

Women Old And Young Keep Up Production Of Guns At Armory

Machines of All Types Operated By Feminine Hands That Formerly Ruled in Home Kitchens

BY WILLIAM HENRY WRIGHT

YOU REMEMBER your former cook—of the days when people had cooks? She could manage the electric range, manipulate the ironing mangle and beat up a good cake in the mixmaster. Even the automatic pea sheller held no terrors for her. But what, you never suspected she had a talent for machines.

So today, it is something of a shock to come upon her over there

again. But by and large she likes the machine shop—not to mention the huskier pay envelope at the end of the week. And with a husband in the army—well, it is something more than satisfying to slide the satiny steel through the fingers, watch the sparks fly and know that another good rifle is on the way to the battle lines.

She is only one of several thousand women who have joined the ranks of Armory workers since the

eran foremen are being obtained. In the present emergency civil service regulations have been temporarily suspended, wherever they have tended to restrict increased production. Therefore authorities have considerable latitude in making use of woman power. Operations for which was required, under standard regulations, a long-term apprenticeship, are being turned over to women as soon as they demonstrate competence—and they are doing this in a remarkably brief time.

Short Cuts in Training

Take tool grinding, for example. A toolmaker is just about tops in the machinist trade. His pay rating is among the highest in the mechanical field. And the tool grinder is not far behind, for tools have to be sharpened after prolonged use and putting them into condition again is no task for the tyro. Under civil service a man formerly had to have four years of training before qualifying as a tool grinder. But at the Armory today women are performing some of the simpler tool grinding operations after three to six months of training.

In the milling division at their Armory you will see a woman grinding such a complicated mechanism as a gang mill—a set of wheels with toothed rims set at various angles with tolerances down to 1/2000th of an inch. It is intricate work, rarely if ever before done by women. You will see another grinding carbide tipped tools, an operation requiring outstanding skill. Tool grinding and gauge checking have up to now formed one of the bottlenecks of production because of the lack of skilled men. And women have helped to break down this barrier to the flow of guns as well as to do their part in earning such an award as the Army-Navy E.

Up in the tool and gauge section in the newly outfitted expansion of the Hill shops Foreman L. W. Norton has the women actually making tools. When you see firm feminine hands putting as many as 100 serrations no more than 1/2000 of an inch deep in a tip of steel 5/8ths of an inch in diameter to form a stamp for a punch press, you realize that this latest increment to the Armory forces has come far since the first entered the shops less than a year ago.

Women are operating all kinds of machines—lathes, punch presses, hand profilers, drillers, reamers and welders. You see them at the gigantic broachers, their hands in a stream of oil that plays constantly over the work as a cooling lubricant. You see them at the intricate Kingsbury machine that is almost human in its functioning doing eight operations simultaneously—multiple drilling, reaming, tapping and cutting.



She handles a thread grinder as easily as a sewing machine.

In the metallic roar of the United States Armory's Watershops plant, standing in front of a big Norton grinder, which bulks considerably larger than a kitchen sink, and shaving a few thousandths of an inch off the barrel of what is destined to become a Garand rifle. A little appalled you watch the left hands that used to flip the pancakes and turn the chops in your kitchen, lock the smooth cold steel in its niche, turn a wheel here, push a button there and amid a shower of sparks pare the barrel down.

