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SMALL ATOMICS A BIG PROBLEM

By Capt B. H. Liddell Hart

THE WHOLE PROBLEM OF DEFENSE is being radically affected, and potentially changed, by the recent development of small-yield atomic weapons. These may even bring about a fresh revolution in warfare, of different effect from that produced by the advent of atomic weapons in 1945, and subsequently by the hydrogen bomb.

Until 1945, the most powerful and destructive bomb produced had a weight of less than 10 tons. The first atomic bomb, dropped on Hiroshima in August 1945, had an explosive force nearly two thousand times as great. It created an immense gulf between atomic and what are called "conventional" weapons.

Then came another enormous jump in destructiveness with the development of the hydrogen bomb. For in 1954 the United States tested a thermo-nuclear weapon with an explosive force equivalent to nearly 20 million tons—a thousand-fold multiplication of the power of the original atomic bomb!

But now the latest developments have gone in the opposite direction towards producing atomic weapons of very small size and very limited explosive force. For among the nuclear weapons tested in Nevada last autumn were seven that had an explosive yield of less than 100 tons. One of them had an explosive yield of only 36 tons, and another only 6 tons—less than that of the ordinary large bomb dropped by aircraft in the latter part of WWII.

Why are such small-yield atomic weapons being developed? What are the particular advantages claimed for them? The first is that they turn the military use of nuclear power from a blind means of "mass destruction" into a weapon of precision and discrimination. They can be used tactically, by troops in battle, without devastating the towns and cities in the area where they are employed.

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That is potentially a great gain in humanity and benefit to civilization. It is also a safeguard to the morale of the people of the country for whose defense they are used. Small nations are more likely to be firm in resisting enemy threats and aggression if they feel that there is a good chance of invasion being repelled without having their homeland devastated in the process of defense.

From the military point of view, there is also a great advantage in the prospect of being able to produce as much killing effect, and destructive effect on fortified defenses with a single artillery piece as has hitherto required scores or hundreds of guns. Moreover, the effect of even a very small nuclear burst is so much greater than any ordinary shell-burst that a single shot may achieve more, both materially and morally, than a prolonged bombardment or barrage of the normal kind—which calls for a lavish and continuous supply of ammunition.

Thus there could be a very great economy, by reduction, in the quantity of guns, of ammunition, of transport vehicles to carry the ammunition, and of fuel to move the transport vehicles—as well as of shipping, in the case of military forces that have to be sent, and maintained, overseas.

Such a great reduction in weapon and supply needs would go far to simplify and diminish the logistical problems of armies—which have been causing an increasingly heavy headache to military planners. The "tail" of an army could become very small compared with its present bulk.

The "teeth" as well as the tail would be much less vulnerable than at present. A handful of nuclear-firing guns, well distributed, would be a very slight target compared with a mass of batteries firing ordinary shells. The need for large ammunition dumps and depots for their supply, likewise forming extensive targets, would also be eliminated.

Tactically, the prospective advantages of small-yield atomic weapons are that they allow much more

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discrimination, that they enable acceleration of action in engaging targets, that they can be profitably used against much smaller targets, and—what is most important—can be employed much closer to one's own troops than has been possible with the large tactical atomic weapons of the 10-20 kiloton range hitherto in vogue.

There is a great tactical advantage in being able to fire at enemy troops until they are within a few hundred yards of one's own, compared with the drawback of having to cease fire when the enemy are a mile or more away. For if there is such a wide stretch of "dead ground"—i.e. ground against which nuclear weapons cannot be used—an attacker may be able to arrive there by stealth and dispersed approach, and then have a good chance of assembling sufficient strength, in this "nuclear-safe" belt, to break into the defense. Once he has broken in, it would hardly be possible for the defending forces to use large-yield tactical atomic weapons to stop his continued penetration of the area they themselves are occupying.

Moreover, present means and methods of locating and engaging targets suitable for large-yield nuclear weapons are apt to be much too slow to catch them before they disappear. At night, the difficulty is still worse. But these means and methods of what is called "target acquisition" would have a better chance with small-yield weapons employed at close range.

With the present tactical atomic weapons of 10 to 20 kilotons it would hardly be worthwhile to use them against targets smaller than a brigade or regiment. But with the small-yield weapons now in prospect, units as small as a platoon may become atomic targets. The United States may already have atomic warheads as small as five inches in diameter, and has developed infantry mortars that can fire atomic shells. These are easily handled by a few men. One of these new types is called the Davy Crockett.

What are the disadvantages of the development of such small-yield atomic weapons? In the first place, they are a very uneconomic form of nuclear power. Limited explosive yield is only possible through using fissile material as *inefficiently* as possible. That technical disadvantage, however, may be offset by the tactical and logistical advantages, as well as by wider considerations. Weighed together, they promise an "economy of force" that much outweighs the technically uneconomic process of producing small-yield atomic weapons.

