THE .338-'06

BY FINN AAGAARD

ALTHOUGH we have a generous—perhaps superfluous—abundance of rifle cartridges, it is interesting to note that with only a few exceptions, the true general purpose big-game cartridges used in this country come in but two calibers, .30 and 7 mm. (The .270 Win. is merely a slightly aberrant 7 mm whose bullets are .007" undersize.)

There are good reasons for this. With both calibers relatively heavy bullets of good sectional density and superior ballistic efficiency can be given high velocities and flat trajectories without the generation of totally demoralizing recoil.

Cartridges such as the 7x57 mm, the 7 mm-08 and the .308 Win. are unbeatable for whitetail and the like, and the .270 Win. is an excellent long-range deer, antelope and medium-game cartridge as well. The .280 Rem., .30-'06 and 7 mm Rem. Mag. work with aplomb on almost anything when used with suitable bullets and a smidgen of common sense and skill, while the superb .300 Mags. are fully sufficient for any beast on this continent except possibly dangerous bears under the worst possible conditions.

Still, there are hunters who prefer to use heavier bullets of greater diameter, even if it means giving away some velocity in order to keep recoil down to tolerable levels. They have more faith in momentum than in kinetic energy. Their feeling is that under some tough conditions, such as hunting elk in thick timber, the big bullets are better able to smash through heavy bone and still give the necessary penetration when fast shots have to be taken at oblique angles at running or partially obscured game. They also contend that large bullets have more reliable stopping power than lighter but faster ones, particularly so when the shot is not quite perfectly placed, as sometimes happens.

The concept is open to considerable disputation, but nevertheless there has always existed a small but steady demand for medium-bore cartridges using heavy bullets at moderate velocities. Few of them have been runaway successes commercially, though. The old .35 Win. with its 250-gr. bullet at some 2200 f.p.s. and the .348 Win. with the same weight of lead at 2350 f.p.s. achieved modest popularity in this country, but are about dead now. Also moribund are the much later .358 Win. and the .350 Rem. Mag., but the good old .35 Whelen wildcat lives on and has a sizable following of enthusiastic and loyal proponents.

The British had their .400/.350 Nitro Express and .350 Rigby Mag., both long gone. But what was likely the most widely used "medium" of them all in Africa until just the other decade, the 80-year-old German 9.3x62 mm Mauser with 285-gr. bullets at 2350 f.p.s., is still in production in Europe.

Two of the most famous and romantic African medium-bore cartridges in the innocent and long-past days of my youth were the .333 Jeffery Nitro Express and the Westley Richards .318 Accelerated Express. Both used the classic recipe of long, heavy bullets at modest velocities to earn their reputations for extraordinarily deep penetration and utterly reliable killing power on all but the largest of dangerous game. The .333 Jeffery offered a 250-gr. copper-pointed expanding bullet at 2500 f.p.s., but its fame was gained by its round-nosed 300-gr. bullet, both soft-nose and FMJ solid, at only 2200 f.p.s. In his *African Rifles and Cartridges,*

Aagaard's .338-'06 carries Burris 2¾X on Mark X Mauser.

Necking up the .30-'06 case (l.) yields a .338-'06.

Pushing heavy bullets along at moderate velocities, this wildcat is earning a niche as the new American "medium bore."