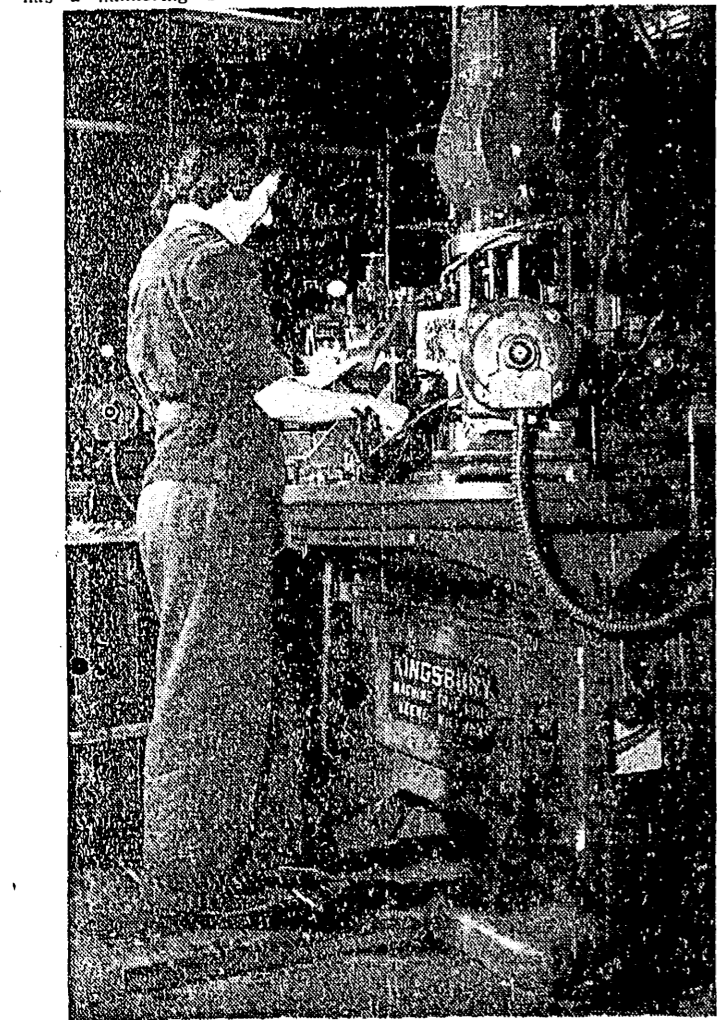
The spinning hand of a little dial tells her when to stop. She lifts out the shining tube, clips on a gauge to check the measurement, lays the barrel away in a rack, picks up another—and so on through the day.

Likes It Better "Do you like this better than baking pies?" you ask her.

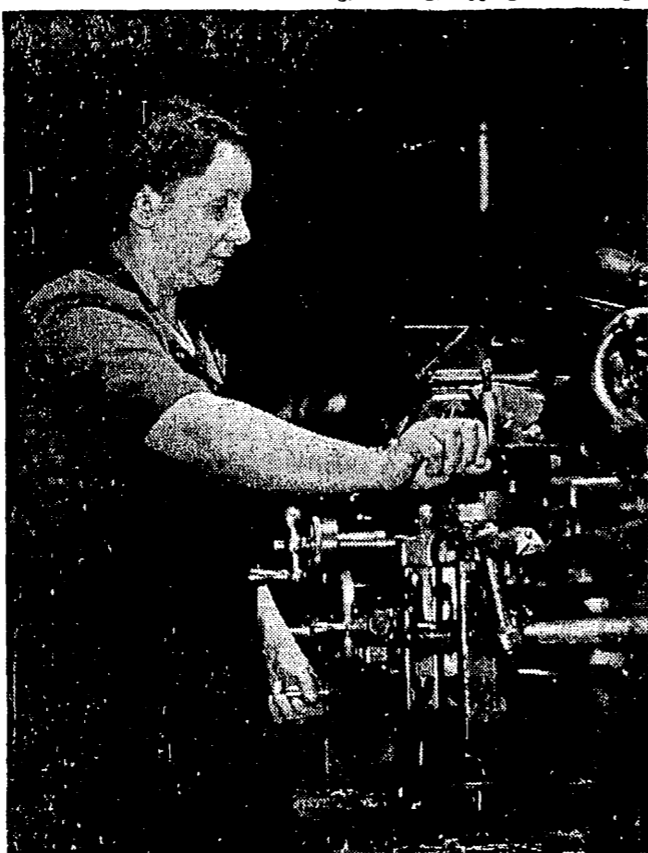
She allows that she does. Of course, there may be days when she has a hankering for the kitchen

first contingent of 13 entered the shops last November when it became clear that there were not going to be enough men to keep wheels spinning and production climbing. This little group, now increased more than a hundredfold, spearheaded the way into departments where women had never worked before, until today they stand shoulder to shoulder with men and operate machines of almost every type, save the earth-shaking trip hammers at the forges. Even here they are possible candidates for consideration. And as all earn a minimum of \$26 a week—why not?

Your former cook is not the only familiar face you are likely to encounter at the Armory. For a Springfield resident making a tour of the shops, it is a good deal like "old home" week. At desks, benches and machines he will recognize many whom he has long been accustomed to meet in office and store, servicestation and barber shop, soda fountain and cafeteria about town.



