

The New British Rules of Proof

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EARLY this year the National Rifle Association had the pleasure of a visit from Major Victor Seely, Renter Warden of the Worshipful Company of Gunmakers in London, and a Director of James Purdey & Sons, Ltd.

As a result of this meeting the National Rifle Association of America assumed responsibility for the distribution within the United States of the "Rules of Proof 1954". These are the newly revised rules (compiled in book form) under which the proving of commercial small arms is carried out in the London and Birmingham Proof Houses. They are being sold at cost by the NRA Book Service.*

In Great Britain, as in most of the principal countries of the world except the United States, small arms must be officially "proved" before being offered for sale. This also must be done after any alteration in the gun affecting its strength or safety, for example rebarreling, rechambering, reboring, lightening, etc. The object is the protection of the user. Proof consists in firing the piece with a prescribed heavy overload, and then examining it to be sure it shows no weakness. Lest anyone jump to the conclusion such an operation is needless, it may be pointed out that military small arms and cannon of every caliber, in the service of every nation including our own, are required unconditionally to undergo proof before being put in use.

American makers prove products

Perhaps it was because American arms were once manufactured in many factories, some of them widely separated, that no proof law was ever promulgated in this country. However, it should not be thought that the products of American arms factories are put on the market unproved. All the reputable estab-

* Rules of Proof 1954. 45 pages, of which 5 are folding, 8x13 inches. Printed on high grade paper, black imitation leather binding. Price \$10, plus \$.35 for handling and postage. NRA Book Service, 1600 Rhode Island Ave., Washington 6, D. C.

lished American manufacturers of commercial arms subject their weapons to a severe proof before offering them for sale. In the case of shotguns especially, this has been done in general accord with the British rules.

However, it should be realized that no proof is done by the great majority of the numerous custom gunsmiths in this country whose business is the assembling or alteration of firearms to order. These find it difficult if not impossible to prove their products even when they wish to do so, partly because the proofloads used in American factories are not made known and partly because many of the custom products are chambered for a great variety of 'wildcat' cartridges for which there are no proof standards.

The new Rules of Proof 1954 rest on more than 300 years of development and experience. In the year 1637, the London gunmakers obtained from the King (then Charles I) a Charter of Incorporation. In old-fashioned but pointed language, they brought out that while they had themselves obtained more exquisite skill, divers blacksmiths and others inexpert in the art of gunmaking had taken upon them to make and prove guns after their unskillful way, whereby not only were the expert gunmakers much damnified in their livelihood, but much harm and danger had happened to some of His Majesty's subjects. Accordingly, the Charter as strengthened in 1672 empowered the Court of the Gunmakers Company to prove and mark all guns, barrels, etc., made in London and ten miles round, or brought in from foreign parts. In 1813, at least partly as a result of the work arising from the Napoleonic Wars, the Guardians of the Birmingham Proof House were also incorporated. These two chartered *private* companies bear the responsibility for proof of all commercial small arms in Great Britain. Their rules and proofs are the same, though their marks are different.

The substance of what follows can be

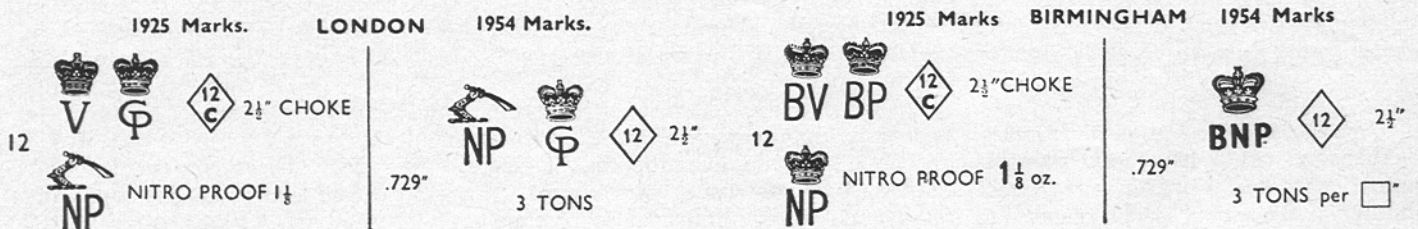
found in the new Rules of Proof themselves. However, I am much indebted to *The Field*, London, for their kindness in permitting use of material appearing in the issue of January 27, 1955, in an authoritative review by R. P. Lees, the Proof Master at Birmingham.