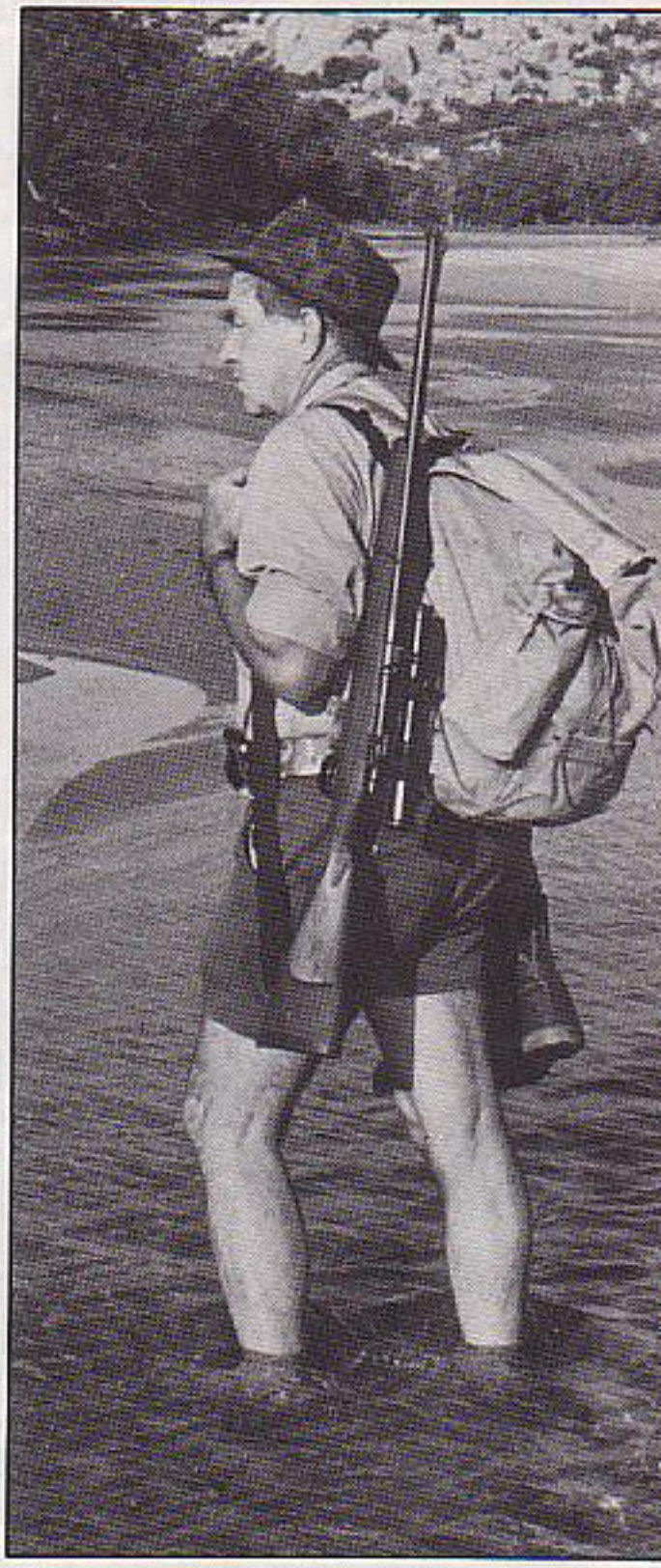
With a finish impervious to the elements, the fiberglass-stocked .338-'06 required little attention on an Alberta bear hunt.

John Taylor says of the .333: "Its long, heavy 300-gr. bullet is a splendid killer and holds its velocity extremely well. It has great depth of penetration, and is one of my favourite bullets. Time and again I have driven it the length of an animal's body and cut the perfectly mushroomed bullet out of his hindquarters. I have never had one break up."

Taylor also had a good opinion of the .318 Westley Richards. Writing in about 1948, he called it ". . . undoubtedly the most popular and most widely-used British medium bore." Remarking on the deep penetration achieved by its 250-gr. bullet at a claimed 2400 f.p.s., he averred that it was capable of driving its solid FMJ bullet the length of a big elephant's body, while its soft-nose had adequate penetration for any soft-skinned game. There was a 180-gr. bullet at 2700 f.p.s. listed for it as well, but I cannot at the moment recall anyone who admitted to using it. The .318's reputation was built entirely with the 250-gr. bullet.

