

PHYSICS—MILITARY SCIENCE

Banish Atom Production

General Arnold sees this as the best defense against the bomb. Advises also devising every possible active defense against an attack.

► GENERAL H. H. Arnold, in his report as commander of the Army Air Forces, confirms with high military authority the contentions put forth by the scientists who worked on the atomic bomb that the best and almost the only defense against this super-weapon is to make sure that it is not being made anywhere in the world.

This is one of three types of defense against the atomic bomb suggested by General Arnold:

"Make sure that nowhere in the world are atomic bombs manufactured clandestinely." The atomic scientists agree with this idea, and they urge further that the only real fundamental solution is world government or cooperation of some sort that removes the likelihood of war.

General Arnold advises also that we should devise every possible active defense against an atomic bomb attack, once launched. That this is a most difficult task is made clear by General Arnold. The chief difference between an atomic bomb and the largest type of conventional bomb lies in the immense destructive power of a single atomic missile. This means, General Arnold explains, that measures intended for protection against an atomic bomb attack must be highly efficient from the very start of a war if they are to be any good at all. And General Arnold remarks that our experience in this war has shown that it is most difficult to attain this goal.

True space ships traveling 3,000 miles per hour outside the earth's atmosphere are all but practicable today and General Arnold further predicts that "research will unquestionably bring them into being within the foreseeable future."

This is the type of projectile from which atomic bombs in the future could be launched, when strategic bombing such as developed by the Army Air Forces and weapons of the general type of the German V-2 rocket are countered by improved anti-aircraft defenses.

"There now appear to be insurmountable difficulties in an active defense against future atomic projectiles similar to the German V-2," General Arnold admits, but he feels that this should only intensify our efforts to discover

an effective means for our defense.

Redesign of our country for minimum vulnerability to atomic bomb attack, which means complete dispersal of our cities and moving vital industries underground, is the third atomic bomb defense suggested by General Arnold. This, he feels, would be overwhelmingly expensive, and the unsolved technological problems would present the greatest difficulty.

Unceasing air patrol of the entire world would do much to prevent the illegal manufacture of atomic bombs in their present form, General Arnold suggests, but this would need to be supplemented by ground inspection. The air patrol would be possible through the use of air contingents made available to the Security Council of the United Nations Organization.

The atomic weapon makes offensive and defensive air power, always ready, in General Arnold's words, "the primary requisite of national survival."

Science News Letter, November 24, 1945

PSYCHOLOGY—MILITARY SCIENCE

Search for Ways To Prevent Aggression

► SEARCH for a countermeasure for the atomic bomb should include a search for ways to prevent aggression and must not be confined to the purely physical sciences. the *Infantry Journal* will say editorially in its December issue.

"The soldier, like others," states the editorial of this official organ of the U. S. Infantry Association, "needs to think about all conceivable ways of countering the atom. About what might come, for example, of spending two billion dollars on an exploration of human aggression—into an organized search for ways of keeping men from wanting to enslave and destroy their peaceful neighbors.

"This would be a 'counter to the atom' and to all war."

There have been two main kinds of military countermeasures in past history, the editorial explains. One was to find a better, more destructive weapon; the other is the block, the guard, evasion,

improved protection. But a more destructive weapon than the atomic bomb potentially may be, appears to be a purely academic conception.

"That," goes on the editorial, "leaves the other kind of countermeasure to consider, the measure that might avoid or turn the atomic blow. What could that be? Armor against the tremendous heat which is the energy loosed from the atom? An underground civilization? A means of detecting the distant approach or the very existence of the prepared materials of atomic destruction? Or a means of setting them off at great distances? Scientists of high standing in atomic research have already stated formally and publicly that they see no hope of countering the weapon they helped develop."

Science News Letter, November 24, 1945

AERONAUTICS

Giant Plane to Test Size Of Efficient Craft

► AVIATION science may get some new answers to old questions when the giant Hughes H-4 cargo plane undergoes its final tests soon. The giant flying cargo boat, now nearing completion, dwarfs even Consolidated-Vultee's 204 passenger clipper and is designed to carry over 200 tons of cargo at a cruising speed of 175 miles an hour.

Aviation experts have long wondered whether efficiency increases or decreases with size. Some have considered that planes as large as the H-4 would require gas turbine engines instead of the reciprocating type used. Some have insisted that there must be a size limit to planes.

All of these questions may be partially answered when the first flight of the H-4 takes place. The plane is 220 feet long, 30 feet high and has a beam of 25 feet. The wing spread of 320 feet makes it even more gigantic in size.

Eight Pratt-Whitney radial engines totaling more than 24,000 horsepower drive the new-type 17-foot four-blade propellers and are expected to give the H-4 a top speed of nearly 220 miles per hour.

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Nylon, if one wants a technical definition, is a generic term for any long-chain synthetic polymeric amide with recurring amide groups as an integral part of the main polymer chain that can be formed into a filament with the structural elements oriented in the direction of the axis.