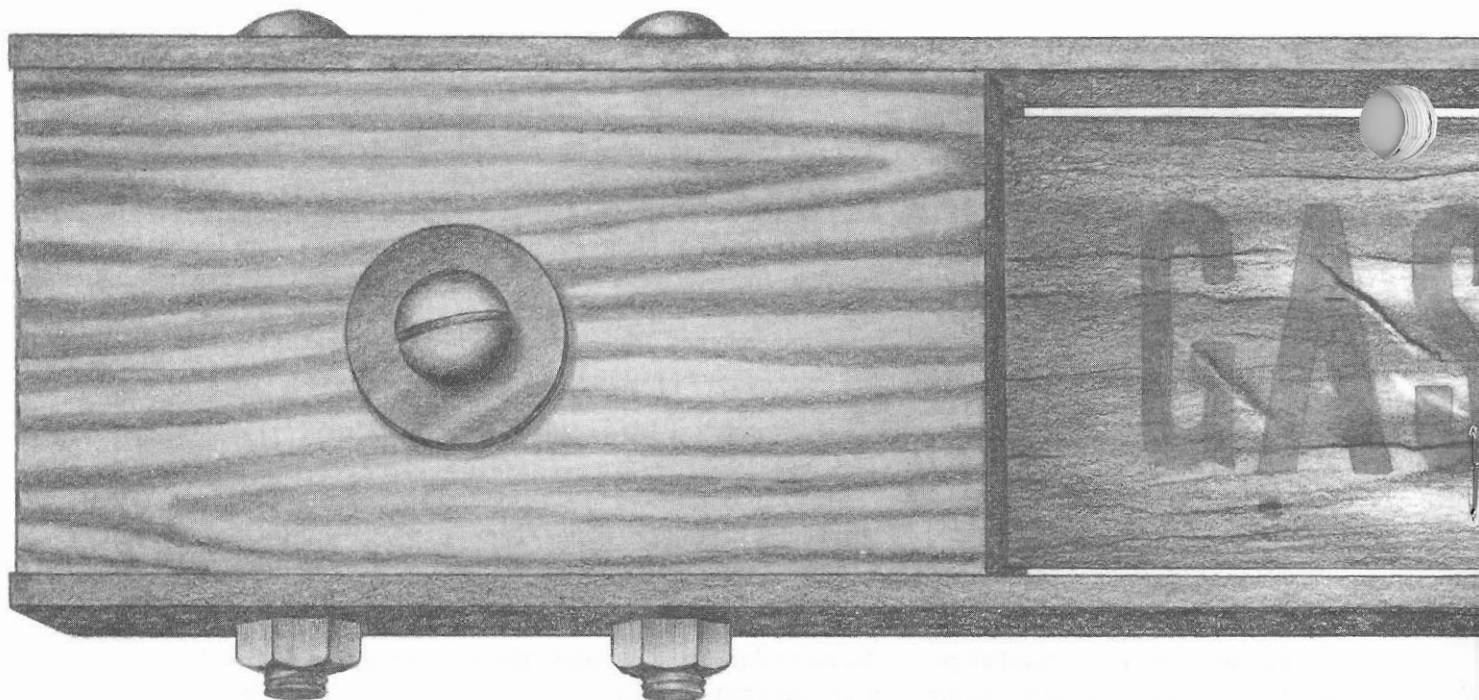




Gas Rattles

— early devices
cheap, effective

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Alarms play a key role in the toxic environment. If alarm mechanisms fail, commanders can expect high casualties.

An alarm system failure caused casualties when the Germans first used phosgene gas against the British in World War I (WWI). British intelligence learned of German preparations to use the gas early enough to develop new masks and distribute them to their troops on the

battlefield. When the attack came, troops in the front trenches promptly donned their masks and sat out the attack—uncomfortably but safely. The speed of the phosgene cloud, however, outran the alarm systems and caused casualties in the rear areas.

The critical problem of communication on the chemical battlefield affects other areas of command and control, as explained in detail in articles appearing in earlier issues of CML.

Alarm Effectiveness

To be effective, alarms must have a number of characteristics including utility, versatility, availability, compactness, and simplicity. One type of alarm—the gas rattle—was used in WWII (and carried as part of the inventory of the British navy until 1959). This rattle exhibits several of these characteristics, and suggests requirements that any alarm for the AirLand Battle must meet.

Rattles have a cog, or gear, that pushes a spline, or plate of some kind, and allows the spline to spring back into place, making a noise. We see this mechanism in musical instruments, as noisemakers at parties,

and as devices used in religious ceremonies.

