

## METALLURGY

**New Penny Will Contain Less Copper, More Zinc**

► THE NEW copper penny, scheduled for production on Jan. 1, will contain slightly less copper and a little more zinc than the traditional "copper." Whereas the old coin was made of 95% copper and 5% zinc and tin, the new coin will contain 85% to 90% copper and 10% to 15% zinc. It will weigh a trifle less than the standard bronze coin and will be similar in appearance.

The Mint will use as a base for the new cent small-arms cartridge cases recovered by military authorities from proving grounds, firing ranges and other training areas for troops. These cases contain 70% copper and 30% zinc, to which will be added enough virgin copper to bring the copper content up to the required amount. The old cases will be melted at the Mint for use.

Due to a shortage of pennies, the 1943 zinc-coated steel penny will remain in circulation and continue to annoy Mr. Average American until it becomes sufficiently discolored with use.

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## RESOURCES

**More Fish Are Needed To Meet Wartime Demands**

► MORE and more fish for food for the armed forces, civilian population and for our allies is being demanded by the government. The Federal Coordinator of Fisheries is trying to help the fishing industry step up the catch by supplying additional manpower, boats and equipment, the shortages of which were largely responsible for the light catch of 1942.

Manpower shortage in the fishing industry is due to the large numbers of fishermen and fishing boat crews who are in military or other government service. These men make highly desirable recruits for the Navy, Coast Guard and other services afloat. Others decided on land jobs in spite of high wages paid to fishermen because of the submarine and other wartime dangers on the oceans. The internment of Japanese fishermen on the Pacific coast added to the shortage.

Lack of boats and equipment is due to the large number of fishing craft requisitioned by the government early in 1942 for use as mine sweepers, patrol boats, and for cargo carriers to take equipment and supplies to American forces overseas and to our allies. Many of

these boats have now been returned to the trade, but before going into actual fishing they had to be re-equipped.

A figure of about 6,000,000,000 pounds of fish and shellfish is set for a 1943 goal. This is a step-up of about 50% over 1942 production and 25% over normal. Whether or not the goal will be met is as yet uncertain, as approximately 75% of the annual catch is made in the second half of the year.

In pre-war days the value of America's annual catch of sea products amounted to nearly \$75,000,000. This included commercial products from oceans, lakes and rivers. Oysters and tuna taken each year had a value of over \$8,000,000 each. Other fish and shellfish, with more than a \$2,000,000 value to their respective annual catches, are sardines, salmon, shrimp, haddock, flounders, clams, cod, crabs, lobsters, mackerel and halibut.

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## GEOLOGY

**Five Lava Blisters Appear In Paricutin's Basin**

► FIVE BLISTERS of eruption have broken out in the basin of Mexico's volcano, Paricutin, just as when Jorullo volcano, 67 miles west of Paricutin, burst forth in 1759 it also produced 19 similar formations.

As yet it is undetermined whether the little craters are openings in the lava flow with the molten material coming down under the surface of the volcano's main cone or whether they are real craters reaching down into the earth.

Visitors at the edge of Paricutin's basin described the change in the volcano's activity as spectacular. This development was not unexpected to geologists studying the volcano, and Dr. Ezequiel Ordonez had published a prediction of this possibility.

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## CERAMICS

**Pottery Made Successfully With Paricutin's Lava**

► PARICUTIN, Mexico's volcano, as it ruins valuable farming land with its volcanic dust and lava, may be producing raw material for a new Mexican ceramics industry.

The pottery factory of the Anfora Company has just completed successful experiments with four tons of Paricutin lava, with the conclusion that it can be used in making pottery.

*Science News Letter, November 13, 1943*

**IN SCIEN**

## ORDNANCE

**Three Weapons Devised To Fight "Tiger" Tanks**

► THE CHALLENGE of Germany's much-publicized 62-ton "Tiger" tanks has been met by American ordnance designers—and they have given not merely one answer, but three, all of them emphatic and conclusive.

What these answers are, Brig. Gen. Hermon F. Safford of the Ordnance Department, U. S. Army, discusses in an article in the technical journal, *Army Ordnance*. (November-December)

Two of the effective defenses against the thick-crusted Nazi monster are adaptations of already existing weapons to the new demand; the third was specially devised for the purpose. The first was the mounting of the standard 105-millimeter field howitzer on a lightly protected, fast tank chassis. This is the tank destroyer officially designated as M7 and nicknamed "the priest" by soldiers in General Montgomery's army. The second is the long-barreled 90-millimeter gun, primarily intended for anti-aircraft purposes but capable of being depressed to a low enough angle to send its terrifically high-velocity projectiles against ground targets.

The third and clinching answer to the "Tiger" is the M10 tank destroyer, which mounts a high-velocity three-inch gun in a turret with full-circle traverse. Although this gun is smaller than either of the others, it was designed especially for anti-tank work, and has such a punch that one hit from it will destroy a "Tiger" or any other known tank.

Weapons like these have been made possible by the ingenuity and high productivity of American industry. As examples of the latter, General Safford cites two changes in the use of critical materials. In one, substitution of pressed steel for machined bar stock in making one small part of an artillery shell, on one order alone, has saved 210,000 man-hours and enough steel to produce 1,500 blockbuster bombs. In the other, change-over from brass tubing to steel stamping in the making of primer tubes has effected a saving of 30,000 tons of brass—enough to provide all the brass needed in building 184 destroyers.

