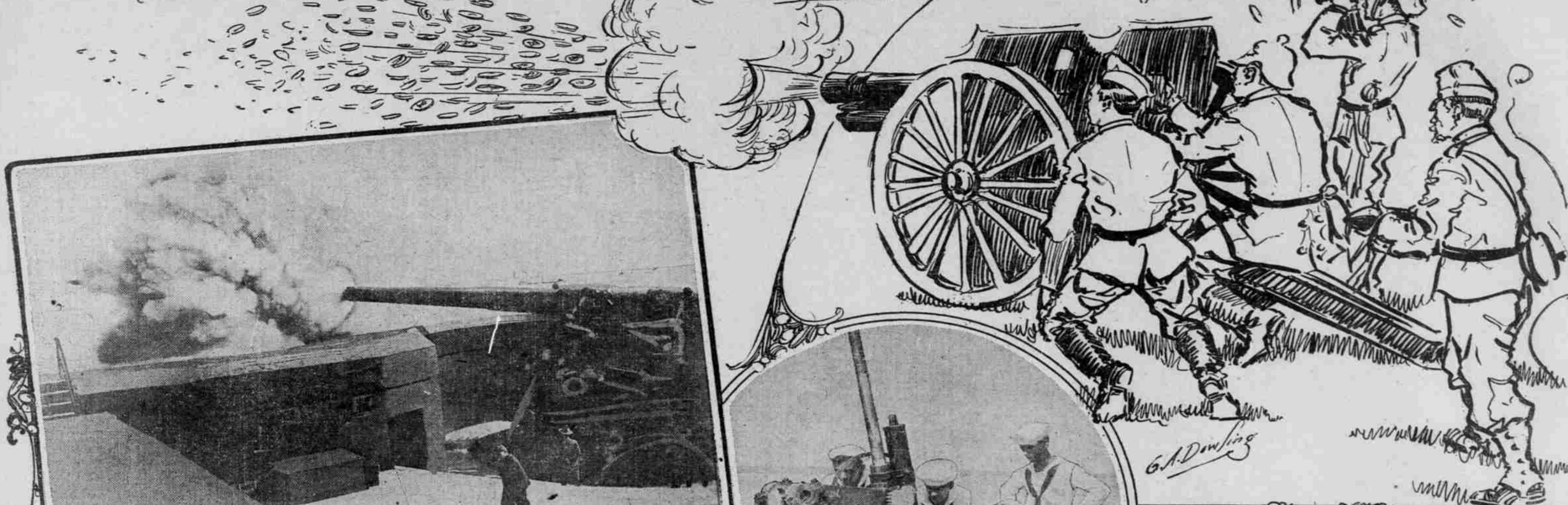


# Shooting Away \$5,000,000 a Day

## That's the Cost of Keeping the Armies in Firing Material.



**112-inch Gun Mounted in a Fortress**

BY RENE BACHE.  
FIVE million dollars a day thrown away in powder and projectiles! Military experts say this is a conservative estimate of the cost of ammunition expended during 24 hours of hard fighting in the recent battles between the French and Germans in France. War is expensive.

A rifle cartridge costs 2 1/2 cents. It takes 100 such cartridges, on an average, to kill one man. Hence it appears that the expense of taking one soldier's life by this means is \$25.

The infantryman goes into battle with 100 rifle cartridges in his belt and 120 more in bandoliers over his shoulders—220 in all. He can fire 10 aimed shots a minute. But the great destruction of life in the present war seems to be accomplished not by small-arm bullets, but by shrapnel.

Shrapnel ordinarily is fired from three-inch field guns and each shot costs \$10. In the battle of Luo-Yang, in Manchuria, 125 Russian guns (in the thick of the fighting) fired 108,000 rounds of shrapnel at the Japanese in two days. This is a matter of military record. At \$10 a shot this meant an expenditure of considerably over \$1,000,000 for those guns alone—only a fraction of the artillery engaged on the Russian side.

