guns review

Volume 25 No. 6 June 1985

Price 75p

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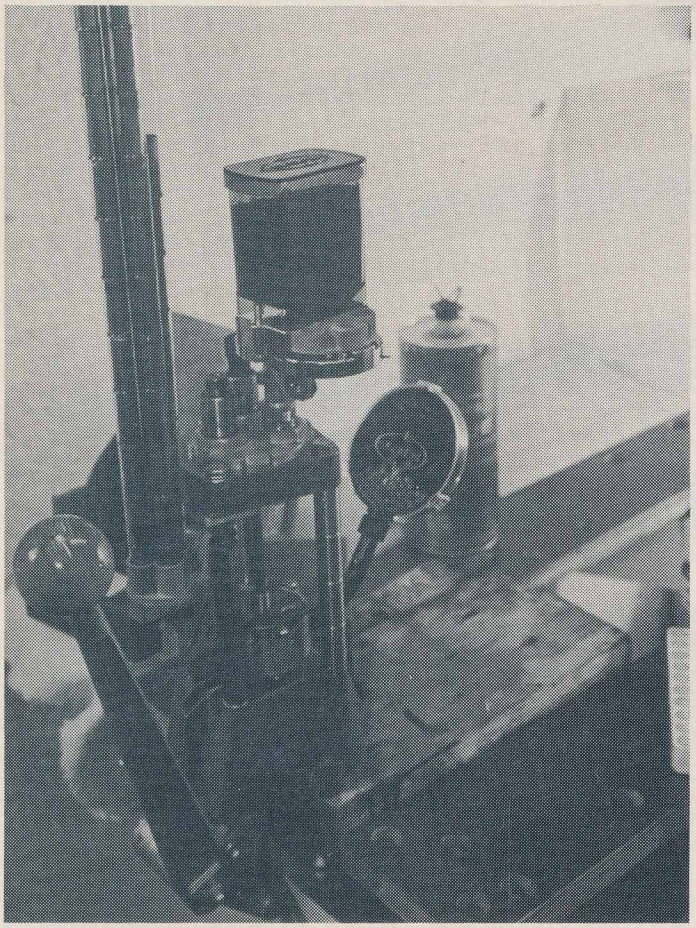
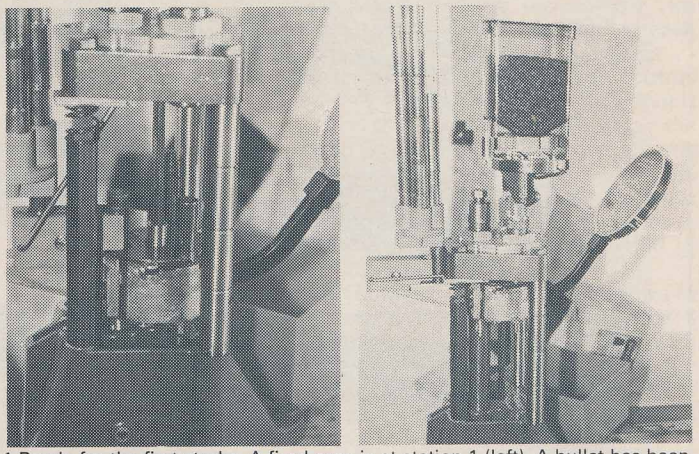
The Lee 1000 Progressive Reloading Press

THE LEE PROGRESSIVE 1,000
RELOADING PRESS

Colin Greenwood



The Lee Progressive 1,000 press set up and ready for action.



1 Ready for the first stroke. A fired case is at station 1 (left). A bullet has been started in the case at station 3 (rear) The case at station 2 has been primed and is ready to be neck expanded and charged with powder. 2 With the shell holder fully up, the case carrier has retracted to take a new case from the feed tube. The disk at the bottom of the powder measure has moved to dump its charge. The twisted section of the hexagonal rod is visible below the base plate. Also clearly visible is the pin running from the primer feed chute along the notches in the frame post on the right.