Pressure is the measure

The new rules provide for the fixing of proofloads on a measured pressure basis. For the definitive or final proof, the pressure must exceed the mean service pressure by 60 to 80 percent in smoothbore arms, and by 30 to 45 percent in rifled arms.

Of course, pressure has always been the basis of proof, but it has in the past often been an uncertain pressure. The comparative regularity and insensitiveness of blackpowder to loading conditions made it possible to make up satisfactory proofloads (in shotguns at least) simply by a heavy increase in the charge of powder and shot. Before World War II, however, Imperial Chemical Industries brought out 12-gauge shells with much heavier charges of shot than the standard, and yet usable in ordinary game guns since the peak pressure did not exceed that given by ordinary shotshells. (The idea was last year adopted in this country, in the form of the 2¾-inch Magnum shells loaded with 1½ ounces of shot.) The availability of widely different loads in the same gauge took much of the usefulness out of the former British system of marking the gun with the load to be used. Therefore, to quote the above-mentioned authoritative review: "It is considered that the Proof marking of highest mean service pressure is the only satisfactory answer to this problem, for pressure is measurable and can be expressed briefly in terms universally understood". Pressure as measured by crusher cylinders is meant.

Accordingly, in the future British sporting and target arms will be marked with the highest mean service pressure, a very unusual departure from the prac-



tice of any other country so far as known. These will be shown in tons per square inch, meaning long tons of 2240 pounds. Accompanying this pressure marking will be the caliber and length of cartridge case—for example, a .318 rimless nitro express sporting rifle will be proof stamped .318" 18.5 tons 2.40", and a 12-bore game gun .729" 3 tons 2½".

Accompanying this departure in practice, it is also expected, according to the above authoritative report, that manufacturers and loaders in Great Britain will print on cartridge cartons additional information to relate the contents to the new pressure marking on guns.

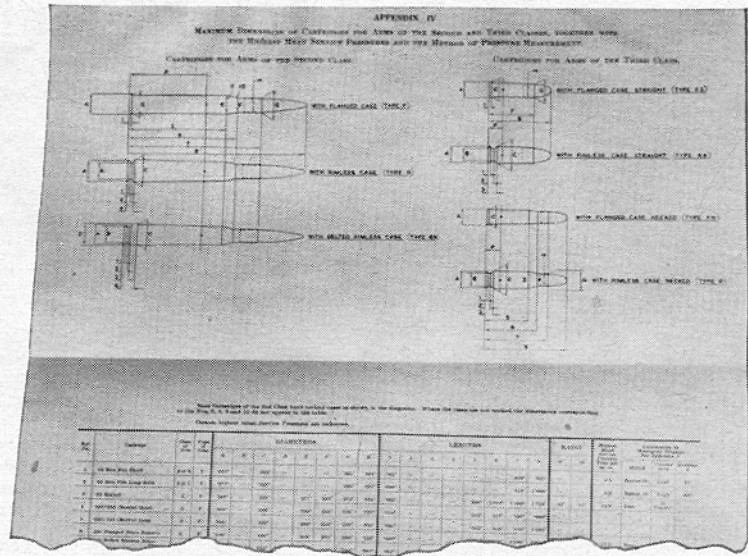
Of course the above-mentioned markings will not be the only ones stamped on the arm. They will be accompanied by the traditional London and Birmingham stamps to indicate proof and view. However, the use of these is shortened. The most noticeable feature here is the elimination of the view mark, which shows the gun has been viewed (the traditional word for "inspected") after proof firing. The need for a separate view mark has never seemed quite clear anyway, I for one being unable to comprehend how a gun could be said to have been proved without having been viewed. The word "Choke" is also dropped, having no longer its original usefulness.

