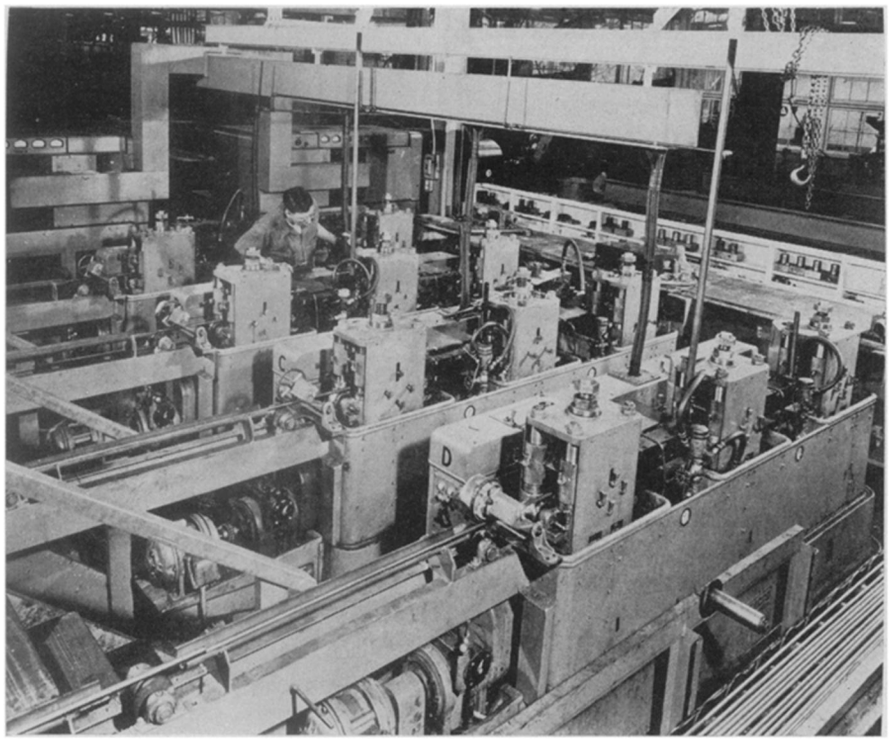

***AUTOMATIC—One has merely to push a button to accomplish hardening of steel bars by the continuous heat-treatment method shown in this Ohio Crankshaft Co. photograph. Bars enter from the left; speed controlled rollers are located in the three housings upon the unit base. Between are the induction heating coils, one for hardening and the other for drawing.***

ENGINEERING

# "Push-Button" Hardening

**A continuous heat-treatment method, employing high frequency induction, accomplishes the hardening of steel bars. One ton produced every 120 minutes.**

➤ ONE HAS only to push a button to accomplish the hardening of steel bars by a continuous heat-treatment method employing high frequency induction. The new method was developed by the Ohio Crankshaft Company, and they report that the method will permit a saving of $15 a ton in production costs. This is 50% cheaper than production by conventional methods.

Bars hardened by high-frequency induction have improved machinability, because of complete uniformity of hardness and the elimination of hard spots.

With the new equipment, bars of steel from 0.5- to 1.25-inch outside diameter are passed through two water-cooled inductor coils by a special roller mechanism. The bars move continuously at a controlled speed. The first inductor coil is for hardening, and the second for drawing.

Typical of the functioning of this equipment is the hardening of ⅞-inch bars. The bars are fed through the hardening unit, where each bar is heated throughout its cross-section to 1600 degrees Fahrenheit. They are then quenched by water at a temperature of from 80 to 90 degrees Fahrenheit, under 60 pounds pressure. The bars then pass through the second coil where they are drawn at a temperature of 1125 degrees Fahrenheit, after which they are cooled by water again to facilitate handling. The bars pass through the units at a speed of 22.8 inches a minute. The ultimate production of an installation of four sets of the new equipment is one ton every 120 minutes.

The bars average 18 to 24 feet long, although there is no limit to the length of the bars which the equipment will handle.

Natural gas is introduced into the inductor coils to provide an inert atmosphere for the prevention of scale.

It is estimated that one man can handle the entire installation of four units with ease.

*Science News Letter, August 5, 1944*

CHEMISTRY

## Hollow Metal Pillars Developed for Builders

➤ STRONG HOLLOW metal pillars covered with an extremely thin layer of plastic, finished and colored to resemble the rarest and most beautiful marbles, polished wood or other material, will be one of the available products for builders after the war. They have become possible with the development by the Goodyear Tire and Rubber Company of a method of bonding the plastic to the metal with the aid of a new organic cement known as pliobond.

This cement was made originally as a means of bonding wood to metal. Recent laboratory developments now make it usable to bond any two materials together. With it wood, rubber, plastics, cloth or leather can be firmly bonded to metal or other materials.

Some of the advantages of the new cement are that it is easy to apply, possesses high adhesion, is waterproof, and provides a flexible bond that will not crack. It is unaffected by the most severe climatic temperature changes.

*Science News Letter, August 5, 1944*

MATHEMATICS

## Mexican Mathematicians Meet at Mining Center

➤ THE MEXICAN Mathematical Society has held its second meeting in Guanajuato City, a mining center with considerable scientific tradition.

Prof. Solomon Lefschetz of Princeton University, now lecturing at the University of Mexico's Institute of Mathematics, was the guest of honor and lectured on topology.

Governor Ernesto Hidalgo of the state of Guanajuato sponsored the meeting, attended by many of the leading Mexican mathematicians.

*Science News Letter, August 5, 1944*