



**HUGE PRESS**—This tremendous press is banging heavy steel plate into a boiler drum section at the Barberton, Ohio, plant of the Babcock and Wilcox Co.

## ENGINEERING

## Giant Forge Press

► A GIANT forge press about six and a half stories tall is thumping out huge steam boilers from red-hot 50-ton sheet steel six inches thick. This is the heaviest plate ever rolled.

Designed, built and installed at the Babcock & Wilcox Company's Barberton, Ohio, plant, the big press can handle sheet steel 42 feet long. The press bends the steel slightly with successive thumps into a half-shell. When two such half shells are welded to form the boiler drum, the resulting cylinder's diameter is accurate to 1/16 of an inch.

Improved steam-driven generators require higher steam pressures to operate efficiently. That in turn means that bigger and better boilers are needed. And that means new machinery must be created to turn out economically the more-expensive parts.

By handling such large pieces of steel, the press not only increases production but also reduces welding costs. Only two welds are necessary to join the two half-shells into a boiler drum 42 feet long. Formerly, a boiler shell 40 feet long was made of 10-foot sections requiring three welds running all the way around the drum in addition to the usual welds joining the half-shells.

After the welds have been made, the drum is taken to a special room where it is given an inspection by a 2,000,000-volt X-ray machine. Flaws spotted on the X-ray film are chiseled out and the weld is repaired.

The glowing 100,000-pound sheets of

steel are handled under the press by means of pushbutton controls almost as easily as records are handled by automatic phonographs.

A specially built overhead crane carries the plate, as it is called, from the gas-fired furnace to the press. Four hydraulically operated arms with grapples manipulate the plate under the powerful jaw of the press.

Strong-muscled workmen work within inches of the plate. They are clad in lightweight garments that look like aluminum-surfaced cloth raincoats. The garments reflect heat from the plate that may be at a temperature of nearly 2,000 degrees Fahrenheit.

In addition to beating out boilers for future power plants, the press combines with another piece of equipment, a draw press, to form hollow forgings, pieces of pipe needed for specialized jobs in power plants.

The crane carries a fiery ingot of steel from the furnace and sets it down in a pit built into a moving section of floor. The pit crawls under the press and, with a muffled rumble, a big finger-like mandrel punches a hole lengthwise through part of the ingot.

The ingot is transferred to a draw bench that has another finger-like mandrel. The draw bench, operated by a powerful hydro-pneumatic pressure system, forces the hot metal through dies which make the forging thinner and longer. The result is a rough pipe with one closed end that can be left closed or that can be opened.

Although the process is not new, the press-draw bench combination can handle sizes of forgings never before attained in this country, B&W officials explained. The draw bench will produce rough hollow seamless forgings up to 35 inches in outside diameter with walls four and a half inches thick. Only a few minutes are consumed from furnace to dirt pit where the forgings are set down to cool.

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## ENGINEERING

## Tougher Grass on Ball Fields to Stop Puddles

► HOW TO lick standing puddles and worn-out turf on football fields is what Walter W. Weir, drainage engineer of the University of California College of Agriculture, Berkeley, is trying to find out.

Last year Mr. Weir first took samples of the soil on the University of California Memorial Stadium football field and found it so compacted that only one-half inch of water penetrated in six days.

The field was disked and new top soil added, thus raising the crown of the field four inches. After seeding, equipment was run over the field during the summer to puncture the upper four inches of soil and increase air and water penetration.

During last season the problem of standing water was practically non-existent. The rough wear and tear of football cleats, however, still tore up the turf in the middle area of the field. Mr. Weir advised that a new strain of Bermuda grass be used in the stadium. This new grass strain is not only tougher, but has less tendency to turn brown in the late fall and winter.

The newly-planted grass is expected to carpet the field by kick-off time this fall.

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## STATISTICS

## Catastrophe Deaths Up, Due to Tornadoes

► TORNADOES AND fires in homes helped bring the catastrophe death toll for the first six months of this year up 25% above the figure for the same period in 1951.

Catastrophes are accidents killing five or more people, Metropolitan Life Insurance Company statisticians explain. They report that tornadoes accounted for 229 deaths in the first six months of this year.

Plane and railroad crashes, on the other hand, killed fewer people the first six months of the year than during the same period last year.

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Mango seeds, normally thrown away as waste, are suitable as subsidiary feed for cattle.

High altitude winds, called "jet streams," have been reported moving at speeds as high as 357 miles per hour.