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But the logistical and financial economy promised will only be attainable if armies and governments decide to take the risk of discarding most of their present conventional weapons, and relying on a relatively small quantity of small-yield atomic weapons as a substitute.

The boldness of such a step is an inherent hindrance to such a decision. Once taken, it might not fit the circumstances, yet would be irretrievable. Although guns and mortars, as well as rocket launchers, may have *dual capability*—to fire either nuclear or conventional projectiles — the number of pieces needed to provide a shattering bombardment with atomic shells would be utterly inadequate when firing ordinary high explosive shells. It would be like changing from a fireman's hose to a garden sprinkler. But if the number was to be adequate for the needs of conventional fighting, the economy would be forfeited.

Another drawback is the uncertainty of the effect on one's own troops of turning a conventional fight into a nuclear one. It might prove a boomerang, shaking their nerve by the "frightfulness" of the experience, and leading to a moral collapse.

This brings us to another big question which applies to tactical atomic weapons in general. The main argument for equipping the NATO forces with such weapons has been that they are essential to counterbalance the Soviet Army's much larger number of troops. This argument is based on the belief that tactical atomic weapons favor the defense, and on the view that an attacker must concentrate his forces if he is to succeed in breaking through the defense, thereby offering packed targets to the defender's atomic weapons. Is this true?

The presence of atomic weapons certainly reduces the number of troops that an attacker can safely deploy in an area. But that limitation also applies to the defender—reducing the number of troops he can safely position in the area. That condition in turn affects the prevailing NATO belief and view. For the more the defense is dispersed over a given space, the less the attacker needs to concentrate his forces in order to penetrate the defense.

Indeed, his prospects may, in this respect, become better than they have been previously: before the advent of nuclear weapons. For where the defense ratio of force to space falls below the minimum required for a closely woven network of fire, a skillful attacker has always had a better chance of success, and re-

B. H. Liddell Hart is recognized both here and abroad as one of the great military writers of our time. No less acclaimed are his military theories. Today in the West they are seen in the concept of a balanced striking force. Next month the author will discuss the relative merits of chemical and atomic warfare.

quired a lower ratio of superiority in strength to overcome the defense. Dispersion inherently increases the scope for flank-turning maneuver, internal or external.

This basic condition applies to operations where tactical atomic weapons are used, or may be used—enforcing mutual dispersion. When tactical atomic weapons were first developed, I came to the conclusion, after a study of the problem, that it was very doubtful whether they would favor the defending side, as was claimed. Indeed, I thought out a method of "busting" a defense based on the type and scale of tactical atomic weapons then visualized (i.e. in the 20 kiloton range) which seemed to me to offer as good prospects to a skillful attacker as the mechanized "expanding torrent" attack originally did when conceived before the last war.

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The question remains how far this conclusion will be affected by the development of very low-yield tactical atomic weapons. Because of their much reduced radius of destructive effect, they can be used in a more discriminating way, and with less risk to the defender's own troops —thus reducing the "dead ground" area in which an attacker could concentrate at the last moment, after a dispersed approach. That should favor the defense. On the other hand the increased dispersion enforced on the defender diminishes the attacker's need to concentrate—enabling a dispersed attacking force to infiltrate more easily. And once it has infiltrated into the defender's position, it exerts the moral effect characteristic of any threat to the defender's rear, which tends to be largely an effective substitute for physical weight and effect.

In arguing that tactical atomic weapons give an advantage to the defense in general, and NATO's defense in particular, the most that can reasonably be claimed is that their presence tends to be a check on the attacker concentrating a very large *quantitative* superiority. Even if he has an overall superiority of 3 to 1 he could hardly venture to mass enough troops in any particular area to produce a local superiority of 10 to 1, or even 5 to 1, at the intended point of breakthrough. On the other hand, since the presence of atomic weapons enforces dispersion on both sides, the attacker may have a better chance than hitherto of achieving *qualitative* advantage by superior tactical skill. It may even enable him to break through without any numerical superiority.

Thus in sum and on balance, it becomes very doubtful whether equipping NATO forces with tactical atomic weapons carries benefits compared to its added risks. Even the potential advantages of the small-yield type, which appear so good at first sight, tend to fade in the light of closer examination.

A wider consideration is that the control of small-yield atomic weapons will be much more decentralized, especially when infantry battalions are equipped with mortars which can fire them. That reduces the check upon their unpremeditated use in a local emergency. They could so easily be fired.

In theory, these small yield weapons offer a better chance of confining nuclear action to the battlezone, and thus limiting its scale and scope of destructiveness—to the benefit of humanity and the preservation of civilization. But once any kind of nuclear weapon is actually used, it could all too easily spread by rapid degrees, and lead to all-out nuclear war. The lessons of experience about the emotional impulses of men at war are much less comforting than the theory—the tactical theory which has led to the development of these weapons. US MC

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