Roughly estimated, the German artillery comprises about 10,000 field guns and howitzers. The French have 8000 in all, the Russians 10,000, the Austrians 4000, the British expeditionary army 1000, the Serbians 1500 and the Belgians 1000. To fire all these cannon once, at \$10 a shot, would cost \$255,000. As a matter of fact, however, the expenses would be much greater, for many of the guns are of much larger caliber than three-inch.

Six-inch shrapnel cost \$12 apiece, and 11-inch projectiles thrown by the great breech-loading rifles of the Germans set the Kaiser's government back \$400 every time they are fired.

But stay. These figures cover only the value of the projectiles. There is the gunpowder to be paid for—all of it of the smokeless kind, which costs 60 cents a pound. It is burned by the ton in such battles as have been going on recently in France and in Galicia, and comes to a pretty penny.

The navies of the contending powers have not yet got into the game to any extent. When they do it is certain that money will be burned at a phenomenal rate. The newest battleships and battle cruisers are mostly armed with 12-inch or 14-inch guns. A 12-inch rifle discharges a projectile weighing over half a ton, propelled by 160 pounds of smokeless powder and each shot costs \$500. The charge of powder for a 14-inch gun is 230 pounds, the shell weighs 1600 pounds and the cost of one shot is \$700.

Our own dreadnought Pennsylvania, one of the latest built of American battleships, carries 12 14-inch guns. Each of these formidable weapons can be fired at the rate of two shots per minute. At \$700 a shot this signifies a maximum expenditure of \$16,800 a minute.

To return to fighting on land, the French in the present conflict find themselves at a certain disadvantage by reason of their lack of howitzers. Being doubtful of their military value, quite mistakenly, they did not begin to make guns of this type until about a year ago, and in consequence they possess very few. A howitzer is a short gun designed chiefly for the purpose of throwing projectiles with a high trajectory (as a baseball might be thrown into the air) in such a way that they may fall upon the enemy, into his trenches or his fortifications. Thus the shrapnel it discharges may be so aimed as to pass over a hill and strike beyond.

In the hilly country which has been the scene of fighting in France during the last few days the possession of howitzers has enabled the Germans



**A Giant Mortar**

to conceal their artillery in such a way that the French could not attack it successfully with their own guns. An important advantage of this type of weapon, by the way, is that, being shorter and proportionately lighter than the field gun, it can be much more easily and rapidly transported. Using a smaller powder charge, with less recoil, it demands a carriage not nearly so heavy. For a given weight of gun and carriage it will fire twice as big a projectile.

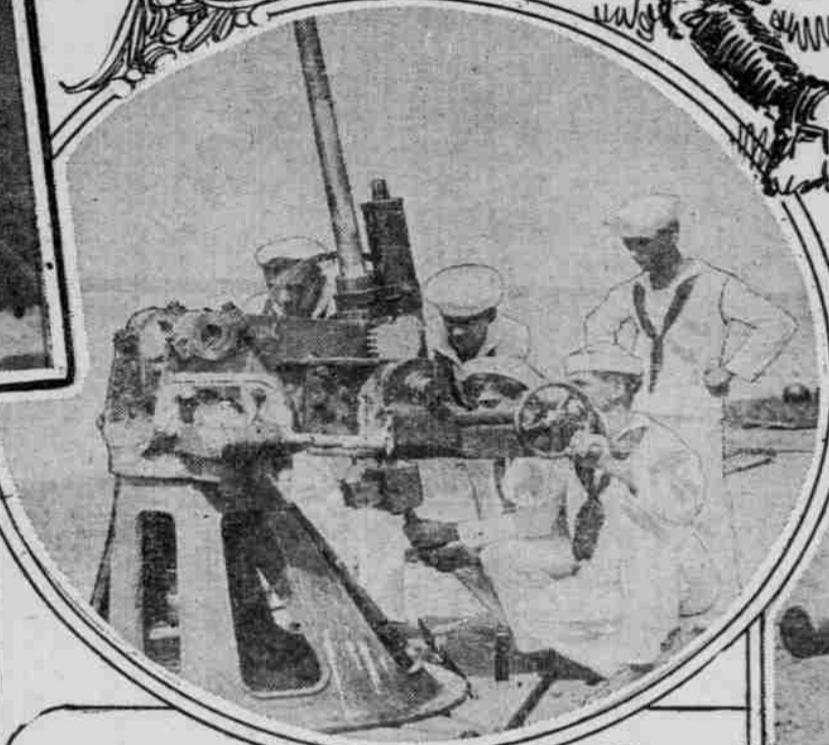
Once upon a time there was a Major in the British army, a clever artilleryman, whose name was Shrapnel. It was he who invented the kind of projectile that bears his name and which may fairly be called the deadliest destroyer of human life ever contrived. In modern warfare it has taken the place of the old-time "cannister," which was so called because it was a can filled with bullets which were expected to scatter when the missile struck.

