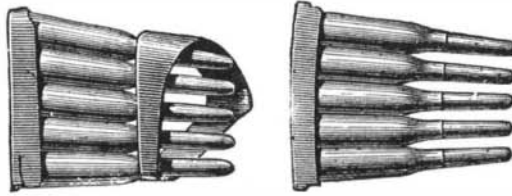


THE MAGAZINE RIFLES OF EUROPE.

Some nine years ago the military world began first to show an active interest in the possibilities of a magazine rifle as a fighting small arm for foot soldiers. The Winchester repeater, of course, was an old friend, and for nearly a score of years before had been favorably known as a serviceable cavalry carbine. One nation, the Italians, certainly, had adopted a species of Winchester, the Vetterli repeater, for special foot regiments; but there were objections on the score of weight and a want of facility in its reloading arrangements, and other reasons against the general adoption of the Winchester as the weapon for marching regiments. Hitherto, therefore, the ordinary breechloader had had to suffice for all armies—each country adopting the type that seemed to suit it best, improving on its own model in detail, from time to time, as became necessary to keep pace with innovations abroad. Thus France, for some twelve years, had rested more or less satisfied with the Gras rifle, Germany with the Mauser, Austria with the Werndl, Russia with the Berdan, and England with the Martini-Henry (as improved on the original type issued to the British army in 1871). It being practically impossible, however, to improve further on the single shooter type of rifle, and each country looking forward, as we continue still to look forward, to the outbreak of a European war in the near future, the idea of a magazine rifle which would give its adopters at the outset a marked advantage of every one else then came into serious consideration. Inventors in various countries almost simultaneously set their wits to work, notably Lebel, in France, Mannlicher in Austria, and Lee in America, with results that we see to-day. The three types which bear the names of these inventors have been accepted since 1886, and are those on which the various magazine rifles now in use all over the world are constructed. The general plan common to all is the fitting to the breech action of the rifle itself of a special mechanism, comprising a "feeder," in which is placed the store of reserve cartridges. The breech action of the rifle automatically works a spring placed in the attached "feeder," which, as each shot is fired, presses a fresh cartridge into the firing chamber by the pulling back and pushing forward of the ordinary loading bolt, which projects at right angles to the stock at the rear of the barrel of the rifle.

The Lebel system may be taken first. For one thing, so much has been heard of it owing to the extraordinary efforts the French army authorities have taken to keep its system to themselves. In the Lebel the magazine is in a fixed tube beneath the barrel, designed to take eight cartridges of the well known modern shape, and of the small caliber necessitated by the important matter of making the rifle light and handy. The caliber of the Lebel bullet is only 0.315 of an inch, penetrating power being specially given to it, as a set off to its lightness, by coating the lead with nickel. The loaded rifle, with its magazine full, weighs 9 lb. 3 oz., and the weapon is sighted up to 2,000 meters, or 2,187 yards. The high velocity of the bullet, the result of the smokeless powder used and the system of rifling, enables the Lebel to shoot at point blank range, that is, without raising the sight on the barrel, up to 700 yards. In this matter of point blank range, however, the other rifles are equally efficient. The mechanism of the Daudeteau rifle, another French invention, and later than the Lebel, the officially recognized design, approximates more to the Austrian Mannlicher system and its congener the improved Mauser magazine rifle of the second or 1890 type. These two weapons are the magazine rifles in use in Austria and Germany. The Mannlicher has a caliber of 0.315 inch, and has its magazine adapted to take five rounds at one loading. The magazine in this case is of the nature of a fixed box in one piece with the trigger guard. The cartridges,

held together in one clip or "filler," are pressed down into the breech, the bolt being drawn back to open the breech. Thence they drop into the magazine, where they rest until the bolt is pushed forward to close the breech, which brings the top cartridge into



THE CHARGE FOR A DAUDETEAU RIFLE.