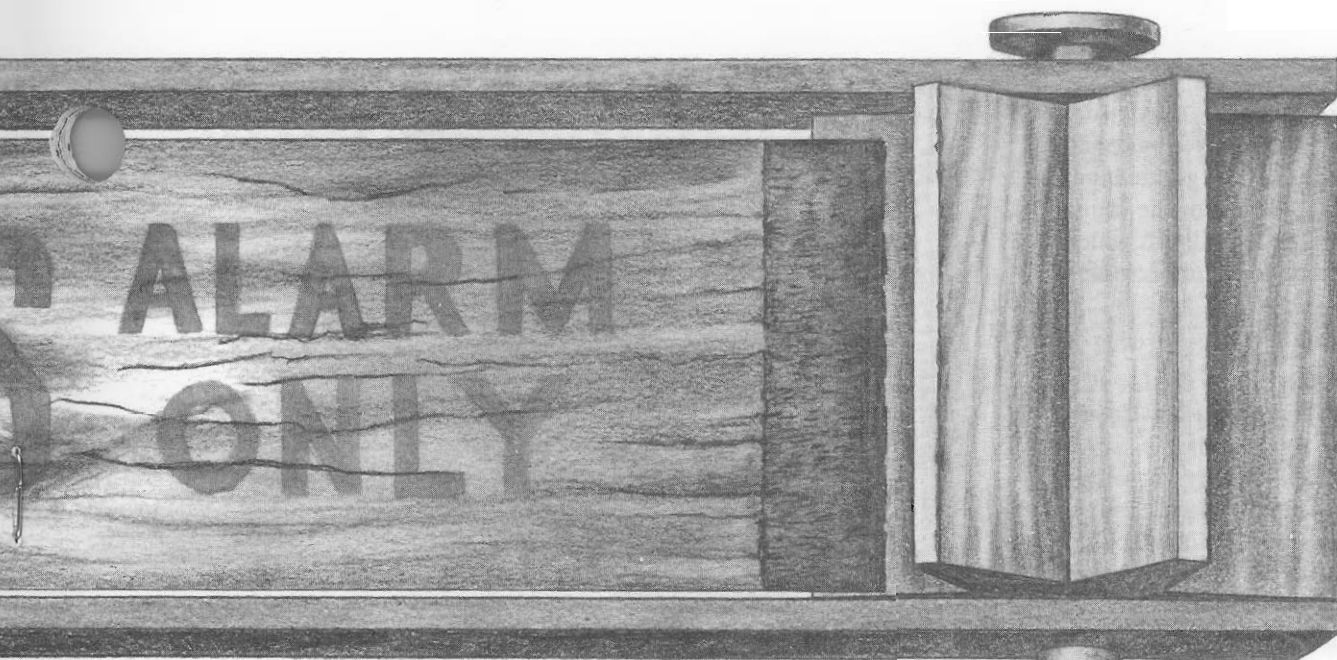
Rattles are old and widespread. They were found in many places throughout Europe and in the Middle East, dating from the Middle Ages.

Utility — Versatility

By the 1600s, the rattle had acquired official uses in the British and American areas. Watchmen, forerunners of the modern police and fire forces, carried rattles to summon help. Homeowners kept rattles for the same reasons. In Philadelphia, in the mid-1800s, every head of household was required to have a rattle to summon help.

In the 1700s and 1800s, naval officers carried rattles—some hand-somely made and decorated—to recall crews aboard ships. Army officers adapted the naval rattle for their own use in military operations, such as the Civil War.

The characteristics of these early, official rattles led to their use in WWI—and later retention in the military chemical warfare defense inventory. Their outstanding qualities were utility and versatility. Because of their many uses and wide distribu-