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# CE FIELDS

## FORESTRY

### Mechanized Tree Feller Invented in the Bronx

► PAUL BUNYAN and the mighty men of his camp may well heave ghostly sighs, as they repose beneath the whispering hemlocks of the lumberjack's Valhalla. A mechanized monster, powered by a prosaic diesel engine, promises to outdo their most tremendous legendary feats of clearing timber—and it's the invention of a city man at that.

The newly patented machine is a tractor-mounted tree-feller, the device of Zygmunt Pehel, who lives in the Bronx. Forward from the front end of its massive frame projects a stout, derrick-like boom, raised and lowered by means of a pneumatic or hydraulic cylinder and piston mounted toward the rear.

At the outer end of this boom is a circular saw, powered from the engine. It operates within a half-collar armed with strong, bent band springs that help hold it steady against the tree trunk it is cutting down. The adjustable boom permits the cut to be made at any desired height, and after the tree has fallen the saw may be turned at right angles to remove larger limbs and cut the trunk into short logs if desired. Finally, the boom can be operated as a kind of derrick to lift and load the logs onto trucks or flatcars.

Patent 2,332,526 has been issued on this invention.

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## SAFETY

### Ten Commandments For Safety in Hunting

► HUNTING accidents should be fewer this year than for many years past. Ammunition is scarce for such purposes, transportation is difficult, and hundreds of thousands of sportsmen are in uniform and hunting a different kind of game. Meat rationing, however, will probably lead many, including some new to hunting, to try this season to bring home from forest and field some additions to the family meat supplies. For them and for any old-timers who may have grown careless through the familiarity that breeds contempt even for guns, the Remington Arms Co. gives

the following "Ten Commandments of Safety in Hunting":

1. Treat every gun with the respect due a loaded gun. This is the cardinal rule of gun safety.

2. Carry only empty guns, taken down or with the action open, into your automobile, camp and home.

3. Always be sure that the barrel and action are clear of obstruction.

4. Always carry your gun so that you can control the direction of the muzzle even if you stumble.

5. Be sure of your target before you pull the trigger.

6. Never point a gun at anything you do not want to shoot.

7. Never leave your gun unattended unless you unload it first.

8. Never climb a tree or a fence with a loaded gun.

9. Never shoot at a flat, hard surface or the surface of water.

10. Do not mix gunpowder and alcohol.

Further advice is to dress suitably, taking special care to wear stout, wet-proof boots or shoes that will help maintain sure footing on uneven or slippery ground.

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## ORDNANCE

### Tanks Given Rides To and From Battle

See Front Cover

► WOUNDED TANKS, like wounded men, need help if they are not to perish wretchedly on the battlefield. They now have their own ambulance, in a new, suitably massive carrier, officially designated as Tank Recovery Vehicle, M-25. It consists of a many-wheeled, low-bedded trailer, hauled by a prime mover whose bullet-proof plates and anti-aircraft machine gun give it something of the appearance of a tank itself. One of these is shown in action in the official U. S. Army photograph on the cover of this SCIENCE NEWS LETTER. A power winch and cable haul the injured tank aboard, and the "ambulance" rumbles away to where Ordnance repair men await, with their oxyacetylene-torch surgery.

Just as is the case with the Army's man-carrying vehicles, the M-25 does not go up to the battle line empty. Until it is needed for the rescue of battle-damaged tanks, it hauls fresh ones up toward the front. This enables them to enter action with fuel tanks full, engines unheated, crews unwearied.

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## ELECTRONICS

### Electronic Instrument Indicator Aids Pilots

► AIRPLANE pilots can now have an automatic electronic assistant in the cockpit with them to keep tab on the formidable battery of instruments necessary for modern flying.

The flightray, new electronic multiple instrument indicator, explained to the Institute of Radio Engineers in New York by F. Q. Gemmill, Sperry Gyroscope Company product development engineer, utilizes a cathode-ray tube to present vital flight information through the motion of four simultaneous and distinctive traces.

The deviation of an instrument from the desired reference condition as set by a control knob causes the associated trace to move from its normal zero position, thus warning the pilot of the deviation, its direction and relative magnitude.

Each of the instruments—directional gyro, gyro horizon, air speed indicator, altimeter and cross pointer meter—is equipped with an electrical pickup whose output voltage after amplification and rectification controls the movement of one of the four traces. Through commutation and persistence of vision the four traces projected on the screen of the cathode-ray tube appear as though they were continuous.

The numerous instruments and controls in the cockpit of the modern aircraft place a staggering burden upon the pilot, Mr. Gemmill said. While relief can be obtained through automatically operated devices and division of duties among a larger crew, coordination of necessary flight information through a single indicating instrument is a new approach to this problem.

The flightray has been under development by the Sperry Gyroscope Company for some time.

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## ORDNANCE

### Motor Torpedo Boat Has Tubes Built Into Hull

► A DESIGN for a motor torpedo boat on which patent No. 2,333,139 was issued to F. L. Alix of Kenmore, N. Y., has a pair of forward-pointing torpedo tubes built directly into the hull instead of being mounted on deck as in most present craft. Aft, the boat carries a cluster of shorter tubes from which depth charges can be dropped.

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