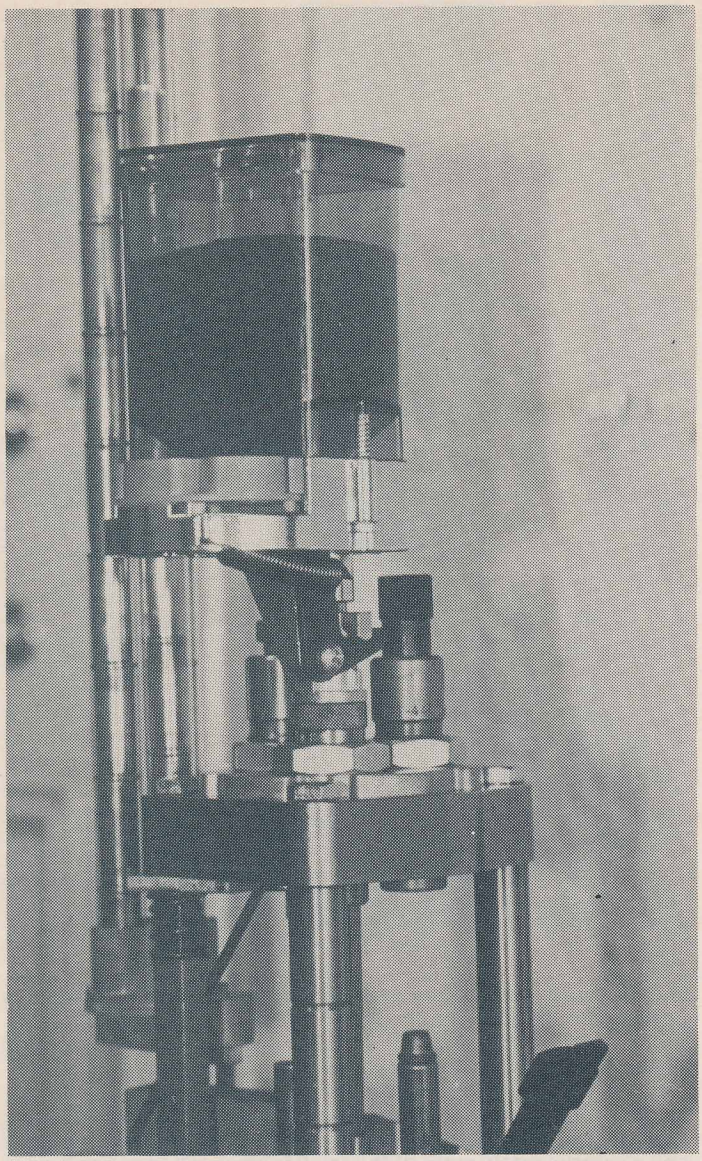
THE PARENTAGE of the Lee Progressive 1,000 press is perfectly clear from a relatively cursory examination and it is instructive to look at the way the machine has been developed. Essentially it is a combination of pre-existing components, each of which has been tested on the market place. The final assembly and the essential parts which made this into a truly progressive press are almost like the glue sticking together a lot of other parts. If those who designed the basic parts knew from the start that they were heading for a progressive press, they built a very flexible basic unit and worked through a logical progression. If they merely developed the design one step at a time without having the ultimate goal in mind they were either very lucky or very clever indeed.

The basis of the new press is the Lee Turret press produced about 1982. This had a rectangular base of light alloy with three posts supporting a head which held an easily replaced rotating turret for three dies. The handle operates through a compound linkage to give a very powerful stroke and its positioning is infinitely variable. The shell holder is mounted on a strong single ram. The die set can be changed in a second by removing the turret and replacing it with another in which new dies are already set up. The shell holder is equally readily interchangeable. The Lee Turret press is an excellent press which is particularly suited to reloading pistol cartridges.