Shrapnel, indeed, may be regarded as a scientifically contrived shrapnel. It is a hollow steel cylindrical projectile, carrying a fuse at the front end. Its middle part is filled with lead balls, much like old-fashioned musket

balls, in the rear of which is a bursting charge of black powder. This sort of powder is used (in preference to smokeless) because it must produce, on exploding, a puff of visible smoke to enable the gunner to see exactly where his projectiles are doing business.

The fuse of the shrapnel, ignited before loading, is set for the requisite distance—i. e., the distance from the muzzle of gun at which it is desired the projectile shall explode. This distance, when the fire is directed at troops, is ordinarily 50 feet in advance of the target. On bursting the shrapnel blows off its own head and throws out ahead of it, in the form of a wide cone, the balls it contains. The scattering balls fly at a rate of 400 feet per second—a velocity sufficient to kill or disable a man or horse. This impulse is attributable partly to the speed at which the shrapnel itself has been traveling, but mainly to the revolving motion given to the projectile by the rifling of the gun from which it was fired.

The idea of the shrapnel, in a word, is to distribute locally a cloud of bullets. The cylinder containing the balls is merely a carrier. When a three-inch projectile of this type bursts it scatters destruction over a wide area—perhaps 300 feet by 100. Larger shrapnel extend the area of destruction in proportion to their size. Inasmuch as this



**A Gun to Attack Aeroplanes and Balloons**



**Projectile of 16-inch Gun**

statesman. The English diplomat accidentally, it is presumed, brushed against the Spaniard and upset the glass he was carrying. This ridiculous incident inflamed the jealousies of the nations and turned the balance in favor of war.

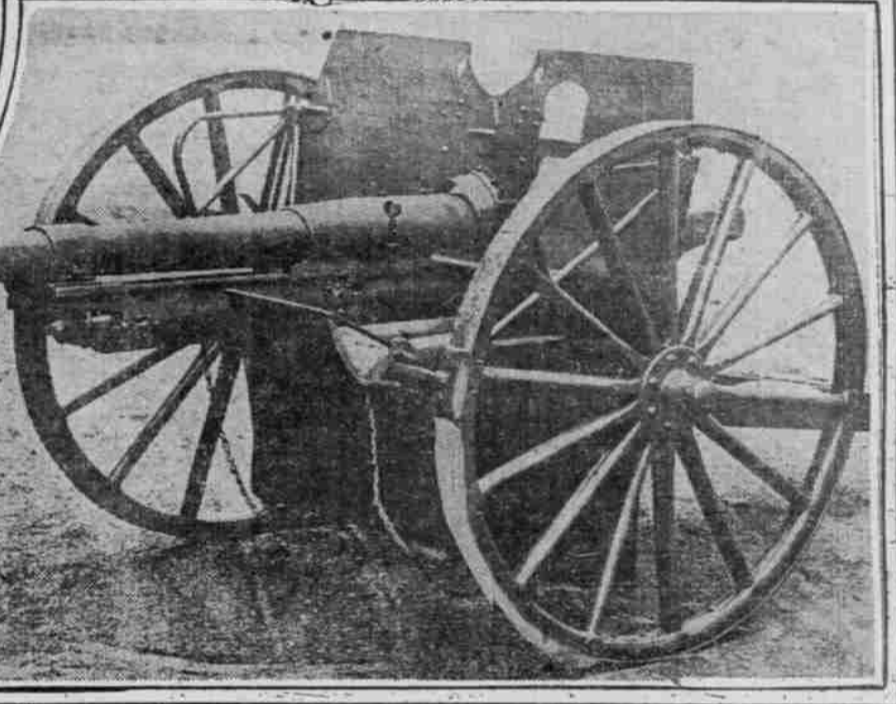
The Seven Years' War was largely due, according to his own confession, to the vanity of Frederick the Great in wanting to see his name figure largely in the gazettes.

