

ORDNANCE

More Giant Guns

Army's 240 millimeter howitzer and eight-inch rifle which can be easily transported, will play big role in coming battles.

► LOUDER and deeper big-gun voices are to be added to the quarrel at Europe's disputed barricades, it has been made plain by the new Army orders for eight- and ten-fold increases in production of heavy ammunition, and for speeding up the making of the powerful barrels that will hurl them at Nazi fortifications.

In particular, the most powerful pleaders for a peaceful world that will roll over Europe's roads in the hot months ahead are the Army's 240 millimeter howitzer and eight-inch rifle. They are the bigger brothers of the two heavy pieces that won fame in the North African and Sicilian campaigns, the 155 millimeter "Long Tom" rifle and the howitzer of the same caliber. These weapons, of approximately six-inch caliber, are not being displaced; it is just that two huskier members of their family have arrived to back them up.

ENGRAVING BONDS — *On the left you see the steel engraving plate being carefully polished by hand to remove the surplus ink while leaving it in the crevices. The worker at the right is placing on the inked plate the wet paper which will be war bonds after the printing is done. Eight bonds are printed on the one sheet.*

The 240 millimeter howitzer throws a shell weighing about 350 pounds to an extreme range of 25,000 yards, or nearly 15 miles. Like all howitzers, it is intended to be fired at a moderately high angle, so that this crushing blow comes down on the enemy from above.

The eight-inch rifle, strictly speaking, is a 7.87 inch gun, for its caliber is officially given as 200 millimeters. Its shell weighs about 100 pounds less than that of the 240 millimeter howitzer, but it can hurl it much farther, to an extreme range of 35,000 yards, or more than 20 miles. Normally, however, it will not be used for such long, looping swings; advantage will be taken of its terrific muzzle velocity of 2,850 feet a second to drive upper-cuts straight at the face of enemy steel-and-concrete emplacements. This gun is as big as the main battery rifles of a heavy cruiser, and can hit with as much authority.

The really important thing about both these guns is that they travel on wheels, over ordinary roads, towed by heavy tractors. To lighten the load on bridges, each gun is separated into two parts for transportation in huge, pneumatic-tired carriers. It is thus possible now to send heavy ordnance, of calibers hitherto regarded as restricted to railway guns, into

any fighting zone where wheeled vehicles can go at all.

So far as is known, the Germans have nothing that even approaches these two heavy weapons. Much was heard for a time of their 170 millimeter rifle in the Italian fighting. This, however, is only slightly heavier than our 165 millimeter "Long Tom."

It might be summed up as a good gun on a bad carriage—like a prize-fighter who can punch but has poor legs. Captured specimens of the German 170 have solid tires, like old-fashioned coal-trucks, so that it cannot possibly move at much more than a horse-trot speed. Our heavy pieces can move at any speed the towing vehicle can make. In a war where victory still goes to "the one that kin get there fustest with the mostest," that is a very important factor.

Science News Letter, June 10, 1944

TECHNOLOGY

War Bonds Made Carefully By Engraving Process

See Front Cover

► YOUR WAR BONDS are made as carefully as your cash. They are engraved, not printed. By the engraving process, ink is absorbed from the tiny crevices etched in a polished steel plate, while type printing is done by pressing the paper against the inked surface of type. Your paper money is engraved. The same presses are used for War Bonds. The flat steel plate is inked and wiped mechanically. Then the plate must be carefully polished by hand to remove all





traces of ink from the surface but to leave it in the etched crevices.

After this preparation, the plate is ready to print a sheet of eight War Bonds. The paper is wet when it is placed on the press; it is kept wet by the use of a humidifier. The sheet passes under a well-padded roller which squeezes it into the engraved crevices of the plate causing it to soak up the ink.

The sheet of eight bonds is then removed from the plate and is placed between sheets of paper to dry. The engraved sheets are examined, and any defective bonds removed.

All the red printing that you see on your bond is next put on by one printing operation which is typographical.

Then the sheets are perforated and the edges trimmed, as shown on the cover of this SCIENCE NEWS LETTER. After this, they are assembled with record cards into small packets. The packets are bound into bundles which are piled on trucks ready for distribution to you.

These photographs by the Science Service staff photographer, Fremont Davis, were taken as the contribution of the SCIENCE NEWS LETTER to the Fifth War Loan Drive.

Science News Letter, June 10, 1944

IS YOUR BOND HERE? — *The stacks of bundles on the right are all completed bonds ready to go out over the country in the Fifth War Loan drive. Buy as many as you want! On the left, you see the bonds getting the red printing put on them after the engraving printing process is completed. These photographs were made at the U. S. Bureau of Engraving and Printing.*

helpful, in Prof. Einstein's opinion, if it is applied vigorously in the fight for a supra-national political force as a protection against fresh wars of aggression. This does not necessarily imply commitment to any particular form or scheme, but rather calls for winning wider acceptance of the basic idea itself.

"It seems to me," he concluded, "that the working out of a view to selection of a particular plan for an international government should not, at the present moment, be our chief aim. For if there existed, among the majority of citizens, the firm intention of establishing international security, the technique of giving shape to such an instrument would not present an all-too-difficult problem. What is lacking in the majority is the conviction, founded on clear thinking, that there is no other means of permanently avoiding catastrophes like the present one. In the organization and promotion of enlightenment on this subject, I see the most important service which an organization of intellectual workers can perform at this historic moment."

Science News Letter, June 10, 1944

Girls of Ethiopia's Galla tribes not only eat *butter* but grease their braids of hair with it.

GENERAL SCIENCE

United Action Asked

Professor Einstein urges brain workers to get together now to take thought and action towards proper organization of the peace.

► BRAIN workers were urged to unite for common action by one of the most noted of their number, Prof. Albert Einstein, in a statement to the National Wartime Conference in New York.

Two principal needs demand such action by the brain-worker group as a whole, Prof. Einstein indicated: the necessity to protect their own economic interests and the urgent call right now to take thought and action towards the proper organization of the peace.

In a united effort towards the protection and betterment of their economic status, intellectuals might well take lessons from the working class, the eminent mathematician pointed out. Workingmen

have done a good deal toward bettering their position in the community, whereas scientists and professional men remain less well protected against arbitrariness and exploitation than members of any other calling.

At the same time, Prof. Einstein continued, brain workers can learn from hand workers "what is our gravest danger, which we ourselves must seek to avoid: the weakening through inner dissensions, which, when things reach that point, make cooperation difficult and result in quarrels between the constituent groups."

In the promotion of the common good, united action by intellectuals will be most