Two other existing accessories are major features of the Lee Progressive 1,000. The Lee Auto Disk powder measure is designed to operate through a special neck expanding die. The powder measure has a rectangular transparent powder measure which has baffles designed to ensure that pressure on the feed point does not vary with the weight of the powder in the hopper. Measuring is done in four plastic disks, each of which has six cavities. This gives a total of 24 different cavities throwing powder charges from two to 24 grains. A disk, set for the appropriate cavity is simply slipped into its recess under the powder hopper. Fitting and changing disks is a simple process achieved in a second or two. The powder measure is screwed into the top of the neck expanding die. As a cartridge case is fed into that die it pushes up a bushing which connects through a linkage to the disk in the powder measure. At rest, the cavity in the disk lies under the feed of the hopper. As the press is activated, the disk is moved forward, dumping its charge through the die into the case. As the case is lowered from the die, the disk moves back.

The system seems almost foolproof. The powder measure will not operate until a case is fed into the die. If the case is neck expanded, it also receives its powder and seems virtually impossible to fail to charge the case. Double charges could only result if the case were deliberately fed into the neck expanding die twice. A chart supplied with the measure indicates the charges of various powders thrown by each cavity. It remains important, however, to check weigh these charges before loading. We selected a cavity for 11.5 grains of Unique and found that it threw 10 grains. Such an eventuality is not abnormal as the bulk of powders can vary and the techniques of the loader have an effect on the amount thrown. During the loading sequences we checked the consistency of the powder measure by removing charged cases, in batches, on a number of occasions. The variation was never greater than 0.2 grains and was usually much less. The Auto Disk powder measure is available for use in any press which takes the special Lee neck expanding die. It is also used on the progressive press.

Another existing device incorporated into the progressive press is the Lee Auto Prime. A primer tray which has a ribbed base has a feed channel which fits into a chute at the back of the press. Primers are loaded into the tray by simply dumping a boxfull in and then shaking the tray until all the primers are anvil-up. The transparent lid is then slipped on and the feed channel closed with something like a pencil as the tray is slipped into the chute. On the progressive press one of those marvellously simple ideas ensures a constant primer feed. A peg running out from the primer feed chute contacts the rear right hand post of the press frame. This post has a number of notches machined into it so that, as the ram is raised and lowered, the primer feed system is constantly agitated. During our tests we never saw a hint of jamming or poor primer feeding. The Lee Auto Prime can be fitted to a number of Lee presses and is not unique to the Progressive.



Above: When the shell holder is down, the disk under the powder measure slides back under its hopper. The linkage which operates the disk can be seen at the top of the neck expanding die.

During 1983, Lee modified their turret press so that the turret rotated one stop with each stroke of the press. A standard shell holder presented one cartridge to each die in turn, creating a semi progressive system which could incorporate the Auto Disk powder measure. The turret was rotated by a hexagonal rod running through a plastic bushing and attached to the shell ram by a holder. The rod was seated into the turret at its top and has a twisted portion near the bottom. On the downstroke of the ram, the twisted portion caused a rotation and the turret was shifted one die on.

The final development is the new Progressive 1,000 press which utilises the previous designs, with additions, to create a truly progressive press with many quite surprising features. *Guns Review* has carefully tested one of the first presses to arrive in this country. Ours was set up in .44 magnum calibre.

The press arrived almost fully assembled, but a few parts had to be fitted after unpacking. That process is aided by a clear instruction sheet but we caution users to read the sheet carefully two or three times, with the press in front of them, so that they avoid any snags in setting up. Once assembled, our press was bolted to a firm wooden base which, in turn, is fitted into the ubiquitous Black and Decker Workmate.