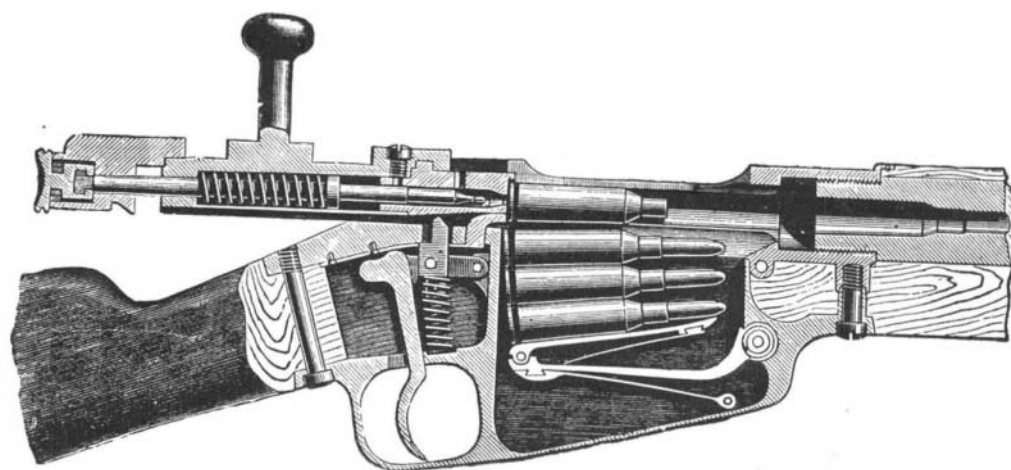
THE CHARGE FOR A MAUSER RIFLE.

the firing chamber, and sets the repeating mechanism ready to eject the cartridge cases after firing, and to replace them with loaded cartridges jerked up automatically one by one into position by the spring at the bottom of the magazine. The action of the new



THE MANNLICHER RIFLE, SHOWING THE CHARGE BEING INTRODUCED AND THE BREECH OPEN.

Mauser closely resembles the Mannlicher, of which system it is an adaptation in all respects. The Mannlicher rifle is sighted up to 2,700 yards, weighs, when loaded, 9 lb. 9 oz., and fires a bullet (cased in steel or nickel) of the same caliber as the Lebel. The new Mauser is a very similar weapon, weighing 9 lb. 8 oz. when loaded (five rounds). It fires a rather smaller size of bullet. The Mauser bullet is only 0.295 of an inch in diameter—about the thickness of an ordinary lead pencil. There remains a final word to be said about the



THE DAUDETEAU RIFLE—THE SECOND CARTRIDGE HAS JUST BEEN FIRED.

Lee, which is the system we in England have adopted. Our system differs essentially from any used abroad. For in our rifle, the Lee-Metford (Metford being the name of the inventor of the rifling and Lee the inventor of the magazine mechanism), the magazine is detachable, and is merely a thin steel box, which clips into slots under the breech of the weapon, from which it is otherwise separate and distinct. The rifle can thus be used, if required, as a single firer without any magazine being attached. The Lee sys-

tem further differs from the other European systems in having a "cut-off" arrangement connected with the magazine, to permit of the weapon being used as a single firer while the magazine is attached; the magazine full of cartridges (ten in number) remaining, under these circumstances, on the rifle as a reserve ready to be made use of in an emergency by setting back the "cut-off." One point in favor of the detachable magazine is that, if damaged, it can be replaced on the spot by a new magazine without there being any necessity for sending the rifle to the armorer for repair, as must happen when the magazine forms an integral part of the weapon. The caliber of the Lee-Metford is 0.303 inch.

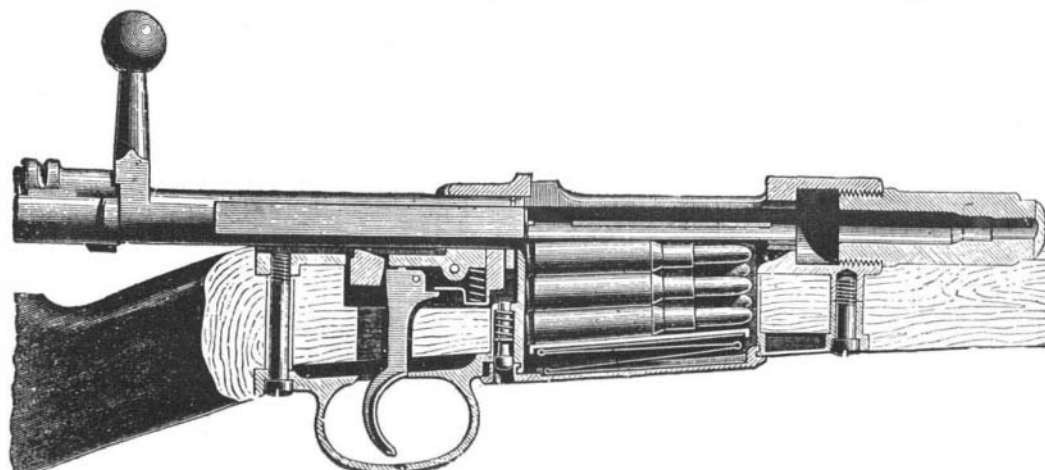
Since the above three types of magazine have been adopted for Europe, Russia and America have introduced combined systems of their own, evolved from comparing the best points of the Lebel, the Mannlicher and the Lee. The Russian arm is stated to be sighted up to three versts, or just two miles. The American arm is known as the Krag-Jorgensen, a five cartridge loader. It is also said to be capable of being sighted up to two miles. Belgium and Turkey have the Mauser, identical in most respects with the pattern of the German weapon. China has the Lee, of a pattern in many details like our own Lee-Metford, but using a much bigger bore (0.433 of an inch). Italy adopts an improved Vetterli, known as the Vetterli-Vitali, a weapon weighing 10 lb. 10 oz., caliber 0.409 of an inch, with a fixed breech-box magazine, like the Mannlicher, taking five cartridges at a time. Switzerland has also adopted the Vetterli-Vitali.—The Graphic.

