the binocular lens does not give away your own location.

At night the location and actions of the enemy can be determined by sounds and sources of light. If the terrain in a desired sector is illuminated by a rocket or other source of illumination, quickly inspect the illuminated sector.

143. It is necessary to report immediately any targets detected on the battlefield to the commander, and correctly indicate their location. The target is indicated by an oral report or tracer bullets.

The oral report should be brief, clear, and concise. For example, "**Straight ahead, broad bush, to the left–machine gun;**" "**Reference point 2, two fingers right, under bush–observer.**"

When identifying a target with tracers, fire one or two short bursts in the direction of the target.

Target selection

144. The most typical targets for rifle fire are machine gun and gun crews, riflemen, or individual figures who are firing from various positions, and also personnel in trucks, on motorcycles, and so on. In addition, fire is conducted from this rifle at aerial targets. Targets on the battlefield can be stationary, fleeting, and moving.

145. As a rule, the rifleman conducts fire in battle as part of a squad or platoon, destroying targets assigned to him by the commander. Therefore he should attentively listen to and precisely carry out all commands.

146. If a target is not assigned to the rifleman for destruction in battle, he selects one himself. The first burst should destroy the most dangerous and important targets, for example, a machine gun or gun crew, or enemy commanders or observers. Of two equally important targets, select the closest and most vulnerable first. Upon the appearance during firing of a new, more important target, immediately shift fire to it.

Sight selection and aimpoint

147. For selection of the rear sight setting and aimpoint, it is necessary to determine the range to the target and to consider the external conditions that might influence the range and direction of the bullet's flight. The sight setting and aimpoint are selected with consideration that during firing, the mean trajectory will pass through the center of the target.

As a rule, the rear sight is set at 3 or "П" when firing at ranges up to 300 meters, using the bottom edge or center of the target as an aimpoint if the target is tall (running figures, and so on).

When firing at ranges in excess of 300 meters, the rear sight is set according to the range to the target, rounded to the nearest hundred meters. As a rule, the middle of the target is used for the aimpoint. If the situation does not permit changing the rear sight setting, depending on the range to the target, and up to the limit of battle-sight range, fire with the rear sight set at battle-sight setting, and aim at the lower edge of the target.

148. The range to targets is determined by visual estimation. The range to targets and local objects is determined by portions of terrain that have firmly registered themselves in visual memory, by degree of visibility, and by the apparent magnitude of targets (objects), and also by a combination of both methods.

During determination of range by visual estimation, some familiar distance that has become firmly entrenched in visual memory is required, for example 100-, 200-, or 300-meter sectors, mentally overlaid from you to the object (target).

During determination of range by degree of visibility and apparent magnitude of objects (targets), compare the visible magnitude of the target with the visible sizes of given targets at specific distances that have been imprinted in your memory.

If a target is detected close to an orientation point or local object, the range to which is known, consider its distance from the orientation point during the estimation of the range to the target.

The range to illuminated targets is determined in the same fashion at night as during the day.

149. During the determination of range by visual estimation, take the following into consideration:
- — with an increase in range from the rifleman, the apparent magnitude of a sector of terrain gradually diminishes in perspective;
- — hollows, ravines, brooks, and so on, that intersect the axis to the local object or target conceal (reduce) the range;
- — small objects (bushes, rocks, individual figures) seem farther away than larger objects (forest, hill, column of troops) at the same range;
- — bright-colored objects (white, orange) seem closer than dark-colored objects (blue, black, brown);
- — a single-color, single-form terrain background (meadow, snow, plowed field) sets objects located on them apart and brings them closer if they are of a different color, and, conversely, a motley, variegated terrain background masks objects located on them and makes them seem farther away;
- — distances seem magnified on an overcast day, in rain, at dusk, in fog, and, conversely, distances seem reduced on a bright sunny day;
- — visible objects seem to be closer in hilly terrain.

150. A significant deviation of external conditions from tabular (normal) conditions changes the range of the bullet or deflects it to the side from the plane of fire. An air temperature of +15° C [59° F], absence of wind, above-sea-level elevation, and gun-target angle of not more than 15° are considered tabular firing conditions.

