Composition, %			Brinell	Shrinkage
Tin	Antimony	Lead	Hardness	Linear, %
3	2½	94½	12	.87
6	14	80	23	.65
4	12	84	22	.65
9	19	72	28	.65
—	—	100	5	1.13
100	—	—	app 7	.90
—	100	—	app 50	.47

metal could be expected
be about .0065 × .357″
n a soft alloy of lead and
× .357″ = .0035″. The
s in agreement with obser-

example, the composition
bullet metal is given as
ie part tin, one part anti-
proximates 8% tin, 8%
lead. (It is also stated to
5 parts tin, 5 parts anti-
cal properties thus will lie
f electrotype and stereo-
ts solidification shrinkage
may be expected to be about .75%.

This information indicates the solidification shrinkages to be expected from general classes of alloys in a range of bullet diameters. Thus, in .001″ on diameters:

	Bullet diameter, in.		
Alloy	.308	.357	.452
Linotype	.002	.0025-	.003
Lyman No. 2	.0025-	.0025	.0035
Soft	.003	.0035	.0045
Pure lead	.0035	.004	.005

The effect on bullet diameter of changing from one alloy to another in this table is the difference between their shrinkages. —E.H.H.

ews of Winchester and Remington .22 WMR cartridge boxes.

tridge

o be some confusion re-
ing of the .22 Winches-
Fire cartridge, as vari-
manufacturers label
ently. What is the rea-
y of names for a single

n Winchester-Western
cartridge in 1959, they
2 Winchester Magnum
his firm designed and
artridge, it was entitled
t might be termed its
nation. However, there
ng ammunition manu-
ze precise or uniform
tions, so the Reming-
eir version as ".22 Rim
omitting the Winchester
designation. Recently,
an manufacturing this
the designation ".22
imfire."
rms also load this car-
erger Patronen-Zünd-
etallwarenfabrik A.-G. of Austria and RWS in Germany. Hirtenberg labels their loading ".22 Winchester Magnum" while RWS calls theirs ".22 Magnum." Remington Arms Co. no longer loads this cartridge.

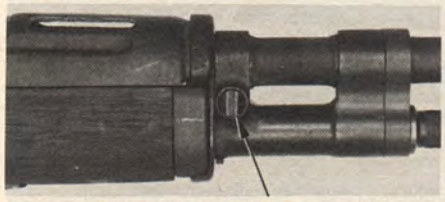
According to the Sporting Arms and Ammunition Manufacturers' Institute (SAAMI), the name of this cartridge is ".22 Winchester Magnum Rim Fire." —M.E.B.

M1A Rifle Velocities

I recently purchased a Springfield Armory M1A semi-automatic rifle for use in NRA matches. This rifle is almost identical to the M14 and has a gas spindle valve which, when rotated 90° to "OFF" position, blocks off the gas system. When this is done, cartridges must be fed singly into the chamber. Extraction and ejection are accomplished by drawing the operating rod handle all the way to the rear. Will bullet velocity be higher when the gas system is cut off? Will there be any difference in velocity if the cartridges are chambered manually instead of being fed from the magazine?

Answer: To answer your questions, *The American Rifleman* Technical Staff conducted velocity tests with an M1A rifle. Match grade ammunition was used throughout, and 20 rounds were fired in each test.

With the spindle valve in "ON" position to provide semi-automatic function, and with cartridges loaded singly, the average instrumental velocity at 15-ft. from the muzzle was 2644 feet per second (f.p.s.). The average instrumental velocity with the spindle valve in "OFF" position was 2630 f.p.s. or 14 f.p.s. slower than with the valve in "ON" position.



Gas spindle valve (arrow) in "ON" position. Valve is rotated 90° to place it in "OFF" position.

This test was repeated except that all rounds were fed from the magazine. Average instrumental velocities remained practically the same as with the first test: 2645 f.p.s. in "ON" position, and 2630 f.p.s. in "OFF" position, or 15 f.p.s. slower.

Additional 10-shot tests were made with the flash suppressor both on and off the rifle. There was no significant difference in average instrumental velocities with or without the suppressor in place.

Recoil of the M1A rifle was noticeably sharper when the gas spindle valve was in "OFF" position.—K.C.R.

Shotgun Primer Replacement

Shotgun primers cost nearly twice as much as rifle and pistol primers. I understand that years ago some shotshell loading tools provided for pushing out only the cap part of the shotgun primer, which then could be replaced at reduced cost. Can this still be done?

Answer: Your information is correct. Reloading a shotgun shell requires either replacing the entire battery-cup primer, which is easy but expensive; or replacing only the cap, which involves fiddling with the loose anvil that has to be saved when removing the fired cap. Cap replacement thus was a time-consuming operation. It never became popular, and eventually went out of use. Replacement caps are no longer generally available.

It is possible to replace the cap with a complete rifle or pistol primer (see "Boddie Primer Rebuilder," *The American Rifleman*, April, 1974, pp. 52-54). But this still requires retaining the loose anvil, and returns in effect to the former procedure with replacement caps.

Another possibility exists, but never has been exploited by ammunition manufacturers. This consists in replacing cap and anvil together, as with rifle and pistol primers.

A construction suited to this procedure was described in "Reloading ICI Shells,"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