



5, 7:42 p.m., moon passes Jupiter. Wednesday, Sept. 9, 1:24 a.m., moon passes Venus. Thursday, Sept. 10, partial eclipse of sun; 11:53 a.m., new moon. Tuesday, Sept. 15, 1:00 p.m., Mercury farthest east of sun. Thursday, Sept. 17, 12:56 p.m., moon in first quarter. Friday, Sept. 18, Mars farthest, 245,300,000

miles; 11:00 p.m., moon nearest, 229,600 miles. Wednesday, Sept. 23, 12:17 p.m., sun crosses equator, autumn commences. Thursday, Sept. 24, 10:34 a.m., full moon. Wednesday, Sept. 30, 1:01 a.m., moon passes Saturn. Eastern War Time is used throughout.

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MILITARY SCIENCE

Russian Weapons Good

➤ **HOWEVER GREAT** the difficulties of Russian armies may be, they do not result from inferiority in quality of Russian arms. The weapons used by Soviet soldiers will stand comparison with those of any first-class military power, states Garrett Underhill, well-known writer on military subjects (*Infantry Journal*, August).

Russia has even beaten the United States to the draw a time or two, in the adoption of new-type weapons. As far back as 1891, the Tsar's ordnance experts adopted a modern, .30-caliber clip-loading magazine rifle. We were still using the old single-shot Springfield .45-caliber "smoke-wagon" and did not adopt a comparable magazine rifle, the Krag-Jorgensen, until the following year. Clip-loading, which makes for rapidity of fire, came in our forces' weapon only in 1903, with the introduction of the .30-caliber Springfield.

More recently, the Soviets developed their own semi-automatic rifle, the Simonov, and by 1938 part of their troops were equipped with this weapon, "even before our Garand was being issued in quantity," Mr. Underhill notes.

The Red Army is strong for light, rapid-firing weapons that can move up with front-line troops. They have a particular fondness for "tommy" guns, their standard weapon having a considerable resemblance to our own Thompson sub-machine gun. They have an "opposite number" to our .50-caliber heavy ma-

chine gun in an air-cooled weapon of the same caliber.

Russian artillery has been rated as superior ever since old-time muzzle-loading days. The Germans think well enough of the 76.2-millimeter Pulitov field gun to send numbers of captured pieces to oppose the United Nations forces in North Africa.

There is also a dual-purpose gun of 76 millimeters caliber, built originally as an anti-aircraft cannon, but modified so that it can be used also against tanks, like the better advertised German 88-millimeter dual purpose gun. It has the steadying muzzle brake which has found favor in the minds of many artillerists.

For medium and heavy fire, the Red Army has 122 and 152-millimeter howitzers of modern type, including again the slotted muzzle brake. The 152-millimeter howitzer is said to outrange the comparable 150-millimeter German weapon. The 122-millimeter howitzer has double pneumatic tires on both the piece and its limber, to make movement possible over muddy Russian roads and plowed fields.

At the outbreak of their part of the war, the Germans had the drop on the Soviets in numbers and caliber of smoothbore mortars, invaluable infantry-support weapons. But the Russians soon caught up. Agreeing with their enemy on the value of heavy mortars, they adopted a 120-millimeter "mine-thrower", which is now being turned out by a

"converted" industry that formerly produced mining machinery. Our own heaviest mortar has a caliber only two-thirds as great—81 millimeters.

Anti-tank weapons include a 45-millimeter gun, throwing a much heavier projectile than our light, 37-millimeter anti-tank weapon. The Red Army also has a peculiar weapon which we have never used in this country, an extremely long-barreled .57-caliber shoulder rifle carried and managed by two men. Its solid slugs must have a terrific velocity and high penetration against light tank armor.

The Red Army has a great variety of tanks, for the Soviet ordnance officers have for years been exceedingly active in trying out all promising models, both home-produced and foreign. The 54-millimeter anti-tank gun and the 76-millimeter rifle are mounted in light and medium tanks, and there is also a heavy tank of 52 tons that carries a 152-millimeter gun.

Concluding, Mr. Underhill remarks, "Looking at Russian materiel from a broadly objective point of view, it seems only just to recognize that an excellent job has been done."

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MEDICINE

Gloves Do Not Protect Surgeon from Mustard Gas

➤ **DOCTORS** who depend on the thin rubber of surgeons' gloves as protection for their hands against mustard gas may run into "unpleasant consequences," Prof. C. I. Reed of the University of Illinois College of Medicine warns.

Prof. Reed was an officer in the experimental laboratory of the Chemical Warfare Service in Washington, D. C., during 1918, and had "opportunity to see numerous demonstrations of the sad results of this particular error," he states (*Journal, American Medical Association*, Aug. 22).

In the kind of rubber used in surgeons' gloves, he explains, mustard gas is soluble, and a droplet that would produce only a small blister on bare skin may spread through an entire glove, in time, and burn the whole surface.

Rubber gloves can be used for short-time protection, if their limitations are recognized. Mustard gas is not quick-acting, Prof. Reed adds; wiping with a cloth is often ample protection, and even rubbing the skin with damp earth is efficient if nothing else is available.

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