151. Deviation of the air temperature from tabular (+15° C) causes a change in the range of the bullet's flight, increasing it during summer conditions and reducing it in winter. The range of the bullet is increased insignificantly during summer firing conditions; therefore do not make a sight adjustment or change in aimpoint. The range of the bullet during winter firing (in low temperature conditions) decreases by a significant magnitude (50-100 meters) at ranges above 400 meters. Therefore it is necessary to select an aimpoint on the upper edge of the target during air temperatures above –25° C [–13° F], and increase the sight setting by one mark in air temperatures below –25° C.

152. Corrections in the sight setting for increasing elevation above sea level and for the gun-target angle are considered only when firing in mountains, if the range to the target exceeds 400 meters.

153. A crosswind significantly influences the flight of the bullet, pushing it to the side. Correction for a crosswind is computed by shifting the aimpoint in target figures or in meters. The calculation of aimpoint shift is made from the middle of the target toward the side from which the wind is blowing.

154. The magnitude of correction for a moderate crosswind (4 m/sec) in meters and human forms is indicated by the following table.

Firing range in meters	Moderate (4 meters per second) 90° crosswind	
	Correction	
	in meters	in human forms
100	-	-
200	.2	.5
300	.4	1
400	.8	1.5
500	1.4	3
600	2.0	4

Double the tabular correction for a heavy wind (8 meters/second) blowing at right angles to the direction of fire. Halve the tabular correction for a weak wind (2 meters/second) or moderate wind blowing at an acute angle to the direction of fire.

When to commence firing

155. The moment for opening fire is determined by the commander's command "**Fire**." When firing is being conducted independently, the timing depends on the situation and the position of the target.

The most favorable moments for commencing fire are: when the target can be defeated suddenly from close range; when the target is clearly visible; or when the target is clustered, exposes a flank, or stands up to full height.

A sudden fire attack on the enemy, especially from the flank, has a stunning effect and inflicts a greater defeat on him.

Conduct of fire, observation of results, and adjustment

156. When conducting fire, the rifleman should attentively observe the results of his fire and adjust it.

Observation for the results of fire is conducted by ricochets, bullet tracers, and enemy conduct.

Adjustment of fire is accomplished by shifting the aimpoint in height or lateral direction or changing the rear sight setting. The aimpoint is shifted by the magnitude of deviation of the ricochets or tracers to the side opposite their deviation from the target (Figure 83). If the range deviation from the target exceeds 100 meters, the rear sight setting should be changed by one graduation. To adjust fire by tracers, it is necessary to fire with conventional and tracer bullets in a relationship of three conventional rounds to one tracer round.

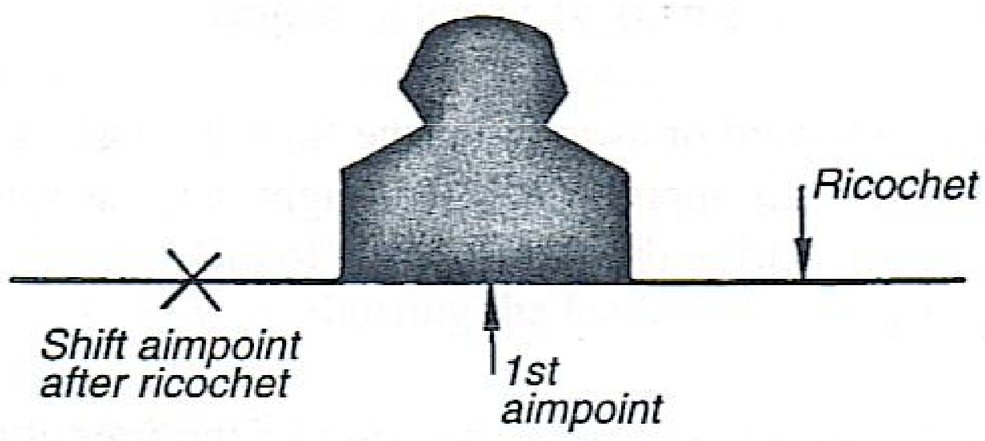

Figure 83. Shift of aimpoint

157. Indicators that point to the effectiveness of one's fire can be: enemy losses, his transition from running to crawling, the breakup and dispersion of a column, weakening or ceasing of enemy fire, or his withdrawal or movement to cover.