While its designation—.318—suggests an 8 mm, the Westley Richards actually used bullets of .329" or .330" diameter, and it was thus in fact closer to the .333 in this respect. The .318 case is quite similar in size, shape and capacity to that of a .30-'06 (though it is about 1/10" shorter and *not* interchangeable), but the .333 Jeffery used an odd-size rimless case with a much larger head diameter of .540". Both of these fine rounds became obsolete when the British ceased the production of center-fire sporting rifle ammunition in the mid-1960s.

As far as I know, the only commercial .33 cal. made in America up until the birth of the .338 Win. Mag. in 1958 was the .33 Win. introduced in 1902 for the Model 86 lever-action rifle. With its .338"-diameter 200-gr. flat-nosed bullet at some 2200 f.p.s., it was reckoned to be a fine deer, black bear and elk cartridge, but it



Equally at home in Texas' Hill Country, the .338-'06 will serve as Aagaard's back-up rifle while guiding clients on hunts.

PENETRATION TEST

Bullet Type	No. Shots	Velocity (f.p.s.)	Av. Exp. Dia. (ins.)	Retained Wt. (grs.)	Pene. (ins.)
Cartridge: .338-'06					
250-gr. Nosler Part.	3	2477	0.64	208 (83%)	19.5
275-gr. Speer SP	3	2356	0.60	176 (64%)	19.0
210-gr. Nosler Part.	4	2781	0.68	172 (82%)	16.8
250-gr. Sierra BT	1	2482	0.68	137 (55%)	16.5
225-gr. Hornady SP	3	2660	0.65	151 (67%)	16.0
250-gr. Hornady RNSP	2	2444	0.69	169 (68%)	15.5
200-gr. Speer SP	2	2760	0.66	138 (69%)	14.3
Cartridge: .30-'06					
200-gr. Nosler Part.	2	2634	0.51	130 (65%)	21.0
180-gr. Hornady SP	1	2608	0.55	114 (63%)	16.0
180-gr. Rem. PCL	6	2590	0.67	122 (68%)	13.0
Cartridge: .300 Win. Mag.					
200-gr. Nosler Part.	3	2843	0.56	135 (67%)	21.0
Cartridge: .340 Wby. Mag.					
250-gr. Nosler Part.	2	2934	0.69	186 (74%)	21.5
Cartridge: .375 H&H Mag.					
300-gr. Sierra BT	2	2582	0.80	238 (79%)	18.8
Cartridge: .350 Rem. Mag.					
250-gr. Speer SP	4	2535	0.61	157 (68%)	18.5

Test medium two dry phone books followed by stack of wet ones fired at 25 ft., velocities average instrumental at 15 ft. Average expanded diameter is the average of largest plus smallest measurement across expanded portion. The author notes that a bullet's terminal expansion measurements are a questionable indicator of expansion throughout the test medium passage. Minor differences in penetration are likely not significant, and the test medium is not claimed to closely resemble a big game animal.

BALLISTIC COMPARISONS

Cartridge	Bullet Type		Range (yds.) 0	100	200	300	400
.338-'06	210-gr. Nosler Part.	Velocity (f.p.s.)	2800	2558	2329	2116	1917
	Sect. Density .263	Energy (ft.-lbs.)	3657	3052	2530	2088	1714
	Ballis. Coef. .386	Trajectory (ins.)	−1.5	+1.9	0	−8.3	−24.3
.30-'06	200-gr. Nosler Part.	Velocity (f.p.s.)	2650	2495	2345	2200	2065
	Sect. Density .301	Energy (ft.-lbs.)	3118	2762	2440	2151	1892
	Ballis. Coef. .585	Trajectory (ins.)	−1.5	+2.0	0	−8.4	−24
.338-'06	250-gr. Nosler Part.	Velocity (f.p.s.)	2450	2276	2109	1948	1795
	Sect. Density .313	Energy (ft.-lbs.)	3333	2875	2472	2103	1787
	Ballis. Coef. .491	Trajectory (ins.)	−1.5	+2.7	0	−10.5	−30
.338-'06	250-gr. Sierra BT	Velocity (f.p.s.)	2450	2305	2164	2028	1898
	Sect. Density .313	Energy (ft.-lbs.)	3333	2945	2589	2282	2000
	Ballis. Coef. .590	Trajectory (ins.)	−1.5	+2.6	0	−10	−29
.350 Rem.	250-gr. Speer SP	Velocity (f.p.s.)	2500	2308	2125	1950	1784
	Sect. Density .279	Energy (ft.-lbs.)	3470	2957	2505	2110	1767
	Ballis. Coef. .446	Trajectory (ins.)	−1.5	+2.5	0	−10.2	−29.5
.338-'06	275-gr. Speer SS	Velocity (f.p.s.)	2350	2168	1995	1831	1676
	Sect. Density .348	Energy (ft.-lbs.)	3371	2870	2428	2043	1715
	Ballis. Coef. .456	Trajectory (ins.)	−1.5	+3.0	0	−11.8	−34
.300 Mag.	200-gr. Nosler Part.	Velocity (f.p.s.)	2850	2687	2530	2378	2234
	Sect. Density .301	Energy (ft.-lbs.)	3608	3206	2840	2512	2215
	Ballis. Coef. .585	Trajectory (ins.)	−1.5	+1.7	0	−7.0	−20.5