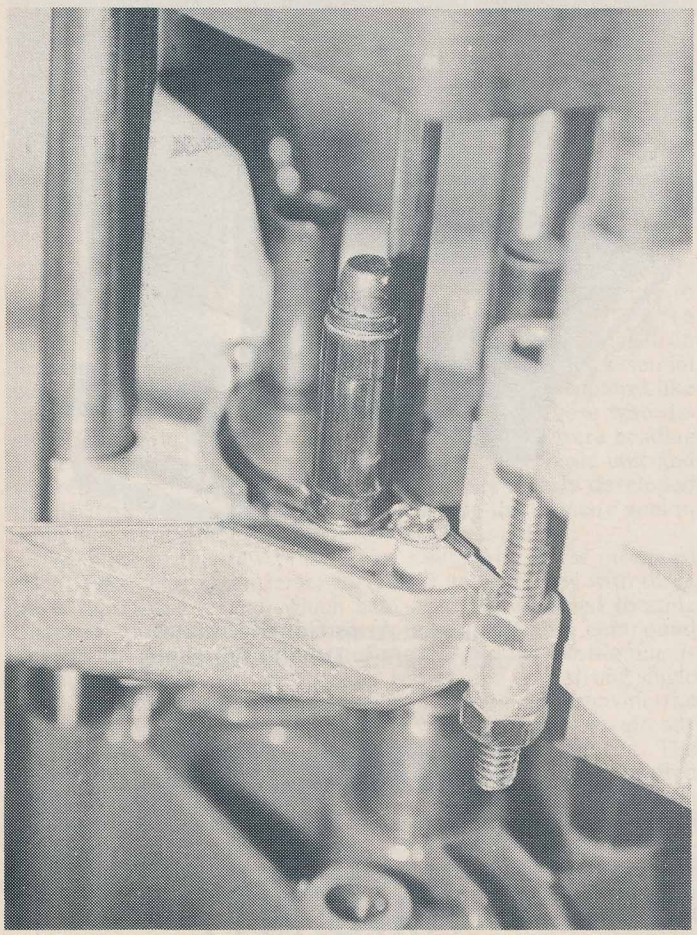
The Progressive press utilises the frame and turret of the standard turret press and uses ordinary dies with the Lee neck expanding die which allows the Auto Disk powder measure to be used. Setting up and adjusting dies is therefore exactly the same as it is with any other press.

Progression is achieved by means of a rotating three station shell plate mounted on a base which takes the place of the ordinary shell holder. The twisted hexagonal rod developed for the Auto Index press is now used with the same nylon bushings to rotate the shell plate. Spring loaded detents position the plate and secure it after each movement. The nylon bushing which is the key to the rotating movements may look a little flimsy but the press is so designed that it is this bush which takes all the strain and wear. The bushes are replaceable but on our experience to date each will last for many operations. Spare bushes are provided with the press.