Firing at stationary and fleeting targets

158. Fire at a solitary, clearly visible target in short or long bursts, depending on the importance of the target, its size, and the range to it. The more dangerous or more distant the target, the longer should be the burst. Fire is conducted until such time as the target is destroyed or no longer visible.

159. When firing at fleeting targets, the time of commencing fire is determined by the appearance of the target. To defeat a fleeting target, take note of the place of its appearance, quickly prepare for firing, and open fire. The rapidity of commencing fire has decisive significance in defeating the target. If the target takes cover during preparation for firing, refine the lay and open fire when it appears again.

When firing on a repeatedly appearing target, keep in mind that it can appear in a new place. Therefore, its defeat will depend on attentiveness in observation, rapid preparation for firing, and opening fire.

Defeat a fleeting target with a rapid succession of bursts of fire.

160. Fire at a group target consisting of clearly visible individual figures by successively shifting fire from one figure to another.

161. Fire at a broad target consisting of not clearly visible or camouflaged figures, and an individually camouflaged target, with successive shifts of aimpoint from one flank of the target (camouflage cover) to the other.

162. Fire at attacking enemy personnel at ranges of 100 meters and closer in long bursts, distributing the fire across the front of the target.

The dispersion of bullets across the front during firing is achieved by angular displacement of the rifle along the horizon. The rapidity of the angular displacement of the rifle during firing with the dispersion of bullets across the front depends on the firing range and the required density of fire. In all cases, the density of fire should be not less than two bullets into each meter of target frontage.

Firing at moving targets

163. When the target is moving toward or away from the firer at ranges not exceeding battle-sight range, fire with the rear sight set at the appropriate battle-sight range setting. At ranges that exceed the battle-sight range, fire with a sight setting that corresponds to the range at which the target might be at the moment of commencing fire.

164. When firing at targets moving at an angle to the plane of the firer, it is necessary to select an aimpoint in front of the target and at the distance from it that the target will move during the time of the bullet's flight. The distance the target displaces during the bullet's time of flight is called the **lead.** Lead for a moving target is selected in target forms or in meters.

165. To determine the lead for firing at targets moving at an angle of 90° to the plane of the firer, be guided by the following table.

Firing range in meters	Target, running with speed of 3 meters per second (approximately 10 kph)	Motorized target, moving with speed of 6 meters per second (approximately 20 kph)
	Lead (rounded off)	
	in human forms	in meters
100	1	1
200	2	2
300	3	3
400	4	4
500	6	6
600	8	9

166. Fire at a target that is moving at an angle to the plane of the firer is conducted by means of tracking the target or by anticipating the target (a fire attack).

When conducting fire by the **tracking method,** the rifleman, moving his weapon in the direction of target movement, fires at the moment of most correct lay, in short or long bursts depending on the firing range and speed of target movement.

When conducting fire by the **target anticipation method** (fire attack), the rifleman aims at a selected point in front of the target. When the target approaches this point at the magnitude of one and one-half or two tabular leads, the firer, firmly holding the rifle, fires a long burst. Subsequently, if the target was not destroyed, he selects a new aimpoint in front of the target and upon the target's approach to this point at the magnitude of required lead, he fires another long burst, and so on.

167. When the target is moving at an acute angle to the plane of the firer, the lead selected for the tracking method is one-half that indicated in the table. The lead selected for the target anticipation method is the same as in the table.

168. The employment of tracer bullets when firing at moving targets ensures the best observation of the results of firing, and the possibility of adjusting the lead.

169. Fire at enemy personnel in armored transporters, trucks, or motorcycles is conducted with conventional and armor-piercing incendiary bullets (at a ratio of 1:1, or other ratio depending on the availability of cartridges with the indicated projectiles).

Firing at aerial targets

170. Rifle fire at aircraft and parachutists is conducted as a part of the squad or platoon at ranges up to 500 meters with the rear sight set on 3 or "II."

Open fire on aircraft only on the commander's order, and at parachutists on command or independently.

Fire at aircraft with armor-piercing incendiary bullets, and in their absence–with conventional bullets. Fire at parachutists with conventional ball ammunition. Use tracer bullets for adjusting fire.

171. Fire continuously at aircraft diving toward the firer with the rear sight set at 3, aiming at the front portion of the target or sighting the rifle along the barrel. Open fire at a range of 700 to 900 meters.

