

THE COLT AUTOMATIC GUN.

Of all the death-dealing instruments being used in the South African war, it seems that a little rapid-firing automatic gun has dealt more terror to the hearts of brave men than all the other weapons put together. Time and again reports have come to show that the British soldiers who will face shrapnel and rifle-fire without a tremor, are apt to be "shaken," if they are exposed to the galling "pom-poms," as they have dubbed the Maxim automatics, used by the Boers.

Although the Maxim type is the most in the public eye just now, there are other forms of automatic gun which are scarcely less deadly. One of these, the Colt automatic gun, is shown in the two accompanying engravings, of which one a longitudinal section, and the other represents the gun as set up on its tripod, with the box of ammunition attached, ready for use. The Colt gun figured conspicuously in the operations of our troops during the Spanish war, and it is being used extensively by the British troops in South Africa. The Colt 30-caliber automatic gun has lately been tested for the army, and the 6-millimeter gun is used in the navy. The gun shown weighs forty pounds and is mounted on a tripod which weighs fifty-eight pounds. The maximum speed of fire is about 480 shots per minute.

The gun itself consists of a stout barrel, *B*, attached to a breech casing, *C*, which carries the mechanism for charging, firing and ejecting the shells. The cartridges are automatically fed to the gun by means of belts which are coiled in the box shown attached to the mount. The gun is operated by the pressure of the powder gases in the barrel, which act through a small radial vent, *V*, in the barrel, located somewhat to the rear of the muzzle. The instant the bullet passes this vent, the gases act upon a piston, *P*, which fits in a small gas cylinder, *G*, which surrounds the vent. The piston depresses the forward end of a gas lever, *L*, which is pivoted at the point *O*, and by means of a short lever, *R*, is held in the normally raised position by the action of the two parallel springs, *S*, which are partially indicated in the figure; the action of the springs upon the levers being to return the piston to the gas cylinder after it has been acted upon by the powder pressure. The piston serves also to operate through a rod, *D*, a sliding bar, *X*, which extends rearwardly along the casing and works the breech-bolt, *Z*, the feed mechanism, *F*, and the carrier, *E*. The breech-bolt is arranged so as to move backward and forward, closing the breech. When it is in the forward position the rear end of the breech-bolt swings downward, turning on its front end as a fulcrum, and in this position it is sustained by its abutment in the receiver.

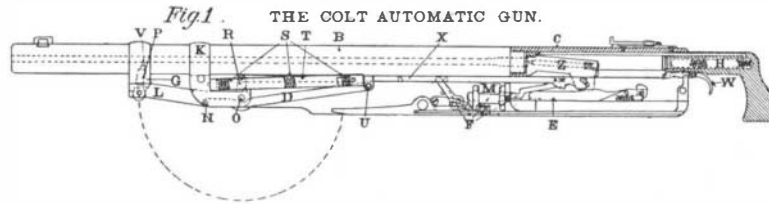
In using the gun a feed belt is entered at the opening, *M*, in the casing, the position of which is shown more clearly in the illustration showing the gun set up, and the lever is pulled to the rear, preparing the piece for firing. On pulling the trigger, *W*, the hammer, *H*, which is caught by the rearward motion of the bolt, moves forward and fires the cartridge, whereupon the breech is opened, the empty shells ejected, and another cartridge is supplied by the feed, *F*, to the carrier, *E*, and placed in front of the breech-bolt, all of these motions being due to the rearward movement of the gas lever and connections actuated by the pressure of the powder gases as already explained. The cartridge is then forced home in the chamber of the barrel, and the breech-bolt is closed and locked by the forward movement gas lever and connections under the action of the springs. If the trigger is held back the same cycle of operations will be repeated as long as the cartridges are supplied.

One man can operate the gun, but two, one to fire and the other to enter the ammunition belts, are necessary to obtain the greatest rapidity of continuous fire with a number of belts. The gun and tripod are packed in cases and carried on a mule for the service of infantry and cavalry troops, and for use in rough countries. A light field-carriage and limber, a parapet mount for fortifications, and landing carriages for naval purposes, are also provided with this type of gun.

A Curious Geographical Blunder.

The Movement Geographique has recently published a long article about a curious geographical blunder relating to South America. The Tocantins River has been regarded as merely a tributary of the Amazon instead of being, as it is, an independent river basin. The writers on geography are only just beginning to treat the Tocantins as an independent hydrographic basin. It rises far to the south and has a great tribu-

tary, the Araguaya, which is even larger than the Tocantins. The joint streams form one of the great rivers of the continent with a width for a long distance of two or three miles, but the river is so impeded by rapids that it is not available for navigation until it widens into the great estuary on which Para stands. The Tocantins does not mingle in any degree with the Amazon and they reach the sea about 40 miles from each other. The chief reason why the erroneous identification of the Tocantins system with the Amazon basin has so long been perpetuated seems to be that the Tocantins basin is closely related with that of the



SECTIONAL VIEW SHOWING DETAILS OF AUTOMATIC MECHANISM.



