

The primer sho makes a difference, good and bad, and in more ways than we might first figure. Different primer brands and offerings influence pressure, velocity, stability, accuracy, and, yes certainly, accuracy (it's the most important influence from the primer). I wish it was as easy as recommending one brand and model but, even if there was a decided ultimate primer, they keep making the dam things over and over and don't always get it right!

IGNITION FIRING THE FUELING

[or, "Why can't I get 4320 to shoot in anything?"]

For our purposes, "ignition" can include the initial spark provided by the primer as well as the combustion of the powder itself. The extent this term applies to combustion should be evident by considering the component discussed.

First, and perhaps foremost, we can't see any of this. The entire combustion process lasts scant milliseconds and it takes place in the sealed dark. The "evidence" of what combustion might do, or ways it can be influenced better or worse, comes some from studies done in allied sciences, and a few things that we do know about, like pressure curves and the like. The thing to keep firmly in mind is that the majority of this is logic and sense, and, therefore, automatically suspicious in its relation to "fact." That said, it sure seems that consistency of ignition must reflect on velocity spread: consistency of shot by shot bullet speeds. If nothing else, incendiary consistency tightens it. Improved ignition consistency is no doubt the reason deburring the inside flash hole, for instance, often makes a notable improvement in accuracy. More correctly: *if* deburring makes an accountable difference in accuracy this just about has to be why.

This may also be a reason that a relatively full case of powder tends to shoot well — assuming

that the powder provides the appropriate pressure and velocity characteristics, which means burning rate. It's possible to fill a small case with a "magnum" powder and get hideous performance, so it's not as simple as powder volume.

[My second subhead on this chapter actually has been a constant source of indignation: IMR® 4320 always looks just like the "perfect" propellant for much what I shoot. It's a little slower than 4064 and meters like sugar. I've never had it work. Ever. Never, ever.]

Having opened that can of worms: What does (really) matter in powder selection? If there is an answer I sure don't know it, and I don't think anyone else does either. If it were as simple as matching burning rate to case volume — jointly optimizing each — then we could choose the ideal load using a highlighter. It frequently works that way, but since different but very similar propellants produce different and frequently most asimilar results on target, they's mo to it.

Why very similar powders produce very dissimilar results is one of handloading's mysteries. Another is why combinations of powders and primers, and also using primers as a variable in otherwise "identical" loads, produces often differing results. In another place there's proposed a few possibilities for why one bullet or one load shoots differently in two similar rifles — some fact and some reasonable but unproven (and unprovable) theories — but now we're stumped. However, given that I imagine I'm obligated to produce as many hypotheses as self-respect allows, here goes nothing.

There obviously is a "synergy" or synergetic

Hot and Cold Results

There is a prevalent idea among some that cool primers produce better long range accuracy with stick powder, and one basis for that thought owed a lot to a lot of RWS® primers. RWS® (or Sinoxid®) can be hard to find, and some of its newer production doesn't always behave as well as they used to. [Yes, lot to lot variations do exist. This isn't just something liability conscious conservative reloading manual publishers say for those reasons: primers do prime differently depending on which run they came from. They don't usually go from good to bad, but they do go somewhat from hotter to milder and, without question, from gooder to goodest.] But, if mild output was the only criteria in good performance with stick powders, then CCI® would always shoot better than anything, and that's not true. Nothing is that simple. Federal® primers, which have a huge following among competitive shooters, and hold numerous titles and records in Benchrest competition, are relatively loud. There is something to this, though, in that, yes, I've found that CCI® can do really well with stick powders and that Federal® can do really well with ball powders. I best also say that, no, I've not seen CCI® do well with ball powders. If there's something to set down I guess it would be that ball powders need a hot spark but stick powders can do well with either. As also should be clear by now, anything I'm willing to venture from personal experience has, ninety-nine percent of the time (that's too high, say "ninety"), been agreeably confirmed with people I know know well.

combination been found when a load works well. Essentially, that means that the whole is greater than the parts sum. Pretzels go with beer. Breaking down the ingredients we'd see that doughnuts should also go well with beer, but substituting the salt for sugar (ingredients that look the same) destroys the synergy. Okay, Germans like chocolate cake with beer, but they also like "Unser Charlie." What an example, I know, but that was the best I could do on short notice.

Synergy has also been described as "magic." Beyond incantations (which may not always be out of the question), a concept like magic is germane to inexplicable but observable phenomena. Questioning a higher power and wondering why an extra half grain opens up the group are both futile pursuits. There is no answer — just be satisfied in the acceptance. Boy is that an easy way to get off this hook.

Folks have rigged up various primer firing devices that settled nothing. Some of these have pointed out differences in ignition characteristics, but none have provided calculable, reliable means to anticipate performance in varying combinations of primers and propellants. There is a tendency for a "cooler" primer to work well with

stick powders and a "hotter" primer to work well with ball type powders. There is also a tendency for that proposition to be continually invalidated.

While representative examples, meaning different lots, vary in flash output, generally speaking CCI® BRs and RWS® are coolest and Federal® Match™ and WW® are hottest. Remington® leans toward hotter and most any make's "magnum" model primer puts out a strong spark. Some propellants need one over the other, but every combination will perform best with one brand, and within that scope, one lot. This difference may be slight, but it will be there.

I haven't seen much about this, but always suspected that ball powders, especially, but others just as well, could get in through the flash hole and clog up the works prior to ignition. Well, now. I don't know if that has to do with much of anything, but did get some confirmation from a penpal, of sorts, that none other than Dr. Louis Palmisano, co-originator of the PPCs, seemed to think this was a factor that might do well if eliminated. His suggestion to my source was cigarette paper or very thin foil over the flash hole (either side should work, but specifically between the primer and the flash hole) and further said that his