172. Fire at an aircraft flying to the side or above the rifleman with the barrier or tracking method.

The barrier method of fire is employed against low-flying aircraft that have a speed greater than 150 meters/second [335 miles/hour].

During the conduct of fire by the **barrier method,** the fire of the squad or platoon is concentrated on command of the commander on the movement axis of the approaching aircraft (Figure 84). The rifleman brings his rifle to the axis indicated in the command, holds it at an elevation angle of 45°, and opens fire, maintaining his rifle on the assigned axis. Firing continues until the aircraft departs the zone of fire. If the rifleman clearly sees his tracers near the target, without ceasing fire, he is permitted to move his rife toward the target in order to bring his tracers into the target.

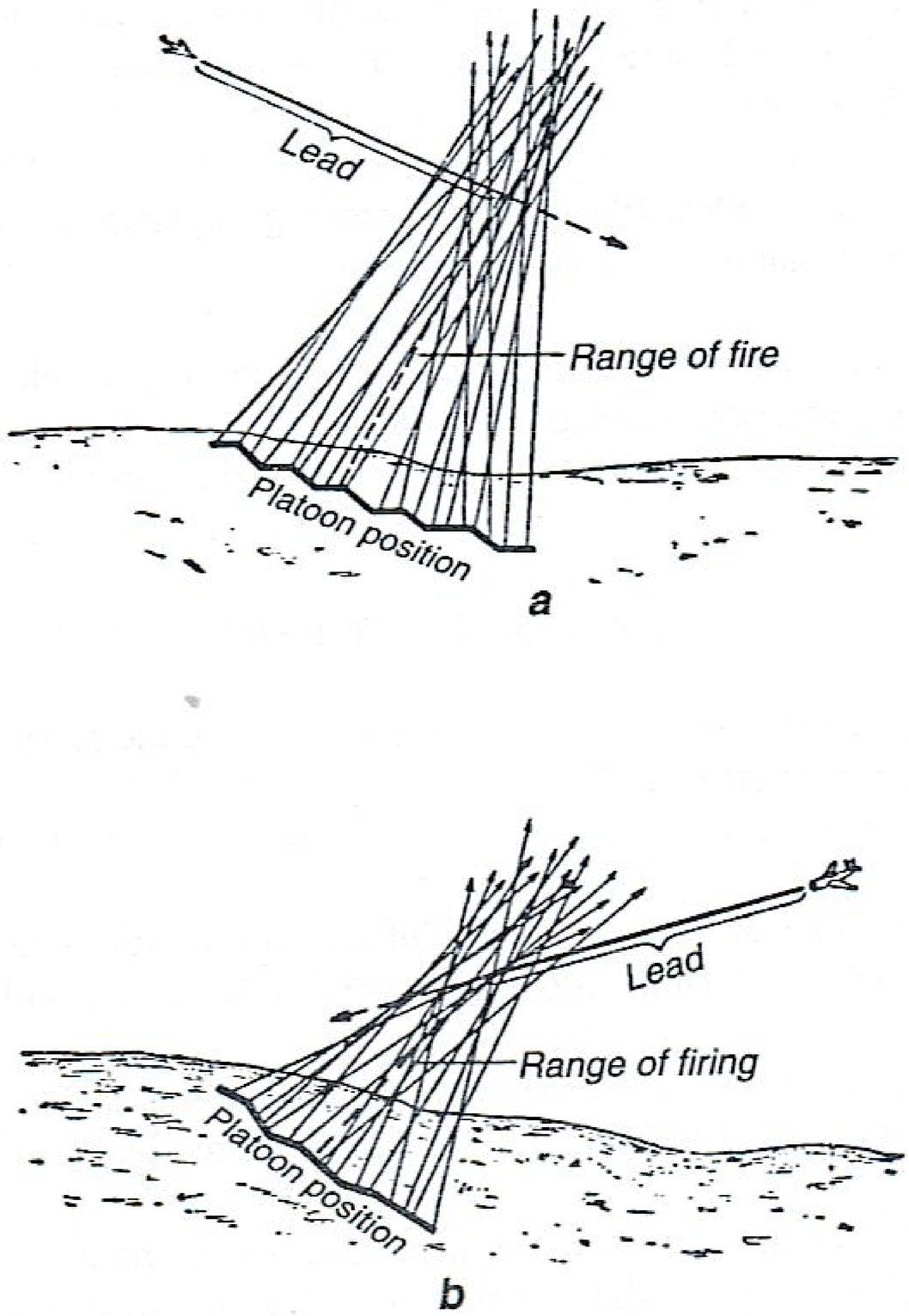

Figure 84. Barrier fire at an aircraft

a - moving along the front of the platoon's position
b - moving at an angle to the front of the platoon's position