This machine will perform eight operations at one time.

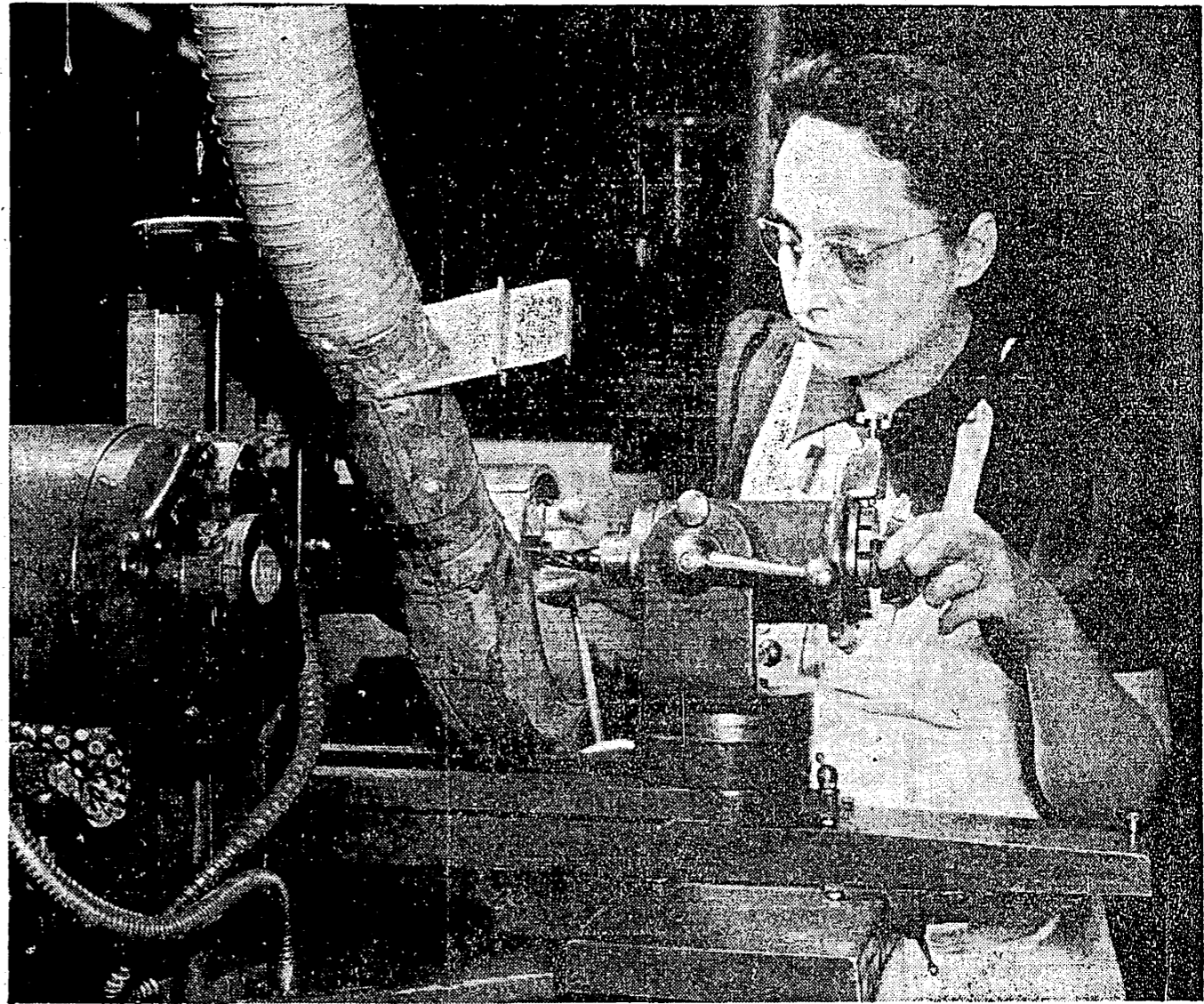


Right down to cases on a milling machine.

grandmother, some in their sixties and one even 70, doing their eight-hour stint and asking favor from no man. And alongside will be the girl just out of school who can stand all day at a broaching machine and then top off with a few hours of roller skating.