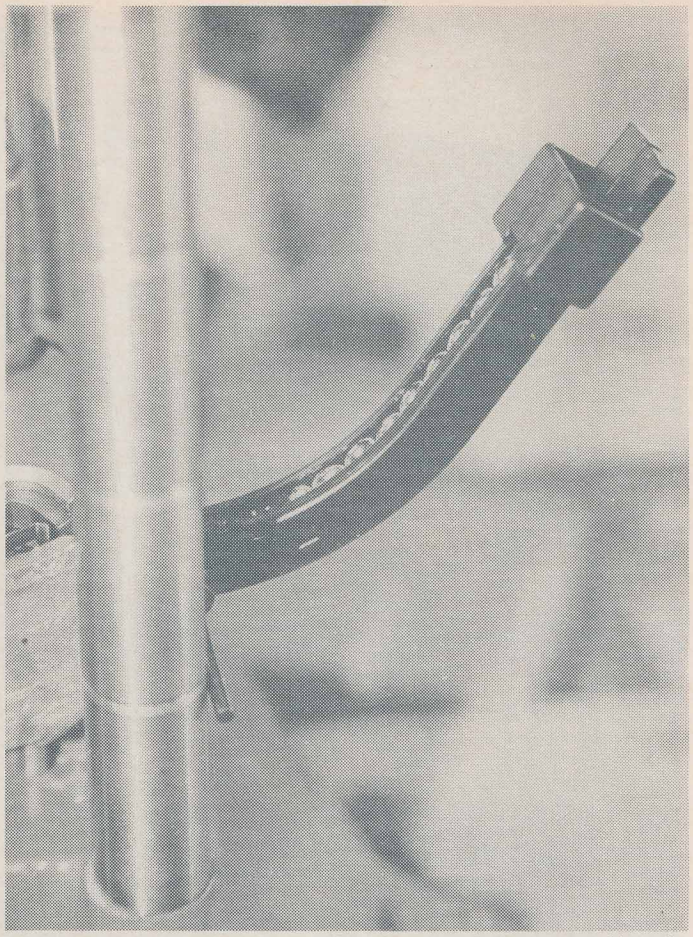
When the press is first set up, the shell plate may not index perfectly with the dies. It should first be checked to ensure that it is not out of sequence because of partial ram strokes. If the press is operated for under half a stroke and then returned, the shell plate may be at half stage. Taking the ram to the top of its stroke and then making a half down stroke will correct that. If the shell plate is almost indexed, it can be finally zeroed by means of a small screw at the side of the shell plate base. This brings the indexing into perfect alignment which is necessary for trouble free operation.

The shell plate rotates on the down stroke of the ram, that is as the handle is lifted back to its vertical position. The makers suggest that, having set the plate up, a number of shells should be run through without feeding in components so that the operations can be checked and the operator can get the feel of the machine. Whilst doing this we deliberately over and under adjusted the indexing screw and found that it could very quickly be re-adjusted to its correct setting.

A case feed system is fitted to the press. Four transparent plastic tubes fit into a rotatable base. A nylon block, the front of which is recessed for a case, runs on the base plate and is linked by a rod to the head of the press. As the handle is pulled down to lift the ram, the carrier block runs back away from the shell plate until the recess is under a feed tube. A fresh case then falls in. As the ram is brought down again, the carrier runs forward, bringing the shell with it and also blocking off the bottom of the feed tube. As the shell plate rotates on the down stroke, a loaded round is expelled



A loaded round drops off the press on each stroke of the handle.



Primers left in their feed at the end of loading operations are something of a nuisance.

and an empty shell holder is presented to the block. The shell is pushed into the block on the final over-stroke which also seats the primer. If the press is merely brought down to its rested position on the down stroke, the shell will not be quite home.

The case feed system worked extremely well. When one tube is empty the base is rotated by hand to put a fresh filled tube over the shell carrier. The four tubes hold just over fifty 44 magnum cases and proportionately more of the smaller cases. The press will work perfectly well without the case feed system. The manufacturers draw attention to this and point out that by feeding the cases by hand, the need to fill the tubes at intervals can be avoided. That process is so quick that we would certainly retain the feed system.

The last over-run stroke of the return movement of the ram seats a primer into the case which was sized on the last upstroke. Apart from a new case slipping into the shell holder, no other operation takes place on this final downstroke and the seating of the primers can be felt quite easily provided the press is not operated too quickly. If high speed production is being attempted, the feel of the primer can be lost in the speed. The only problems experienced in primer feeding occurred when the flow of production was interrupted. If there was no shell over the priming post when the press was operated, primers tended to stack one on top of the other. Unless these were removed by hand they tended to fall under the plate or amongst the spent primers. If the loading process is interrupted at the priming stage, the user should simply take the unused primer off the post and then carry on to the next process.

The only operation which has to be performed manually is to start a bullet into the mouth of the case at station 3. That having been done, all other operations are automatic on the full stroke of the handle down and then back up again. A loaded round falls off the press each time.

