

**B. F. Goodrich
grommet belts
at work**

V belt failures used to cause plant shutdowns, slow up production at Westfield Paper Co., Russell, Mass.

Eliminate paper wait

Ordinary V belts on these drives lasted only a year. They couldn't take the 24-hour service, the heavy load running the pulp beaters. Covers would separate from the belt, flap around the drive, get caught in pulleys, finally tear off completely.

A BFG distributor heard of the trouble and recommended grommet V belts. It proved to be a perfect solution. Installed in 1941, both sets of grommet V belts have already outlasted other belts by 10 years, and still look good for years' more service.

These typical examples (see preceding pages) tell you why B. F. Goodrich grommet belts are superior to ordinary V belts—prove they last 20 to 50% longer—yet cost no more.

The B. F. Goodrich Company
Department PG
Akron, Ohio

- ☐ Please have a BFG distributor call on me to discuss grommet V belts.
☐ Send set of reports telling users' experiences and showing actual installations where grommet belts outlasted all others.

Name _____
Title _____
Firm Name _____
Address _____

Grommet V Belts
BY
B.F. Goodrich
FIRST IN RUBBER

H-Bombs Versus Common Sense

SWAIN, EDITOR • APRIL 1953 • ESTABLISHED 1882

POWER

THE AMERICAN PUBLIC has never recovered from its original confusion about the atom bomb—what it will do and won't do. And now we enter a new era of H-bomb confusion.

Our fuzzy thinking springs from too much rhetoric and not enough arithmetic and geometry. If we would think in terms of circles and maps, atom bombs and H-bombs would be as easy to size up as the family car.

Here's how, using the original atom bomb as a yardstick. Its energy equals 20,000 tons of TNT. Call it the power bomb.

For a practical knowledge of nuclear weapons, pick up a map of some major American city or imagined industrial target area. To the scale of this map draw a circle 2½ miles in diameter—four square miles.

Center this circle on some likely-looking spot for an enemy bomb burst. Figure that everything in the circle is either destroyed or heavily damaged. Estimate the military value of the people, structures and equipment in the area. Do the same for other possible targets. List them in order of their importance.

Imagine the enemy doing just this for the whole of the United States. He'd come up with a list of top-priority targets.

If he works down from the top of this list until his limited supply of atom bombs is exhausted, he will get the most for his bomb money—the greatest total value enclosed by the circles of destruction.

If you make this study on the map of any large city, you will see at once that no sensible enemy would attempt complete destruction of a major city with atom bombs. That would be suicidal—would waste most of his precious bombs on low-priority commercial, industrial and residential districts. He would aim, rather, to wipe out certain carefully selected 4-square-mile circles, certain limited areas of major importance to him.

So much for atom bombs. Now for the question on everybody's lips, "What about the H-bombs, particularly the H-superbombs?" The answer is that they may be less

attractive than you think. Why? Because larger bombs are doubly inefficient. First, they destroy less area per unit of power. Second, there are no suitable targets.

To test this statement consider the largest H-bomb anybody has yet had the nerve to suggest, one of 1000 power, equaling 20,000,000 tons of TNT. This bomb would be nowhere near 1000 times as destructive—in fact, only 100 times as destructive, since area destroyed goes up as the square of the cube root of the bomb's power.

Thus the area of its circle of destruction would be 400 square miles (a 22-mile circle), not 4000. The standard atom bomb is ten times as efficient as this super H-bomb in applying the energy it releases to destroy area.

Even that is only half the story. Having achieved a certain area of destruction with this very low efficiency, the big bomb can't find a suitable target anywhere in the world. Where can you find a 400-square-mile circle solid full of number-1 strategic target material?

Combining these two inefficiencies you'd generally find that about ten "model-T" atom bombs, properly placed, could accomplish as much of military value as a single 1000-power H-bomb.

There isn't room here to discuss other important angles, such as the reduced number of planes required by the bigger bombs and the reduced need for bombing accuracy.

After making all allowances for such factors that may somewhat favor the larger bombs, the conclusion is unavoidable that the nuclear explosive needed for a 1000-power H-bomb would do far more damage to an enemy if divided among a fair number of less powerful H-bombs. You don't use a sledge hammer to kill a few fleas.

And perhaps even the ordinary A-bombs may be the most economical in many cases.

We hope POWER readers will pardon all this cold-blooded arithmetic. We are fully aware of the human implications of the bombs, and very much concerned. But we do feel that all of us, as engineers, must first understand the nature of atomic weapons if our opinions regarding their use are to be worth a whoop.

ADS OUT

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