And perhaps you think these women are just doing simple assembly or inspection jobs, or serving as attendants in the tool crib. But not so. There is almost no type of machine that they do not operate. As you look across one end of the new milling division, where much of the intricate machine work is done, you gain the impression that most of the workers are women. And results surprising even to veteran

Down at the Watershops division you see them cutting the rifling in gun barrels. Rifling, in case you do not know, is a spiral groove cut in the interior surface of the barrel and serves to give the bullet a spin that keeps its flight straight. The groove has a depth of only 1/4000th of an inch. It is an intricate job that can't be seen in process and has to be constantly checked with gauges after the long pencil-like tools have gone through the barrels. It is an operation that comes near the end of manufacture and much work has already been done on the metal by the timer it reaches the rifling machines. Carelessness here means the sacrifice of many hours of labor. But women



It takes real skill to grind tools.

make the grade. Over at the forge you find women straightening the gun barrels as they first come into the shops preparatory to machining. It is an operation that



They mount guard over automatic plane milling machines.

demands a good eye and a fine sense of touch quite apart from the ability to handle a mechanism that pounds cold gun metal as easily as a hammer bends a pin.

While certain women have demonstrated their capacity for jobs requiring a high degree of skill, it is notable that employment of considerable numbers of them has been largely facilitated by the development of modern automatic machinery. In many instances it is largely a matter of feeding work into a machine, pressing a button and taking the work out. Sometimes the machine stops itself when the operation has been completed. Otherwise a pressure indicator tells the operator when a cut has been made deep enough.

It is for this reason that a woman without previous mechanical training can step directly from the home or the office into the shop and become a machine operator after a relatively brief period of instruction. And the work performed will frequently be the equivalent of what would have required a skilled mechanic in the old days.

"I don't even see the use of these adult training courses in their schools," intimated one of their Armory sub-foremen the other day. "We can take on absolutely green women and inside of a few weeks teach them to operate many types of machines with as much efficiency as if they had had previous training." This represents an extreme view. Any woman over 18 years of age

time to give the applicant some clue to her own ability, for many, green to shop work, have little idea for what they are best fitted. If they know nothing of machine work, they are classified as mechanic learners with a minimum pay of \$4 a day, which for 48 hours, with eight hours at time and a half, comes to \$26 a week. As they acquire skill and don't seem to have. The women are qualify as a barrel rifler, a tool grinder, a lathe operator or some other precision job, they may earn up to \$6.64 a day or \$43.16 a week, the Army maintaining the policy of paying the prevailing wage of the area.

This influx of women into the industrial field has brought reactions in many directions. Industrialists who have been loath to release younger men for the armed services have been given food for thought. Not long ago a high ranking army officer pointedly observed that the air corps could take a youth and inside of 18 months teach him to fly a complicated airplane, considerably more intricate than any factory machine. Why, then, was industry finding it so difficult to train men to replace those wanted by the draft boards?

Stirs Production Competition Similarly, the Armory has demonstrated that women can turn a hand at most any job in the shop. Why, then, should there be wailing and gnashing of teeth among industrialists at the departure of valued workers called to take up arms instead of making them? Women workers have had a tonic effect on the male element at the Armory. A guide Army officials in training them as assemblers, inspectors or machine operators and at the same time there is a girl ready to step into his

shoes and perhaps do a little better on the job. It has happened. "It's a new field for most women," says veteran Foreman Fletcher of the milling division. "They go at things with enthusiasm. The fact that no girl ever performed a certain operation before provides an incentive to make good that the boys aren't seem to have. The women are often very clever at figuring out new ways to complete operations, using both hands to save motion. As a rule, they have a keener realization there is a war on and want to play their part to the fullest on the home front. Perhaps it is because they have husbands or sons in the armed services that the war has hit them harder. It is not that they are any more patriotic than the men. It is merely that they sense things a little more deeply. With many of the young fellows, particularly it is just a case of marking time until they are called into service, and the high ambition to progress as machinists is sometimes lacking."

Mr. Fletcher was active in their Armory during the first World war. Women were employed then, some utilized on bench operations and ran small machines such as hand millers and punch presses. Most of them were between 22 and 30 years of age. Today, the span is from 18 years to the 60s. And the mean age of mechanic learners in the milling division rose from 34 to 38 years.

Home a Source of Worry This age bracket means that many women workers are married with

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At 57 years of age she does precision work