When adjusting fire with tracers, keep in mind that tracers directed at the aircraft appear to the firer to be going above the aircraft and somewhat in front of it.

Conduct fire at slow-flying aerial targets—helicopters, transport aircraft—by the **tracking method.** The lead is determined and calculated in visible target forms. When conducting fire by the tracking method, the rifleman holds the line of aiming in front of the aircraft at the required magnitude of lead and fires a long burst.

173. Use the following table for guidance in determining the magnitude of lead when firing at aerial targets.

Type of aircraft and speed	Firing range in meters					
	100		300		500	
	Lead					
	in meters	in aircraft fuselages	in meters	in aircraft fuselages	in meters	in aircraft fuselages
Helicopter 50 m/sec	8	1	25	3	50	6
Transport 100 m/sec	15	1	50	3	100	6

174. Fire is conducted in long bursts at parachutists. The aimpoint is shifted in the direction of the parachutist's descent at the magnitude indicated in the table below.

Firing range in meters	100	200	300	400	500
Aimpoint shift in parachutist forms	under feet	1	2	3	4

The calculation of lead is made from the middle of the parachutist's form (Figure 85).

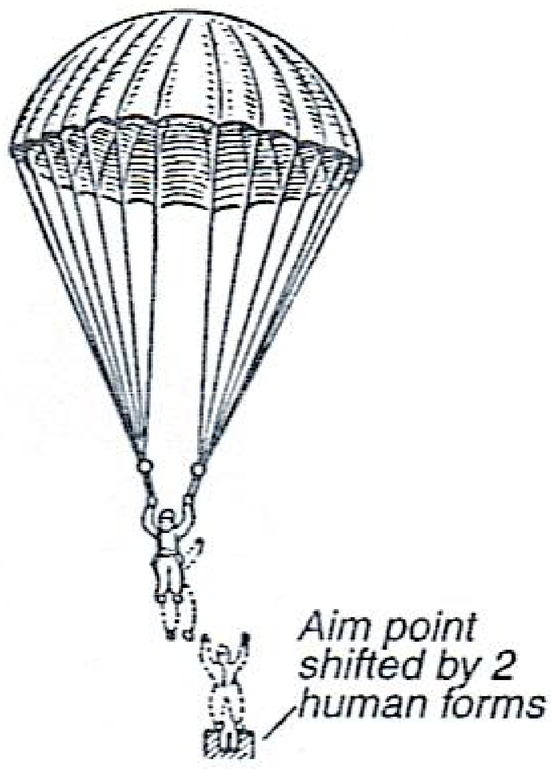

Figure 85. Shift of aimpoint when firing at parachutist

Firing in mountains

175. When firing in mountains at ranges in excess of 400 meters, if the elevation of the terrain exceeds 2000 meters above sea level, the rear sight setting must be reduced by one graduation to account for the reduced air density at altitude. If the elevation of the terrain is less than 2000 meters above sea level, do not reduce the rear sight, but use the bottom edge of the target as the aimpoint.

When firing in the mountains from below to above or from above to below at ranges above 400 meters and gun-target angles of less than 30°, select an aimpoint at the lower edge of the target. At gun-target angles greater than 30°, reduce the rear sight setting appropriate to the target by one graduation.

Firing in limited visibility conditions

176. Fire is conducted at illuminated targets at night the same as in the daytime. During the illumination of the terrain, the rifleman, observing the target, quickly sets the rear sight, aims, and fires the shot.

If the terrain is illuminated for only a brief moment (for example, the terrain is illuminated by rockets), fire with the rear sight set at "П." Aim at the center of the target if the range to the target does not exceed 300 meters, and at the upper portion of the target if the range is greater than 300 meters.

Avoid temporary blinding by not looking at the illumination source.