Tables compiled with data from Nosler and Speer manuals and Phillip Mannes' "Tables of Bullet Performance." Velocities calculated from 22" barrels except for the .300 Win. Mag., 24".

was obviously not in the same class as the two British rounds. Like them, it has been obsolete for quite some time.

Sometime before WW II, Charle O'Neil, Elmer Keith and Don Hopkins collaborated on a series of wildcat cartridges. One of them, the .333 OKH, was simply the .30-'06 case necked out to accept .333"-diameter bullets obtained from Kynoch. It achieved enough popularity that Speer thought it worthwhile to make a .275-gr. .333" bullet (used also in the later .334 OKH on a belted magnum case) and to publish loading data for it in at least one of Speer's early manuals for wildcat cartridges.

Elmer Keith took a 26"-barreled .333 OKH along on his first African safari in 1957 and killed more than 20 head of game with it, including oryx, kudu, sable and roan antelope. But he reported that the 300-gr. steel-jacketed Kynoch soft-nose bullets he was using blew up badly and did not penetrate as they should (probably due to the steel being brittle). He shot a Thomson's gazelle that was quartering away at 80 yds. The bullet went to pieces inside the little 60-lb. animal and failed to exit despite its tremendous sectional density of .386.

With the arrival of the .338 Win. Mag. in 1959, nearly all the manufacturers started producing bullets of that diameter. So it made simple sense to use ther instead of hard-to-find .333" bullets Hence, the .333 OKH was soon replaced by the .338-'06.

American fans of the non-magnum medium bores are about equally divided into those who favor the .35 Whelen (another .30-'06 derivative) and those who advocate the .338-'06. Actually, both of them and the .350 Rem. Mag. are so close ballistically as to be identical for any game-killing purposes. With bullets of the same weight, the two .35 cals. have a slight edge in velocity and bullet diameter, while the .338-'06 has the higher sectional density and, at least potentially, a better ballistic coefficient.

What matters more is that at present there is a wider choice of bullets available for the .338 than for the .35 cals. These include the famous Nosler Partition bullets in 210- and .250-gr. weights) which are not made in .358" diameter.

At heart, I am something of a heavy-bullet man myself. I had always wanted to try out a .333 Jeffery or a .318 Westley Richards, but never had the opportunity. So when I was offered the chance to work with a .338-'06 rifle built by Texas rifle- and barrelmaker Bill Wiseman, I accepted with alacrity. Wiseman was for 16 years a premier Marine Corps gun smith and a competitive shooter who saw action as a sniper in Vietnam. Besides having designed and built an advanced new sniper rifle, he has also served as