The Sepoys believed that cartridges served out to them were greased with the fat of animals unclean alike to Hindu and Mohammedan, and the Indian mutiny was precipitated.

The Turko-Russian war was said to have been started by the hammer with which a Florentine citizen once killed a tax collector who had insulted his daughter.

The stealing of a Castile lady's lace petticoat by a Moor led to many years of fierce warfare between the Spaniards and the Moors. The emptying of a bucket of a Florentine citizen on the head of a Milanese gave rise to an inter-provincial war in Italy.

Borrowing a tobacco pipe and falling into the relative attractions of snails and vipers as food started 50 years of fighting between Milan and Pisa.



**A 3-inch Field Gun**

advancing troops may be considerable. It is as if death were to take a broom and sweep out scores of lives in an instant.

Each shrapnel shell of a given caliber contains exactly so many balls, in order that the weight of the projectile may be unvarying. Thus a six-inch shrapnel (the largest used in the United States Army) holds 1200 bullets. The howitzer that fires it has a range of five miles.

Suppose, however, that the firing is directed not against the troops of the enemy, but against a shielded battery or earthworks. In such a case shrapnel would be ineffective. Accordingly, shells containing a high explosive are used instead. The load of such high explosive—the bursting charge, that is to say—must not be too large, lest the shell itself be reduced to powder. Furthermore, a projectile of the kind has no fuse; it goes off "on impact." But an important point of its efficiency is that it does not explode instantly on striking the target. A fraction of a second elapses, while it has time to bury itself in an earthwork or fort wall, and then it bursts.

In former days an earthwork, if well constructed, had the advantage, from the viewpoint of the defenders, of being almost artillery-proof. Cannonballs and bombs might penetrate it for a few feet, but would do no further damage. It is different with these modern shells loaded with high explosives. Burying themselves deep before bursting, they literally demolish an earthwork as by an action volcanic.

It goes without saying that for such purposes guns of very large caliber are preferably used. Such guns were employed by the Germans in their attack on the forts at Liege and Namur, and they proved astonishingly effective—much more so, indeed, than anybody had expected. Some of the shells fired from them weighed 750 pounds apiece, and one of these projectiles, finding its way into a powder magazine at Namur, blew up a whole fort. As well as can be ascertained, the forts at Maubeuge proved equally untenable against assault by these tremendous weapons.

The most important military lesson taught by the present war in Europe is that no fort can be built strong enough to resist attack by modern artillery. In the long-continued race between fort and gun the latter has definitely won. The likelihood seems to be that in future the value of permanent fortifications will be discounted. While untenable against a well-equipped foe, they may serve merely as traps—as happened to the army under Marshal Bazaine at Metz, and to some thousands of French troops recently at Maubeuge.

But, however the rules of war may change, the business of fighting is becoming progressively more expensive—a fact which, in so far as it relates to the present conflict, has one advantage,

### War's Cost in Human Life

Balkan Surgeon Reports Losses During 11 Months' Conflict.

Of particular interest at this time are the records of killed and wounded in the recent European wars—"little squabbles in the Balkans" they are sometimes described. Professor Octave Laurent has summed up these losses of human life in the account of his 11 months' experience as a surgeon with the Bulgarian troops, which has just been published in Paris. He writes for his surgical colleagues, not to produce a sensation.

