

## **DAVID BRADLEY**

### **Made the 4.2" Shell in World War II in Record Time**

The contract for making 4.2" shells during WW II came to David Bradley in June---for production not later than September. In order to meet this difficult schedule a complete change had to be effected in the method of manufacture of the 4.2" shell.

The original method was to make parts on bar stock on cone automatic screw machines. The machine tool manufacturers quoted 1 ½ to 2 years delivery on these machines, so it was up to Bradley to find another means of production. We contacted new lathe builders who worked on designing lathes that could be quickly built to handle specific forgings for this 4.2 shell. The Bradley engineers worked day and night to develop the new type of forging that could be done on Bradley hammers, and finally the new methods and new lathes were acceptable.

While waiting for the new lathes, the plant was busy getting ready... stoker manufacturing equipment was moved out, new conveyor system, power, air lines, etc., were installed. Important to the end result was the fact that Bradley engineers studied 4.2 mock-up samples far in advance of getting into actual production, to assure a perfect product.

One of the unique problems in making the 4.2 at Bradley was mastered and thereby set the standard for the entire industry; it was the problem of wall thickness of the shell. The thickness had to be maintained to a close tolerance, and gradually increase in thickness to the small end of the shell. This involved a through study of metal flow in the cold nose forming operation. Also it required considerable experimental work with the proper amount of metal removal prior to the forming operation.

This problem along with others was solved in record time and within three months after the contract was let, 4.2 shells were rolling off the production line at David Bradley---- with less than 4/10ths of 1% rejects.



The 4.2" mortar shell donated by Dale Monty and painted and cleaned up by Bob Simpson. The shell is housed at the Bradley Historical Society.