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THE PNEUMATIC DYNAMITE GUN.

Our engraving represents the pneumatic gun which, at a recent trial, threw one hundred pounds of explosive gelatine a distance of nearly two miles. It is 60 feet long, has a bore of 8 inches diameter, and is made of one-half inch iron lined with one-sixteenth of an inch of brass. The barrel is supported and stiffened by a light but strong iron frame, at the center of which is a pivot, about which the gun may be revolved, the breech end being provided with wheels that run upon a circular track. The gun is elevated and depressed by means of a piston, whose cylinder receives air from the eight reservoirs placed upon the frame beneath the barrel; this piston presses upon the gun just forward of the trunnions to elevate the barrel; upon the air being allowed to slowly escape, the barrel lowers by gravity. To the pistons of two cylinders located at the pivot are secured the ends of wire ropes, one of which is guided by properly arranged pulleys to the rear part of the frame, where it is fastened; the other rope is fastened to the other side of the frame. The cylinders are operated by compressed air. The gun may be rapidly turned in either direction by admitting air to the proper cylinder.

An arm at the center of oneof the trunnions, through which the air passes to the gun, operates an auxiliary valve, which in turn moves the main valve, opening the passage to the chamber behind the projectile.

From the instant of its start the full pressure of the air in the reservoirs is exerted upon the projectile until it reaches the muzzle, when the valves are automatically closed, thereby preventing waste of air. The reservoirs—each of which is 20 feet long, 12 inches outside diameter, and made of iron ½ inch thick—contain enough at 1,000 pounds pressure to discharge the gun six times; but as they can be continually resupplied with air by the compressor, there need be no delay in firing. All the movements of the gun are controlled from the platform at the breech.

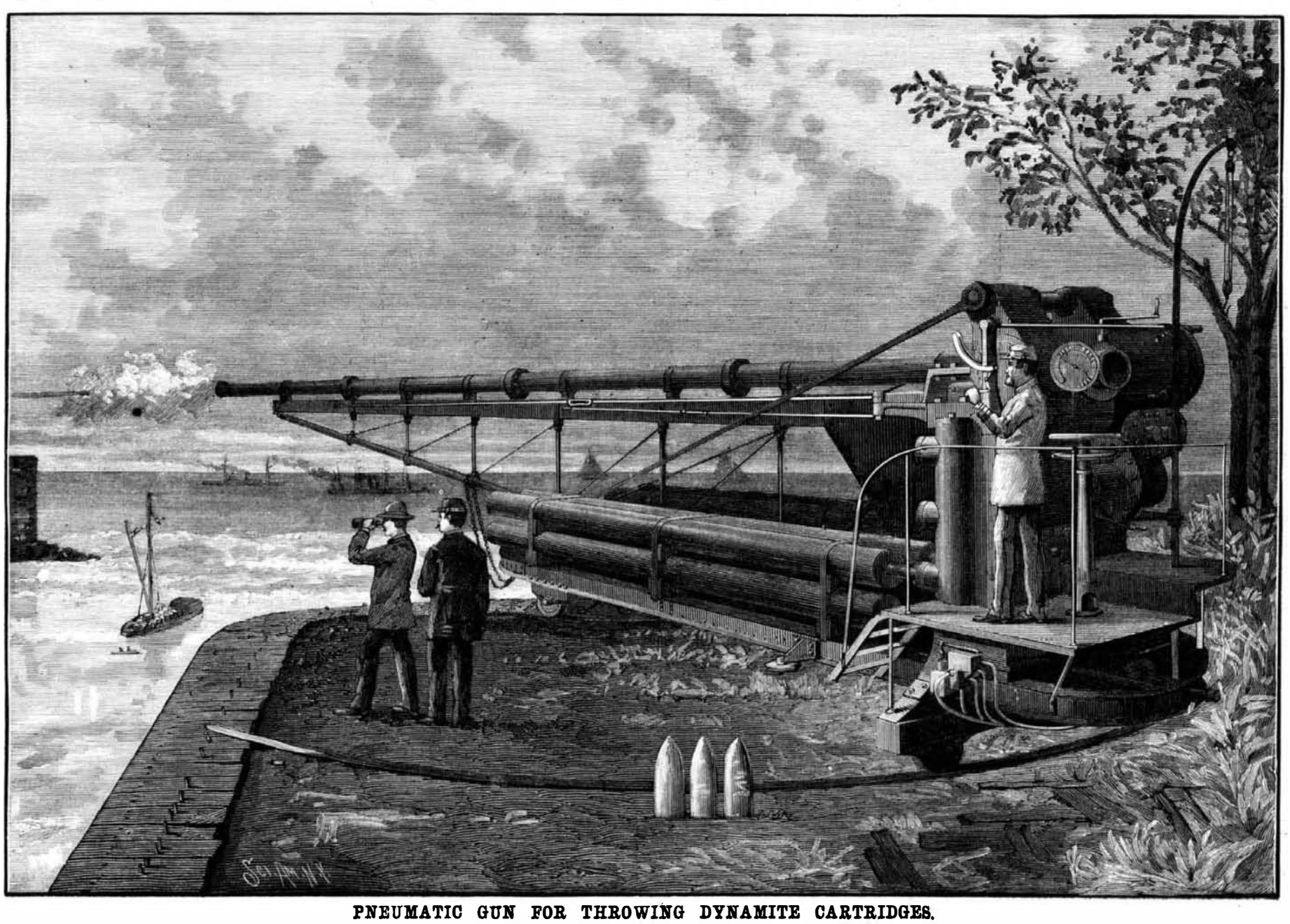
The cartridge consists of two parts; the forward or head portion consists of a brass cylinder 40 inches long, having a conical cap 12 inches long. In the tube are placed 100 pounds of explosive gelatine, through the center of which extends a core of dynamite, and in the center of the dynamite is a fulminate of mercury exploder, from which a rod leads to the point of the cap. This device is for the purpose of exploding the charge by concussion. In order that the charge may be exploded in case of failure of the above device, a dry battery, placed in a little recess in the tail piece of the cartridge, is connected with the fulminate exploder; the battery begins to work upon being brought into contact with water, and the gelatine is exploded. The wooden tail piece of the cartridge is 51 inches long, and guides the projectile in its flight.