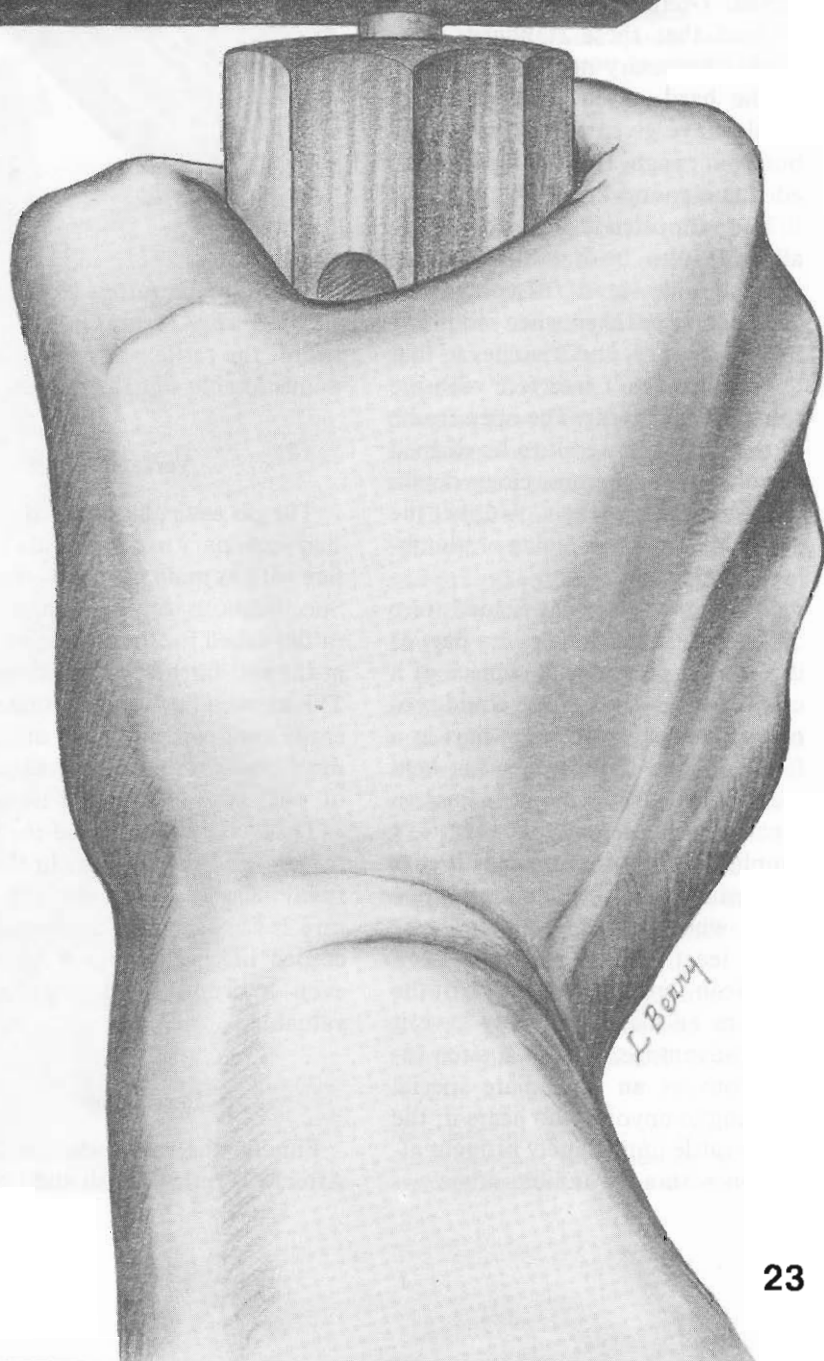
tion, rattles required no extensive development. They were readily available for use on the western front.

Availability

An early Army War College manual, published in 1918, pointed out that ready availability was an important reason for rattles to be used as gas alarms. It judged the rattle to be, by far, the best of the local appliances. In a chapter on local alarms, the manual noted that a variety of alarms existed—gongs made from shell cases, lengths of steel rails or triangles made from rails, Klaxon horns, and police rattles. The horns were generally unavailable in quantities large enough to meet the needs, and the shell casing made too weak a sound.

Size

Compact size made the rattle a good choice as a gas alarm. Large, stationary rattles existed on some warships, but most military rattles had been small enough to carry in a pocket or hang from a belt, like the police rattles. Some of the rattles even had folding handles to make them



more compact. Thus, they were highly portable and likely to be handy when needed. The US gas manual contrasted the rattle to the rails, horns, and triangles, all of which were regarded as too cumbersome.