At any rate, by the change from 1925 to 1954 Rules the number of stamps on a shotgun regularly proved has been reduced from nine to six at London, and to five at Birmingham. The cut on the preceding page (courtesy *The Field*) illustrates this reduction. While more than one consideration may have entered into this change, it certainly is true that the flats of a double gun's barrels with complete sets of the 1925 stamps looked pretty well beat up.

It is of interest that all metallic-cartridge proof rounds are prescribed to be lightly oiled before loading in the gun, which tends to increase the severity of the proof.

Provisional proof

Mention has already been made of the definitive or final proof of the gun, in connection with prescribed pressures. This is the proof that checks the safety of the completed gun, and thus protects the user. The other kind of proof is provisional proof, which is performed on gun barrels in the rough-bored state. Barrels of seamed or burnt steel are in this way made to fail at an early stage, before much labor has been spent on them. Provisional proof is thus primarily for the benefit of the gunmaker,



One appendix to the "Rules of Proof 1954" gives maximum dimensions of cartridges, highest mean service pressures, and method of measurements

and it is easy to see how he would wish to have it before going very far with a pair of expensive barrels. On the other hand, it can hardly pay in the manufacture of mass-produced guns. It is seldom if ever used in the United States. The new Rules of Proof make it optional for single-barrel shotguns, but it is not clear why it is required with any. The gunmaker can be relied on to ask for it if it will be of any use to him.

An interesting feature emerges in the proving of shotguns. While "Nitro Proof" of shotguns has been supplemental in Great Britain since 1887 and obligatory since 1925, and while the new rules contemplate the possible use of smokeless powders for such proof, smokeless powders have not yet been so used. The reason is that blackpowders have long been available which developed the required pressure level for proof at the breech and maintained it satisfactorily up the barrel, but until recently there have been no smokeless powders that would do the same. Sufficient pressure up the barrel could be had with them only at the expense of excessively high breech pressure. However, the change to smokeless for nitro proof can be made in future if desired, using smokeless powders lately available. This situation is roughly paralleled in the United States. Here the Sporting Arms and Ammunition Manufacturers' Institute permits the use of either black or smokeless for nitro proof, but some manufacturers consider that a better proof can still be given the whole barrel with blackpowder than with smokeless.

Appendices valuable

The Rules of Proof 1954 contain, in addition to the rules themselves, a

quantity of other information in appendices. Much of it is not available anywhere else. Its clear and accessible presentation here makes this work unique.

Appendix I provides specifications for loading and mean proof pressures for certain calibers. Appendix II continues this with the proofloads in detail for shotguns from four-gauge to .360 bore, and rifles and pistols of some 135 calibers—British, American, and European. The publication of such information is much at variance with the practice of manufacturers here, which is not to release it at all.

Appendix III shows by outline drawing and tabulation the standard chamber and bore dimensions of shotguns, and the diameters of bore gauges from two inches down to .350 inch. It is by this means that the nominal gauge of the shotgun is determined, even though (as often happens) its bore size is not precisely standard. The table contains also the highest allowable mean service pressure as measured at both one inch and six inches before the breech face.

Appendix IV for metallic cartridges gives the maximum cartridge dimensions for 90 calibers, together with their highest allowable mean service pressures and the method by which the pressures are taken. An indication of the thoroughness of this information is the fact that the table contains 26 columns.

Appendix V describes the methods used in taking pressures, with outline drawings of each type of fixture. These include both the radial and the base methods. The latter, peculiar to British practice, places the copper crusher cylinder in the bolt head of the special pressure gun, and allows the oiled cartridge case to move bodily a short distance in compressing the crusher. ♦♦♦