Bulgaria, with 4,300,000 inhabitants, put 500,000 soldiers in the field. Of these 55,000 were wounded and 20,000 killed in the first war, and 16,000 killed and 62,000 wounded in the second. Altogether 150,000 killed and wounded—one-third of the effective force of the army and 3 per cent of the population. There was one death out of every four injured, a very high figure.

In the last Balkan war 150,000 men on both sides were killed or wounded on the field in a single month. Eighty thousand of these fell on the banks of the Bregalnitsa in the six days from June 29 to July 5, 1913.

Professor Laurent quotes an authoritative prophecy to the effect that a zero added to these figures would give the losses in a European war which would line up two armies of the great powers. There would be not less than 1,500,000 wounded and killed in a month, once the forces were fully in the field. The figures may be an exaggeration, but they come approved by a professional expert who has just had the latest possible experience.

**Dredge Saves Sunken Boy.**  
Klines Grove, Pa., Cor. Philadelphia Bulletin.

When Anson Babcock, 14 years old, fell into the Susquehanna River he did not reappear, and men and boys grappled and dived for the body.

Three hundred feet down stream a coal dredge was working, and in a few minutes the digging machine threw the little fellow up on the screen, apparently dead.

His frantic mother, who lives close to the stream, urged that they try to save the boy, and a half-dozen men took turns, under her directions, at using "first aid to the injured" methods.

After a half-hour's hard work the boy showed signs of life, and afterward was able to eat his supper.

Doctors said that it was one of the rarest cases of resuscitation they had ever heard of.

## TRIVIAL INCIDENTS CAUSE OF BIG WARS

OPINIONS may differ as to whether the dispute which led to the present conflagration in Europe were sufficient to justify the loss of blood and treasure which it is feared, will be expended, but it is certain that many great wars in history have resulted from much more trivial causes. The dogs of war have been let loose and continents deluged with blood frequently as the result of amazingly insignificant incidents.

A man may start an incipient riot in his own home by appearing unannounced with a clean shave after having worn a luxuriant hirsute adornment for years, but ordinarily the trouble does not go beyond his own door. Louis VII of France was less fortunate. A visit to the royal barber plunged two nations—France and England—into intermittent warfare which lasted 300 years.

According to the story, the archbishop of Rouen persuaded the King to remove his beard, in company with his subjects. The act led to so much friction with the Queen that at last Louis divorced her, to become a few months later the wife of Henry II of England.

From this marriage centuries of bloodshed may be said to have followed.

In an iron case in the tower of the cathedral in Modena, Italy, a bucket which 900 years ago was the cause of a terrible war may be seen today. Soldiers of Modena, in a mischievous mood, stole the bucket from a public well in Bologna and refused to return it. The states were rivals and were jealous of each other, and fights between soldiers of the two followed. This spark kindled a fire of war which devastated a large part of Europe and led to the imprisonment for life of the King of Sardinia, son of the German Emperor.

Lord Palmerston once said that only three men had ever known the exact nature of the troubles in Schleswig-Holstein which led to two great wars. Two of them had died before the wars broke out, and he, the third of the trinity, had completely forgotten what it was all about.

The manipulation by Count Bismarck, then Prussia's Foreign Minister, of a telegram set Prussia and France flying at each other's throats in 1870. The French Ambassador went to Eins,

where Emperor William then was, to ask him not to approve the ambition of Prince Leopold to become the King of Spain. The King refused to give a definite answer, but Prince Anthony of Hohenzollern withdrew his son's candidacy.

A report of the conference was submitted by telegram to Count Bismarck, with authorization to publish it. Bismarck altered the text, and in the changed form gave it to the newspapers and through them to France. As Bismarck wrote it the report was unfavorable to France, and the international war with all its horrors followed. Years later Bismarck confessed the forgery.

The war of the Spanish succession, in which the great Duke of Marlborough played a brilliant part, was said to be the outcome of a glass of water at a ball at the Tuilleries in Paris. One of the court ladies had expressed a wish for a drink of water in the hearing of the British and Spanish Ambassadors, who hastened to get it for her. Returning each with a tumbler they found the fair bird had flown and was dancing with a French