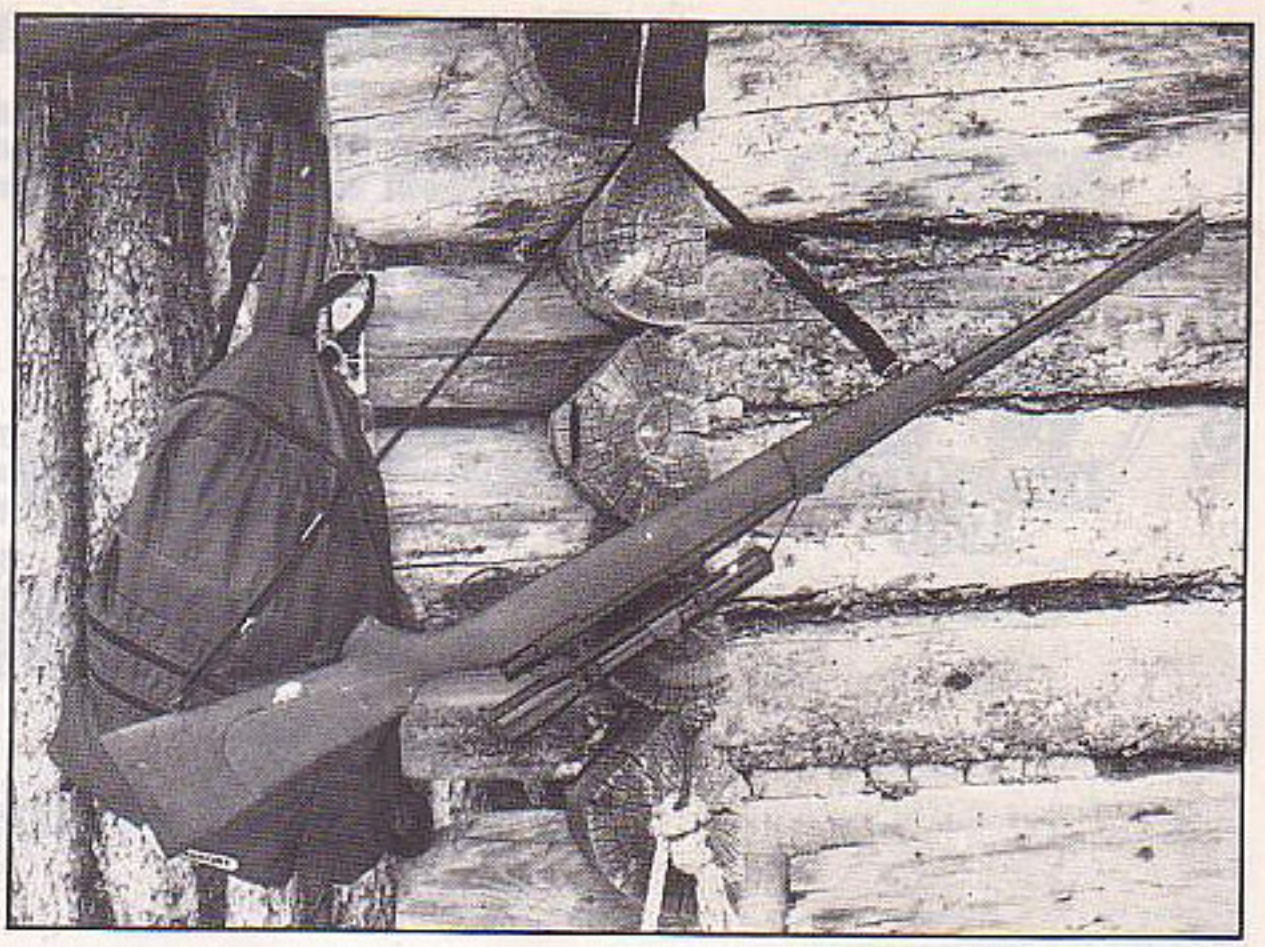
gunsmith to U.S. international shooting teams. To put it mildly, he is concerned with accuracy!