Facts About Wood.

The strongest wood which grows within the limits of the United States is that known as "nutmeg" hickory, which flourishes in the lower Arkansas River. The most elastic is tamarack, the black, or shellbark, standing not far below. The wood with the least elasticity and lowest specific gravity is the Ficus aurea. The wood of the highest specific gravity is the blue wood of Texas and Mexico. The heaviest of the foreign woods are the pomegranate and the lignum vitæ; the lightest, cork. The tensile strength of the best known woods is set forth in the following: Ash, 14,000 pounds; beech, 11,500; cedar, 11,400; chestnut, 10,500; cypress, 6,000; elm, 13,400; fir, 12,000; maple, 10,500; American white oak, 11,500; pear, 9,800; pitch pine, 12,000; larch, 9,500; poplar, 7,000; spruce, 10,290; teak, 14,000; walnut, 7,800; willow, 13,000; lance, 23,000; lignum vitæ, 11,800; locust, 20,500; mahogany, 21,000; maple, 10,500.

The weight in pounds per square foot (without fractions) of the well known woods (dry) is as follows: Butternut, 25; cedar, 35; cherry, 44; chestnut, 38; cork, 15; dogwood, 47; ebony, 83; box elder, 43; elm, 41; blue gum, 52; water gum, 62; white hickory, 49; shellbark hickory, 43; holly, 47; juniper, 35; lancewood, 45; larch, 34; basswood or linn, 37; mahogany, 66; hard maple, 46; white maple, 34; mulberry, 35; white oak, 53; persimmon, 44; pear, 41; pitch pine, 41; red pine, 36; white pine, 34; yellow pine, 33; plum, 49; poplar, 33; quince, 44; rosewood, 45; sassafras, 30; spruce, 31; sycamore, 38; tamarack, 23; black walnut, 41; white walnut, 32; the willows, from 30 to 36; and the yew, 49. Four hundred and thirteen different species of trees grow in the various States and Territories, and of this number 16, when perfectly seasoned, will sink in water. These woods of high specific gravity grow mostly in the arid regions of New Mexico, Arizona and Nevada.

It is proposed to build a ship canal from Lake Erie to the Ohio River. Three routes suggested are from Erie, Pa., to Pittsburg, from Cleveland to Marietta, O., and from Toledo, O., to Cincinnati. Most of the agitation concerns the first named route, for the ship canal idea originated in Pittsburg. The distance is about one hundred miles, and the cost of the canal is estimated at \$25,000,000.



THE MAUSER RIFLE WITH THE MAGAZINE CHARGED AND THE BREECH OPEN.

The Position of Women in Africa.