Overcoat "Colds."

This is the season most appropriate for a little serious reflection on the subject of overcoats. Nothing seems more simple than to adapt clothing to the weather by the addition of an overcoat, light or heavy, as the occasion requires. It must not, however, be forgotten that just in proportion as the garment superimposed upon the ordinary clothes is effective in producing a sense of warmth, it acts by arresting the evaporation of warm vapor from the body. This warm vapor continues to rise through the ordinary clothing, but it is prevented from escaping, and the clothes are saturated with it. The general effect is well enough while the overcoat is kept on, but the moment it is removed evaporation recommences, and the body is placed in a "cooler" constructed on the principle adopted when a damp cloth is wrapped round a butter dish, the vapor passing off, abstracting the heat, and leaving the contents of the cooler refrigerated.

The point to make clear is that the overcoat, let it be fashioned and ventilated as it may, does not prevent the underclothing from being saturated with moisture, but actually tends to make the moisture accumulate therein. This is proved by the sense of genial warmth felt while the overcoat is worn, and the evidences of perspiration, easily perceived under the arms and at the sides of the chest particularly, immediately after the overcoat has been removed. Moreover, we take off the coat when we enter a warm house, and precisely at the moment when muscular activity is suspended. A very little consideration will suffice to convince the common sense thinker that nothing can well be worse managed than this process, both as regards its nature and the time and conditions of its operation. It is opposed to all the canons of health to allow the clothing to become saturated with perspiration, and then to take off the external covering and suffer rapid cooling by evaporation; while, if it were designed to do this at the worst possible time, probably none worse could be found than when muscular exercise has been discontinued.

The suggestion we have to offer is, that it would be far better policy to wear only one coat at a time, and to make whatever change may be necessary by removing a thin coat and replacing it by a thicker one when going out of doors, and the reverse when coming in. If, instead of wearing overcoats, people would wear coats of different thicknesses, according to the weather and conditions generally, they would avoid the danger of cooling by evaporation; the garments saturated with moisture would be removed, and dry off the body instead of on it. We believe no inconsiderable proportion of the "colds," attacks of lumbago, and even more formidable results of what are popularly called "chills," may be traced to the practice of wearing overcoats which arrest the ordinary process of evaporation, cause the clothing within to be saturated with accumulated perspiration, and are then removed, when rapid cooling takes place. The avoidance of this peril is to be attained by such change of coats as the conditions require.—*Lancet.*



PNEUMATIC GUN FOR THROWING DYNAMITE CARTRIDGES.