In May of 1983, Bill Wiseman took over the McMillan Rifle Barrels concern from Pat B. McMillan, its founder, and moved it to Bryan, Texas. (P.O. Box 3427, Bryan, Tex. 77805). McMillan barrels have a good reputation in the target-shooting world and are being used by at least two domestic bullet makers to test bullet accuracy.

Wiseman uses stainless steel for all his barrels. He says that stainless not only tends to give better accuracy than carbon steel, it has a 25% longer accuracy life into the bargain. He makes his own rifling buttons, stress-relieves the barrels after rifling, and hand-laps the bores to a glass-like smoothness. (This, by the way, also makes them very easy to clean).

My rifle was fitted with a Mark X Mauser action and a 22" No. 4 mediumweight varmint contour barrel that measured .72" across the muzzle. It contained a lot of metal, as Wiseman in his brochure advocates ". . . using as heavy a barrel as is feasible, for it is an established fact that heavier barrels produce better accuracy, especially over longer periods of time."

With a solid fiberglass stock (made by Gale McMillan in Arizona, and chosen for its greater strength compared to hollow stocks), a nylon sling and a sterling and extremely rugged Burris 2¾X scope, the rifle weighed 10 lbs. exactly.



Aagaard's .338-'06 rifle survived an early spring Alberta bear hunt without the usual oil wiping. The author credits the "Black T" finish applied by a Mississippi firm with preventing corrosion. The untreated steel sling swivels did show some rust.

Now, I can still carry a 10-lb. rifle all day without suffering unbearable agony, if there is some good reason for doing so. But that is about the right weight for a .375 H&H Mag., and it irritates me to have to lug that much iron around just to shoot a mild-recoiling cartridge like the .338-'06. I believe that Wiseman's No. 1 contour barrel, which weighs a pound less while still retaining ample stiffness for big-game-hunting accuracy, would be a better choice for calibers under .350".

The Burris scope was mounted in an experimental single-lever mount that Wiseman is developing. He machined the dovetails in the scope bases while they were mounted on the barreled action to get them precisely aligned with the bore. Consequently, when the rifle was sighted in, the reticle remained almost exactly in the middle of its adjustment range.

However, enough play developed in the rear mount, the one without a locking lever, that I had to drill and tap it and insert a screw to tighten it. It could be that Wiseman will have to use two locking levers, no big inconvenience.

All the metal, including the inside of the action, had a black, non-shiny Teflon-type finish applied by W. E. Birdsong & Associates (4832 Windermere, Jackson, Miss. 39206). This is great stuff. Not only did it smooth up the Mark X action so that its bolt traveled with gratifying slickness, but it also made the metalwork virtually rustproof. I took the rifle on a recent abortive bear hunt in northern Alberta, experiencing some inclement weather. I carried the rifle in snow and sleet, barging through a lot of wet willows with it. I never oiled the rifle, or even wiped it off much, yet when I got it home, the only rust I could find was on the detachable sling swivels. These had not been given Birdsong's treatment. The coating seems rather more durable than

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.338-'06 LOADING DATA*

Bullet grs./type	Powder Type	Powder (grs.)	Primer	Vel. (f.p.s.)	Remarks
200 Hornady FN	IMR 4895	47.0	R9½	2253	.33 Win. equiv.
200 Speer SP	IMR 4895	50.0	R9½	2405	Med. range deer
" " "	IMR 4064	59.0	R9½	2775	
" " "	IMR 4320	56.0	F210	2725	Accurate
" " "	IMR 4320	58.0	F210	2804	Max. load**
210 Nosler Part.	IMR 4064	59.0	R9½	2793	
" " "	IMR 4320	56.0	F210	2675	Accurate
" " "	IMR 4320	58.0	F210	2792	Max. load**
225 Hornady SP	IMR 4064	57.0	R9½	2675	
" " "	IMR 4320	53.0	F210	2574	Accurate
" " "	IMR 4320	55.0	R9½	2660	
" " "	IMR 4320	55.0	F210	2661	Max. load**
250 Sierra BT	IMR 4064	53.0	R9½	2508	
" " "	IMR 4350	57.0	F210	2443	Very accurate
" " "	IMR 4350	58.0	R9½	2480	Max. load**
" " "	IMR 4350	58.0	F210	2496	Max. load**
" " "	IMR 4350	58.0	W120	2506	Max. load**
250 Nosler Part.	IMR 4350	57.0	F210	2425	Very accurate
275 Speer SS	IMR 4064	52.0	R9½	2341	
" " "	IMR 4350	57.0	R9½	2354	Good accuracy