Dr. W. Stoss, in the *Frauen Zeitung*, Berlin, gives an interesting account of the position of women in Africa. He says:

Among natural people women have to suffer on account of their natural want of physical strength, and this is especially the case among the African tribes, where polygamy adds to the degradation of the weaker sex. But their lot is not without mitigation. It is influenced by the same factor that raises woman to her high position among civilized people—the love of her children. The laws of the barbarous African tribes give much influence to the mothers in regulating heritage and succession, which gives them a more important position in the family and in the tribe. The mothers and sisters of an African chief are often his most influential advisers, even the real rulers. On the whole, however, the old maxim holds good: if the intellectual state of a tribe is very low, their women are treated badly. With the lowest of the African tribes, the Bushmen, woman is nothing but a slave and a beast of burden. During the travels of a Bush-

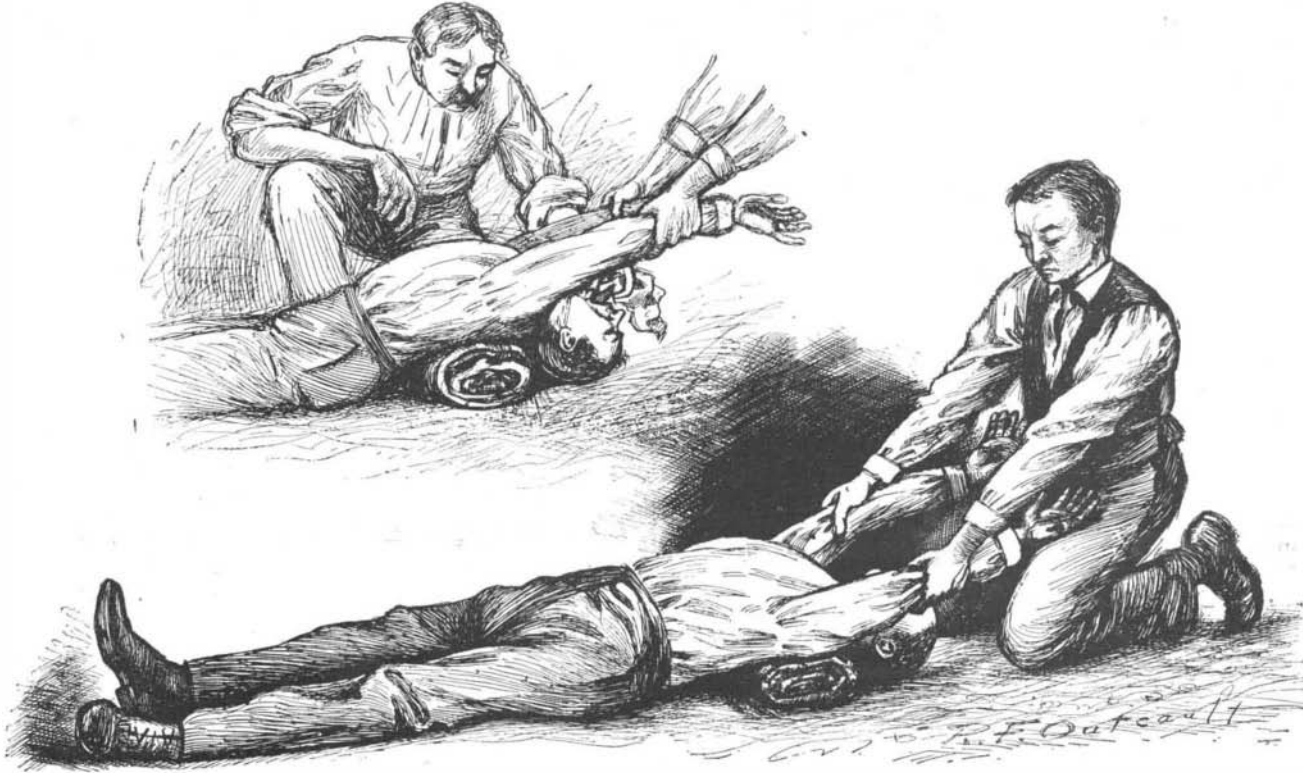
man family the wife has to carry everything, and if there is a scarcity of food, the woman has to suffer first. If she becomes weak and old, she is abandoned to the mercy of the wild beasts. Very different is the treatment accorded to the woman of the genuine negro. All things considered, their position is the same as with us. Men and women share in the necessary work. True, if the man thinks fit to beat his wife, no one is likely to interfere. On the other hand, the woman will find the laugh on her side if she succeeds in getting the better of her spouse by a judicious use of her teeth, her nails, and—her tongue.

The Zulus are a patriarchal race. The father is master of the family and owner of its female part; therefore the position of the woman is much lower, if her husband has a high rank. The wives of the chief never take part in his councils and may only move about on their knees before him. The principal reason for this degradation is the custom of selling women. The price varies between ten and a hundred head of cattle for the daughters of a chief. Other women may be had for three or four cows. If the wife does not suit the husband in every particular, then he sends her home and demands another, or else part of the price paid must be returned to him. But if she proves to be specially valuable, the relative who sold her will demand some extra payment. A bad wife may also be sold as a slave.