The shell plate has three stations. When loading is under way and all stations are filled, the following is the sequence of operations. A fired case lies in station 1. When the ram is lifted that case is sized and de-primed. As the ram is lowered the shell plate rotates so that the case is at station 2. On the last part of the

downstroke of the ram, that case is reprimed and a new case is fed to station 1. On the next upstroke, case No. 1 is neck expanded and charged with powder before being rotated to station 3. A bullet is started in its mouth by hand and seated on the final upstroke of the ram. On the final downstroke, the loaded round is tipped into a waiting box.

On each stroke of the press, three cases are being operated upon. Once the press is set up, the operator's task is (1) place a bullet in the case at station 3 (2) pull the handle down (3) raise the handle again, going onto the overstroke to seat a primer. That is all there is to it. The feed systems need to be watched but otherwise the process is fully automatic.

Having set up the machine and checked all the functions we first loaded fifty rounds, breaking off at various points to check this point or that. Cases can be lifted from the shell plate at any stage. The shell plate can be turned just out of index and the cases slipped in or out. During this phase we hit a number of snags with indexing, priming and so on. Finally it was realised that our moves were too hesitant and tentative and we were seeking to check things in mid operation. The correct procedure is to set the machine up carefully and check each function before starting, then run the machine positively and firmly, trusting it to do its job.

Having loaded fifty rounds during which we spoiled four cases, missed a few primers and generally caused more problems than we should have, we put the press away. Two days later we started again. The machine was in place and we gathered around it fifty cases, a can of powder, a box of primers, a box of bullets and a stop watch.

It took 1½ minutes to fill the case feed tubes with 50 cases. It took 1¼ minutes to dump 100 primers in the primer tray, get them all anvil up and fit the tray to the machine. Filling the powder measure took just one minute. Then, with a box of bullets open and to hand and a tray under the chute to catch loaded rounds we were ready for off. Each of those operations will have to be performed individually during an extended loading sequence so individual timing is significant. Initial setting up, including all the minor jobs, was done in less than five minutes.

We then ran fifty rounds through at a fairly fast speed and without a single snag. The time taken was 10 minutes. It may well be possible to go faster than that but we advise against it. At the end of the string we found we had missed one primer. Clearly we missed a priming stroke somehow. There had been no snags in the primer feed and the fault was in the operator. In fact it did not happen again during subsequent runs.

Allowing for refilling the feed systems a production rate of 200 to 250 rounds an hour is perfectly practicable. We advise going for a slightly slower speed and carefully feeling in the primers. In subsequent runs we went more slowly and found we could run the press with no faults and could load ammunition about which we had no reservations. That is the way to do it. Accuracy and consistency should take precedence over speed.

Spent primers seemed to be a constant problem. Most fall into the frame of the machine and we drilled through the wooden mount to let them fall through into a bin beneath the bench. About a third of them missed the bin and we had a little picking up session after each loading session. That is a minor nuisance but tends to aggravate. At the end of each sequence we also had a problem with clearing the primer feed chute. Any primers left in the tray are easily removed but the dozen or so in the chute must either be worked through the press or slipped back out of the feed. Users might be tempted to leave these in place but we advise against that.

The Lee Progressive 1,000 is a pistol cartridge press. It is currently available in eight pistol calibres. Changing calibres involved firstly changing the turret, complete with dies. Whilst it is possible to change the shell plate, the makers suggest that a new base be fitted for each calibre. If that is done, changes of calibre will be both quick and simple. The press is not suited to rifle cartridges and should certainly not be asked to cope with tasks like case forming or swaging. It is just not that sort of press.

We have to say that we approached the press with a degree of scepticism. Perhaps we should have known better. The press did its job very well indeed. It is priced at just under £200 complete with dies, powder measure and everything needed to get started. That puts it in a price bracket all by itself.

Lee products are imported by Tim Hannam, The Granary, Wakefield Road, Swillington, Leeds (0532 862175) and are available through local retail outlets.