177. Fire is conducted at night at targets that reveal themselves by muzzle flashes in long bursts with the sight set at 3 or "П." Open fire at the instant when the muzzle flashes are visible in the center of the front sight guard and on the rear aperture (Figure 86). In those cases when the front sight guard and blade aperture are not visible, point the rifle at the target along the barrel.

If the sighting apparatus is equipped with self-illuminating dots, then align the illuminating dots with the muzzle flashes when aiming the rifle at the target (Figure 86).

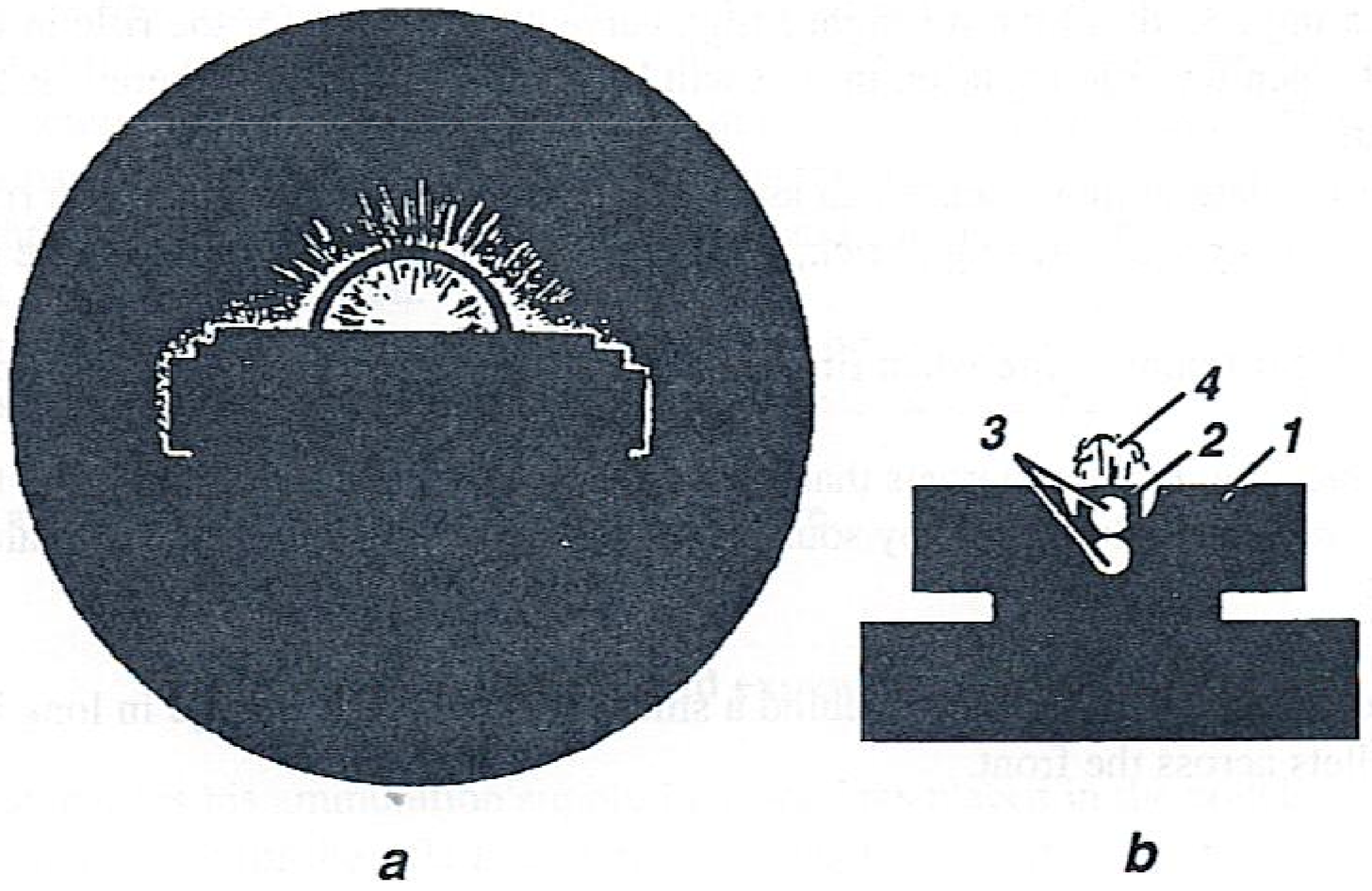

Figure 86.
Aiming when firing at targets that expose themselves by muzzle flashes:

a - using the front sight post and rear sight aperture
b - using the night firing apparatus

