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ILION RESEARCH DIVISION

MONTHLY REPORT

JUNE 1956

SHOTGUNS

SPORTSMAN-50

12 Gauge

Research activity has been limited principally to several problems effecting production and some customer complaints on this model. Fortunately, these have been few in number.

An improvement in the design to eliminate trouble with the neoprene ring seal at the forward end of the fore end is being worked on. There is an area between the Barrel and the Fore End which permits a segment of the neoprene ring to be unsupported so that after considerable shooting or disassembly and reassembly results in damage to the part. This makes it difficult to remove the Barrel Assembly and also might result in gas leakage. There have been five different design proposals considered, the majority of which have proven inadequate or involving problems of interchangeability. The investigation testing is continuing in effort to arrive at the most feasible solution.

The proper operation of the Magazine Caps with the Dial-A-Matic controls has continued to be a problem, especially from standpoint of eliminating excessive lockages in the assembly. Various refinements have been considered and are being worked on to improve the efficiency of this assembly and also a more positive testing device has been provided as a means of more positive inspection of the work.

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SPORTSMAN-53 Continued16 Gauge

A preliminary pilot test was fired using ten guns which had been assembled by Production with the modified design which involved a minimum of tooling. The Plant reported a very good performance through gallery test firing; however, Research testing involving a complete range of loads and with shoulder shooting under actual field conditions gave less impressive results. In this case the overall malfunction rate for the ten guns being fired 325 rounds each was 2.9%. An analysis of the results indicates that the difficulties were confined almost entirely to competitive ammunition and more than half the malfunctions were failures to feed into the chamber where shells were caught on an obstruction in the Receiver. The cause for this condition is being eliminated and the guns will be retested. The remaining functioning problem would then appear to be feeding from the magazine using Winchester Magnum ammunition, which has continued to be a problem in the 12 Ga. gun as well as the 16 Ga..

Effort is being made to clear up these design problems so that the 16 Ga. assembly might be released not later than the middle of July.

20 Gauge

Plant reports that all parts for 20 Ga. pilot assembly sufficient to put up about 50 guns are available. These have been prepared to the modified design which would involve the lesser amount of tooling changes for this gauge. It is expected that a few of these guns should be made available for testing within the next several weeks.

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SPORTSMAN-X

The first appearance model for this proposed shotgun is being made ready for review at the next scheduled Operations Committee Meeting in July. Research work on development of the action for this proposed gun is being accelerated with additional facilities and personnel being assigned.

CENTER FIRE RIFLESMODEL 725

Design details were completed sufficiently to permit Plant to prepare tooling and product cost for the proposed refinements as requested by Sales, and it is expected that the appearance sample and indicated economics will be available for review by the Operations Committee and Sales during the month of July.

It appears at this point that the requirements from the standpoint of improvements to the Safety and other features requested by Sales will be adequate. There is considerable doubt that any satisfactory return can be shown with the economics in view of the proposed sales forecast and selling prices as compared to the original designs. It is of course possible that an improvement be realized through elimination of some of the more costly proposed changes which influence the estimate from standpoint of required expenditures.

Another problem which remains to be resolved is the checkering of the stocks for the ADL Grade. At the present time machine checkering has been limited to the short stocks which are the shotgun style with all of the long stocks being hand checkered. The relatively high cost for hand checkering is a major factor in the economics for the ADL Grade rifle. And the Machine Development Group has been asked to consider what might be done for this situation.

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MODEL 740 - CALIBER 308

Release of rifles for shipment has continued to be held up because of the relatively high rate of gallery rejects in functioning. The characteristic appears to be related directly to the available "power" from the ammunition to function the M/740 gas operating mechanism. With some exceptions, actions which are relatively free from any internal friction or similar characteristics appear to function satisfactorily. Also, rifles seem to improve in functioning with additional testing. Design and Plant Engineers are working on the problem in effort to arrive at some immediate solution which would make it feasible to proceed with production and shipments on this new caliber.

MODEL 750 - CALIBER 308

Samples of the Magazine Followers have been reported as shipped by the vendor and are expected to be available before July 1. If found satisfactory, the initial pilot production of parts will be released to permit assembly for pilot testing during the coming month.

MODEL 750 - CALIBER 244

Barrels for pilot production are being currently processed and should be completed by June 30. It is anticipated that parts for the pilot assembly should be available for testing in July.

MODEL 750 - CALIBER 222

Estimates of tooling for adapting this cartridge to the M/750 have been completed. The required expenditure appears to be relatively high and on this basis it would seem doubtful that the proposal can be economically justified. Details will be given further study anticipating a review with the Operations Committee in July.

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RIM FIRE RIFLESMODEL 552 - AUTOLOADING RIM FIRE RIFLE

The new Research testing facilities were completed during the month, permitting endurance testing to be resumed on the four rifles which were assembled earlier for evaluation. Effort is being made to complete these tests in time for a review during the month of July.

MODEL 555 - LOWER COST AUTOLOADING RIM FIRE RIFLE

Three appearance samples have been turned over to Sales for review and approval of the proposed colors. These are in shades of maroon, brown and green. A fourth combination which would involve a black stock with chrome plated Receiver <sup>Cgo</sup> is being prepared at the suggestion of Sales.

The construction of the mold is continuing in anticipation of the scheduled completion in September, and in the meantime the functioning model, utilizing a machined nylon stock and receiver, has been fired more than 5,000 rounds. The performance now appears to be very good especially from standpoint of feeding and ejection characteristics.

MODEL 524 - BOLT ACTION RIFLE

The completion of design and tooling for this proposed model awaits authorization by Management in line with recommendation of the Operations Committee that this model be introduced to replace the present M-21T and M-21R.