Among the Dualla tribes, on the west coast, the women have not the slightest vestige of a right. They are sold and resold at the pleasure of the men. They may be given away, lent and hired out. They must do all the work in the fields, and, if they fail to bear children, they may be killed. And yet they often manage to hold their own against their masters. The natural result of their position is that the women combine against their husbands in a most alarming manner. The traveler Bastian tells of a rich man in Okoloma, with whom he stayed for some time. The poor fellow was at loggerheads with his women, and had to

barricade his hut at night time. Twenty infuriated women inhabited his place and refused to come to terms.

The importance of the women among the Dahomeyans is well known. Their female warriors were much more dangerous to European troops than the men. The enormous extent to which decapitation was carried on among the Dahomeyans during Behanzin's reign accounts for the great predominance of women in point of numbers. A procession of the king included fifteen



DEALING WITH ELECTRIC SHOCK—FIRST POSITION.

of his daughters, accompanied by fifty female slaves, 730 of his wives, thirty Amazons of the bodyguard, six companies of Amazons of seventy each, 350 slaves, and a rear guard of another sixty Amazons—but only 150 male warriors. The influence of the women among these people has been felt by both the Germans and the French in their colonial troubles.

The Russian Pacific Railway.

A length of 2,200 miles is now open and Omsk is now reached by rail. The cost has been about \$44,000 per mile. The natural conditions were on the whole unfavorable. The men often had to carry their food with them, and they were not unfrequently compelled to allow themselves to be lowered down in baskets in order to prepare the track. On the section between



DEALING WITH ELECTRIC SHOCK—SECOND POSITION.

Ufr and the Sima River there was, between Urakowo and Bulaschawa, a bog of about 60 miles extent, which had been formed through the rain water accumulating in the course of thousands of years in this natural pit of granite. The engineers and the men were for a long time compelled to live in huts, built of earth on crossed piles, which they could only approach in boats. The mosquitoes were another trial, and 4,000 masks had to be procured, in addition to which smoking with juniper was resorted to.

HOW TO DEAL WITH APPARENT DEATH FROM ELECTRIC SHOCK.

[FROM THE ELECTRICAL WORLD.]

BY AUGUSTIN H. GOELET, M.D.

Much interest has recently been excited by the report from France of the resuscitation of a man apparently killed by electricity, and by the announcement of the French scientist D'Arsonval that a person so shocked should be treated as one drowned. The suggestion is a good one but may be somewhat misleading

unless understood; that is, unless the person undertaking the resuscitation appreciates what is to be accomplished and just how it is to be done.

As this authority says, an electric shock may produce death in one of two ways, viz.:

1. By producing destructive tissue changes, when death is absolute; or 2, by producing sudden arrest of the respiratory and heart muscles through excitement of the nerve centers, when death is only apparent; in other words, animation is merely suspended. The subject may be aroused from this syncope if efforts at resuscitation are not too long delayed.

The alternating current, which is usually regarded as the most deadly, strange to say, nearly always produces death in this second manner.

To say that a person has received a shock from a wire conveying a current of four or five thousand volts, does not necessarily signify that the body has been subjected to the full force of the current, even if the meter does register nearly one ampere during the time of the accident. In view of the fact that the human body offers a resistance of several thousand ohms, which resistance is greatly increased by imperfect contact, and by charring and burning the tissues at the points of application, it is not often that the internal structures or vital organs are submitted to a very considerable volume of current, though it apparently passes through the body. It must be borne in mind that when the clothing is moist with perspiration

or wet with rain, it offers a circuit of less resistance than the human body, and in this event the body receives only a shunt current very much less in quantity than the main current. The bulk of current, in this instance, passes over the surface and does not enter the body. This may explain the survival of some who have apparently withstood very powerful currents. It must be presumed, therefore, that electricity seldom kills outright, though the condition of suspended animation, which it induces, would result in death if not counteracted.

All things considered, it is rational to attempt the resuscitation of those apparently killed by electricity, and if not too long delayed, the effort promises fair chances of success, provided proper means are instituted.

If the body has actually been submitted to a current of sufficient volume to produce destructive tissue changes, all efforts at resuscitation will, of course, be futile.

If, on the other hand, only respiration and the heart's action have been temporarily arrested, there is a condition of syncope simulating apparent death