1 - rear sight
2 - front sight post
3 - illuminating dots
4 - muzzle flashes

178. For firing at a target whose silhouette is visible against the background of the sky, the glow of a fire, or snow, point the rifle near the target on the light background and achieve sight alignment (Figure 87). Then, shifting the rifle, select an aimpoint in the middle of the silhouette and open fire.

Fire in long bursts. When firing at targets visible against a dark background (trees, bushes), sight the rifle along the barrel.

Figure 87.
Method of aiming at silhouette

179. When preparing ahead of time for night firing, carve out a trough for the rifle in the parapet of the trench so that when the rifle is placed in it, it will be pointed at the line where it is believed the enemy will appear.

Limit the rifle's lateral movement to an assigned sector at night with pegs. The rifle can be positioned for height by a layer of turf (e.g., brick, stone, notched board), placed under the pistol grip.

180. For the best adjustment of fire when firing at night, it is advisable to use tracer ammunition.

181. Fire is conducted at night on targets that are located in the immediate vicinity of the rifleman, and which have given themselves away by sound, in long bursts by pointing the rifle along the barrel toward the sound.

182. Fire is conducted at targets that are behind a smokescreen or camouflage in long bursts with dispersion of the bullets across the front.

Firing in conditions of radioactive, chemical, and bacteriological contamination

183. Fire is conducted in conditions of radioactive, chemical, and bacteriological contamination while wearing individual protective clothing. Firing while wearing the protective mask is conducted in long bursts. If the rear aperture and front sight post are not visible while firing in a gas mask, sight the rifle along the barrel.

When conducting fire in terrain contaminated with radioactive, chemical, or bacteriological substances, protect first of all those components of the rifle that you will have to touch during firing. The conduct of fire is the same as for firing in normal conditions.

After departure from the contaminated zone, conduct radioactive (chemical) decontamination or bacteriological disinfection of the rifle at the first opportunity.

Firing while the rifleman is moving

184. Firing while the rifleman is moving (on the march, from an armored transporter, from a truck) is possible with short halts and without stopping.

Aimed fire is conducted from a short halt by the same rules as when firing from a stationary position. Prepare for firing, set the rear sight, and take aim during the time of movement and when the vehicle is braking. At the moment the vehicle stops, refine the sight picture and commence firing.

As a rule, because of the significant and constant movement of the rifle, firing from the march (when operating dismounted, on an armored transporter, truck, or amphibious vehicle) is conducted within the limits of battle-sight range. The rear sight is set at this range and should not be changed in the course of firing.

The aimpoint for height is selected at the lower edge of the target, and for lateral direction depending on the speed and direction of movement of the armored transporter (truck) and on the nature of the target (fleeting or moving). When firing over the front (rear) side or at an angle not exceeding 30° to the direction of movement of the armored transporter (truck) at fleeting targets in calm weather, do not displace the aimpoint from the target.

If firing off the right (left) side of the armored transporter (truck) with a speed of 10-15 kph, displace the aimpoint 4 mils to the side opposite the vehicle's movement. Remember the following rule when firing at personnel: shift the aimpoint to the right (left) when firing from the right (left) side by the number of human forms equal to the hundreds of meters to the target.

Calculate the shift of the aimpoint for a crosswind and lead for target movement the same as when firing from a stationary position.

When moving without halting across uneven ground on an armored transporter or truck, or on an amphibious crossing means in large waves, fire in long bursts, aiming the rifle along the barrel without using the sights.

Use tracer ammunition for the best adjustment of fire.

Ammunition resupply and expenditure in combat

185. The rifleman carries his ammunition supply in magazines placed in the pouch.

Ammunition resupply for the rifle in combat is conducted by ammunition bearers selected by the unit commander.

Upon expending one-half of his personal ammunition supply, the rifleman reports this fact to the squad commander.

The rifleman should always maintain one magazine loaded with cartridges as an untouchable reserve, to be expended only with the commander's permission.