



#### AIMED ABOVE

*Low-flying planes, intent on bombing troops or supply trains, will get a waspish reception from the new 37-millimeter anti-aircraft gun. Its automatic fire spins 120 shells a minute into the air, each one so sensitively fused that it will burst on contact with wing or fuselage skin.*

quences had better be left to the imagination.

Advance of all-metal airplane construction has made the destructive task of these small shells easier, rather than more difficult. When Army Ordnance men first began experimenting with shells of this type, fabric construction necessitated a fuse so sensitive that it would cause a burst if it hit a large raindrop. This made lots of trouble. But the use of more rugged material in planes permits the use of a more rugged fuse in the shells intended to destroy them.

Adoption of the new 37-millimeter automatic fills a troublesome gap in defense against aircraft. The Army has for some time had a satisfactory gun for use against high-flying heavy bombers. Machine-guns, even rifle fire perhaps, could do something against very low-flying "hedge-hoppers." But the attack plane, dropping light bombs from low-to-medium altitudes, still lacked an antidote. The new piece promises to take care of this job.

#### Mortar Used for Short Range

The two 37-millimeter pieces are, as we have seen, high-velocity jobs. Bark and bite are so nearly simultaneous that it simply isn't funny—to the enemy. The third little gun, however, is quite a different breed of cannon.

It is a mortar, a high-angle, smooth-bore weapon that points its muzzle skyward and lobbs a slow-flying missile at the enemy at comparatively short range.

Its caliber is 60 millimeters (not quite 2½ inches), and the extreme range to which it can heave its 3½-pound projectile is only a little over a mile—1900 yards, to be exact.

The job of a mortar is to go along with the first waves of attackers, and blast out stubborn concentrations of fire power too well entrenched to be reached with rifles and too far away to be within the very short range of hand grenades. This 60-millimeter piece can be used at distances as short as 75 yards, which is just beyond the throwing range of a stout grenadier.

#### Very Mobile

It is exceedingly light, and hence highly mobile. With all its accessories it weighs less than 50 pounds. One man can lug it alone, if need be; two men can pick it up and carry it along at a dead run. And it is so small and inconspicuous that it can hide in a ditch a couple of feet deep, or behind bushes a few feet high. It makes no smoke at all when it is fired, so that it is exceedingly hard to locate, even at a very short distance.

Unlike its ancestor of 1914-18, the three-inch Stokes mortar, this new weapon is really quite accurate. The Stokes mortar fired ordinary artillery shells by means of a small charge attached to the base. The projectiles tumbled end over end as they sailed through the air, like pieces of stovewood.

After the war, a French military engineer named Edgar Brandt improved the mortar projectile by streamlining it and giving it a set of tail-fins to steady its flight. The U. S. Army adopted his design for their standard infantry mortar, an 81-millimeter weapon, of which the new 60-millimeter mortar is a lightweight brother.

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#### BOTANY

### Plants More Immortal Than "Everlasting Hills"

THE "everlasting hills" are mutable, evanescent; the grass which perisheth has in it the pattern of immortality. This paradox of living as against non-living is pointed out by Donald Culross Peattie in his new book, *Flowering Earth*.

Himalayas and Rockies are creatures of geologic yesterday, Mr. Peattie points out; the Appalachians are of respectable middle age. "But if you want to see really old mountains you must travel to the Laurentians of Canada. Look carefully—you will observe that there are no mountains there any more; just a stump, a boss on the continental shield. The stuff of them has found its grave under the seas. The grave of something that was never alive.

"But that which lives is less mortal. Plants there are today made after the image and the very mold of plants half a billion, and a billion years ago."

Non-living rock, hard and rigid, can only stand still while living things—lichens, mosses, bacteria—pluck at it, while rain and wind reduces it to dust, the author points out.

"But you can batter a seaweed on the reefs for twice ten million years, without changing its inner convictions. All that the surf has been able to accomplish in these eons is to knock the spores out of the slippery fronds—and so set them adrift to colonize some other reef."

In his book Mr. Peattie looks at plant life through a hundred windows—the Harvard laboratory where he first boiled chlorophyll out of a handful of ivy leaves, the mouth of a cave where men cowered in the chill of the Pleistocene, his own house in California where a small bird has woven an exquisite nest out of lichens and lined it with sycamore seed-down. Through its pages, plants from lowly alga to sophisticated orchid insinuate themselves into the reader's consciousness as they have long rooted themselves in his life—whether he has known it or not.

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