Reduce all beginning loads 10% and work up, watching for pressure signs. *Warning: The .338-'06 is a wildcat cartridge; cartridge and chamber dimensions have not been standardized by SAAMI. The test rifle was throated to handle 250-gr. Nosler Partition bullets at an overall cartridge length of 3.38". Rifles with shorter throats or different chamber dimensions may give higher pressures. Cases all Winchester. **Loads thus marked in "Remarks" all proved less accurate than loads with lighter powder charges. Abbreviations: FN (flat nose), Speer SP (spitzer soft point), Part. (Partition), Hornady SP (Spire Point), Speer SS (semi-spitzer).

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regular bluing, but it can be scratched, and it did wear off where the bolt rubbed and at the sharp edge around the muzzle of the barrel.

Wiseman told me that the rifle would shoot 1" or better five-shot groups all day long with the right loads. Using the 2¾X scope I had on it for fast work in close cover, I was never quite able to achieve that. But it was certainly a most accurate piece, and what is perhaps even more important, it reliably maintained its zero 'om day to day, and in traveling from Texas to the Alberta Athabasca and back.

I obtained a set of .338-'06 Durachrome dies from Hornady. The sizing die had a tapered expander button that opened the necks of .30-'06 cases to accept .338 bullets in one smooth, effortless pass. Although most of my dies came in green boxes, I must say I was favorably impressed with these Hornady dies, whose quality seemed as good as any. I prefer the large hex heads that allow adjustments to be made with the fingers over the screwdriver slots used on RCBS dies. Necking up cases normally shortens them, so they end up well under the maximum case length of 2.94". All the same, I trim them a little just to square up the case mouths.

Perhaps because the rifle was throated to accept the 250-gr. Nosler bullet seated out to an overall cartridge length of 3.38", the rifle seemed to shoot slightly better with 250-gr. bullets than with lighter ones. It also gave very pretty accuracy with the 275-gr. Speer semi-spitzer.

In the beginning, I was somewhat disappointed with its shooting. It seemed erratic and produced more fliers than I could reasonably blame on myself. Eventually, I discovered that for outstanding accuracy it was necessary to use loads a grain or two below maximum. With the 200-gr. Speer spitzer or 210-gr. Nosler Partition bullets, this particular rifle would accept a charge of 58 grs. of IMR 4320

powder for velocities of around 2800 f.p.s. But the best accuracy came with 56 grs. of IMR 4320 and velocities some 100 f.p.s. lower. Likewise, while 58 grs. of IMR 4350 was a safe maximum working load with the 250-gr. Sierra and Nosler bullets, 57 grs. produced superior accuracy. (This is no doubt just an individual idiosyncrasy of this particular piece that does not necessarily apply to other .338-'06 rifles.)

Good velocities could be obtained with all bullet weights from 200 to 275 grs. with IMR 4064 powder, which in this respect may be the best single powder for the cartridge. But better accuracy was obtained by using IMR 4320 for the lighter bullets and IMR 4350 for those of 250 and 275 grs. I used both Remington 9½ and Federal 210 primers, but could not determine that there was any very significant difference in the results obtained with them. All my cases were of Winchester make, which does matter. Some of the other brands have less internal capacity and could produce excessive pressures with some of my loads.