Simplicity

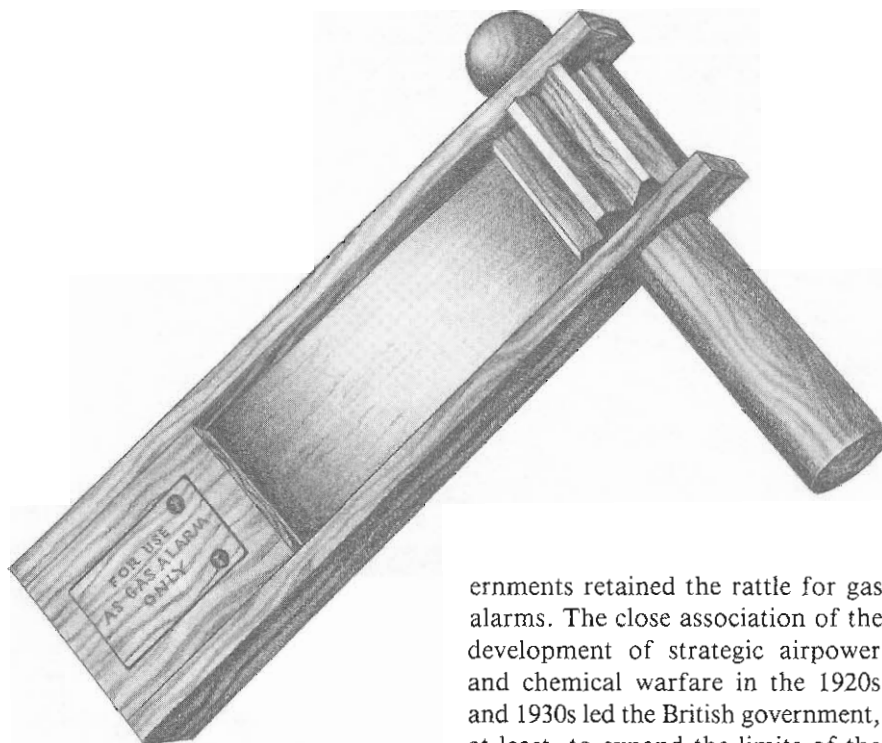
The simplicity of the rattles also made them highly reliable and cheap. Specifications for British gas rattles emphasized high quality materials and rigid adherence to specifications. These standards were enforced by lot tests, and any lot where five percent didn't meet the specifications was rejected. (Actual rattles from WWI showed that these standards were neither necessary nor enforced.)

The hard, dried wood specified would have given a sharper sound, but even rough, thick wood gave an adequate sound.

The simplicity of the device allowed it to be operated reliably under a wide variety of conditions. Care had to be taken when mounting the rails, gongs, and triangles so that the mount didn't interfere with the sound of the alarm. The open frame of the rattle allowed it to be cleaned out quickly if it became clogged with mud or other debris. Unlike the horns, there was no piping or plumbing to fail.

Many of the devices fielded were quite crude. If the rattle or a part of it broke, someone with a piece of a crate or other scrap wood could probably carve a replacement part in a few minutes. The frame was held together by pins or staples—easy to repair, if necessary. The rattle's simplicity and low cost made it easy to produce thousands, almost overnight, when needed.

At least for the British and American forces, the prior use of the rattle as an alarm probably gave it some advantage. Just as a siren today conveys an immediate special meaning to anyone who hears it, the police rattle immediately brought attention within its audible range.



Many of the rattles were marked "For Gas Alarm Only." When heard, the rattle was an immediate, unmistakable signal to mask.

Versatility

The gas rattle, like its predecessors, had secondary uses that didn't interfere with its main purpose—warning. Specifications for naval and police rattles called for them to be weighted at the end farthest from the handle. This allowed the frame to rotate more easily and smoothly, thus making as much noise as the device was capable of with as little effort as necessary.

This weighting allowed the alarm to be used as a weapon. In the confused melee of trench warfare, in the rare instances when an enemy succeeded in coming "over the top," even a crude hand weapon was valuable.

Persistence

Finally, the rattle was persistent. After WWI, the British and US gov-

ernments retained the rattle for gas alarms. The close association of the development of strategic airpower and chemical warfare in the 1920s and 1930s led the British government, at least, to expand the limits of the rattle's use to include general warning for aid raids.

Although toxic chemicals weren't used against either American or British forces in WWII, the fact that the rattles were already there, didn't intrude on space needed for other things, and weren't likely to be stolen, led the British government to leave them as a standard alarm aboard ships until 1959, when stationary, emplaced alarm systems finally replaced them.

Today, as we look for ways to survive and fight on a battlefield that resembles none other so much as WWI, we might well remember the gas rattle, its history, and its virtues.

Since retiring, Mr. Thomas E. Tragle, Jr., has served as director of the Department of Architecture's Model Shop at Hampton University, Hampton, Virginia. Mr. Tragle became interested in the rattle program in 1983 while reading some historical background on the Civil War. He hopes one day to put together a book based on his historical and research data on rattles.