To discover whether there was any substance to the legendary deep penetration attributed to the .330-.338" cartridges, I tested various .338-'06 loads on wet phone books at 25 ft. in comparison to a few other cartridges. As expected, of the .338-'06 loads, the 250-gr. Nosler Partition bullet gave the most penetration, with the 275-gr. Speer very close behind it. Both just beat the 300-gr. Sierra boattail of the .375 H&H (though the latter made decidedly the bigger "wound channel"), but were in turn surpassed by the 250-gr. Nosler fired from a .340 Wby. Mag.

Unexpectedly, the 200-gr. Nosler Partition bullet in both the .300 Win. Mag. and the .30-'06 gave deeper penetration in the test medium than any of my .338-'06 loads.

On the other hand, if we disregard the Partition bullets, then the Speer 275-gr. bullet in the .338-'06 did in fact outpenetrate all the conventional bullets tested, including the 300-gr. in the .375 Mag. and the 250-gr. Speer in the .350 Rem. Mag. Thus, in pre-Nosler days, cartridges like the .318 Westley Richards and .333 Jeffery and OKH likely did give deeper penetration than most others, due to the superior sectional density of their long bullets. But this is no longer always so, as the construction of modern controlled-expansion bullets can compensate for a great deal of sectional density.

Studying the ballistic tables, a few things strike me immediately. One is what a remarkably efficient cartridge the .30-'06 is with the 200-gr. Nosler partition bullet. It starts to equal or surpass the 210- and 250-gr. Noslers of the .338-'06 in both flatness of trajectory and energy delivery anytime the range extends much beyond 200 yds. Another is that what the

.338-'06 really does is to equal .30-'06 muzzle velocities with bullets that are 0.030" fatter and 20 to 30 grs. heavier. It will propel 200-, 225- and 250-gr. projectiles to about the same velocities that the .30-'06 can attain with its 180-, 200- and 220-gr. bullets, respectively.

The tables also suggest that for extremely long-range shooting—400 yds. and beyond—the Sierra 250-gr. boattail bullet is the best bet in the .338-'06. But I cannot see any non-magnum medium bore as a long-range cartridge. If one wishes to deliver a lot of energy over a great distance, the .300 Mag., or better yet the .340 Wby. Mag., will do it far more effectively.

The .338-'06 is at its best within 200 yds., where it will deliver more energy, will make bigger holes and will work more destruction in animated targets than the .30-'06. It is also more likely to produce a good blood trail, which can be important in the thick stuff.

My choice for the larger game, and for all-around use, would be the 250-gr. Nosler Partition bullet (or the 250-gr. Speer Grand Slam, which I have not yet tried). The front portion of the big Nosler, ahead of the partition, is quite soft and expands readily even on deer-size game, while the intact rear half assures penetration on more massive beasts.

But for general use on animals smaller than elk, I would pick one of the lighter bullets, most likely Hornady's 225-gr. Spire Point. I shot one aoudad (Barbary sheep) at about 150 yds. with that bullet. It expanded well on the 200-lb. animal's ribs and wrought impressive mayhem through the lungs. The exit wound was large enough to cause a good blood trail, but said trail was extremely short as the animal dropped within four paces.

I will illustrate my feelings about the .338-'06 by explaining that when I am guiding hunters, I always carry a short-barreled Mauser .30-'06. It is used only for following up and finishing off wounded game, when quick shots at rapidly receding tail-ends are the norm. Good penetration and lots of stopping power are obvious requisites for the work.

The .30-'06 rifle is a delightfully fast-handling tool that has served me well, and I am very fond of it. But I am replacing it with something slightly better.

I have sent the McMillan-barreled rifle back to Bill Wiseman. He is going to turn the barrel down and otherwise trim its weight by 1½ lbs. Then I will have not only an improved back-up gun, but also a splendid rifle for deer, elk, bear and moose at close and medium ranges.

It will be almost weatherproof and able to stand up to the most rigorous conditions. And despite being a handy and portable piece of moderate recoil, it will still strike a walloping blow, because the .338-'06 is one of the finest medium-bore cartridges of them all. ■