COLT AUTOMATIC GUN ON TRIPOD, WITH BOX OF BELT AMMUNITION ATTACHED.

Amazon tributary to the west, inasmuch as both flow from the same slope and in the same direction. A very small quantity of water from the Amazon does, however, enter the Tocantins through several narrow arms of the Amazon delta. This does not, however, make the two rivers belong to the same system.

THE GORDON BENNETT CUP RACE.

The conditions for the Gordon Bennett automobile cup race, offered by James Gordon Bennett, publisher of the New York, and Paris Herald, have now been formulated, and the race will take place on June 14, 1900. There is every indication that the event will be one of the most important which ever occurred in the automobile world. We take pleasure in presenting an engraving of the racing machine which Mr. Alexander Winton will use in the race. The motor contained in this carriage is about 10 horse power, and the complete machine weighs about 2,000 pounds. It is to be hoped that an American machine may win this important trophy, which is undoubtedly destined to occupy the same place among automobilists that the "America's" cup does among yachtsmen. Mr. Win-



THE WINTON MOTOR CARRIAGE WHICH WILL COMPETE FOR THE GORDON BENNETT CUP IN THE INTERNATIONAL RACE IN FRANCE IN JUNE.

ton will find for competitors MM. Charron, René de Knyff and Girardot representing the Automobile Club of France. The Automobile Club of Belgium has also made entry and will select the three first Belgians in the Paris-Bordeaux race to represent them in the cup race, and Italian and German clubs will be represented.

The conditions regulating the competition for the cup are quite elaborate. All foreign automobile clubs that are recognized by the Automobile Club of France, are entitled to challenge and compete against the club which holds the cup. The sum of 3,000 francs must be deposited with the club holding the cup, this amount to be returned if one of the automobiles entered is present at the start and the qualified club wishing to challenge must give notice before the 1st of January, of each year, giving the number of automobiles which will compete for the cup. The cup can be competed for every year between May 15 and August 15, and if two or more clubs of the same country are included in the list of challenges, it is understood that this country could only be represented by three automobiles at the most. The exact date of the race is to be arranged for annually between the clubs interested.

The automobiles qualified for the races are those coming under the description given in the racing rules of the Automobile Club of France, which were published in 1899, and in brief, the automobiles must weigh more than 400 kilos, and carry at least two passengers of an average weight of 70 kilos. Four hundred kilos are counted for the weight of the automobile when empty, that is, without passengers or supplies, such as fuel, water, batteries, tools, luggage, clothing, etc. The automobiles must be constructed by members of the competing clubs in the respective countries of the competitors. The two seats must be occupied during the whole time of the race. Various provisions are made as to delegates. The race is a "go-as-you-please" one without any stipulated stoppage. The distance is to be from 550 to 650 kilometers. This distance is to be chosen between two towns or apportioned into several outward and homeward journeys, but in the latter case the minimum distance of each part is not to be less than 150 kilometers. The race is to take place in the country of the club holding the cup, with the option for this club to hold the race in France. Various arrangements are made as to starting the race. In the event of one of the clubs which had challenged being alone represented at the start, one of the automobiles of this club would have to cover the distance stipulated in the maximum time of twenty-four hours, failing which, the cup will be kept by the club challenged. It is understood that no club can ever become the owner of the cup, but they are to hold it only under the conditions fixed by the rules, and any club becoming the holder of the cup, or even challenging for it, must agree to abide by the rules on road racing which were published in 1899, and also by the rules of the Automobile Club of France.

Cost of the Chinese-Japanese War.

The Japanese Minister of Finances has recently published a report which gives an idea of the expense incurred by that nation in the war with China. This report covers a period of twenty-two months, from June 1, 1894, to March 21, 1896, although actual operations ceased about the end of April, 1895. The total expenses of military operations amount to \$76,000,000, those for the marine being estimated at \$18,000,000, making a total of \$94,000,000. An itemized account is given, which shows that the transportation of troops and material reaches \$19,000,000; provisions, \$12,000,000; clothing, \$10,000,000; pay roll, \$8,000,000; arms and ammunition, \$6,000,000; horses, \$4,000,000; hospitals, etc., about \$1,000,000. As to the marine, the expenses are divided as follows: Vessels, \$6,000,000; arms and ammunition, \$5,000,000; pay roll and provisions, each about \$600,000; clothing, \$200,000. In order to meet these expenses, the Japanese government has collected a revenue equal to \$113,000,000. The difference between the expenses and the revenue, or \$19,000,000, has been turned into the treasury to be used as a reserve. The report of the Minister of Finances ends by a reference to the indemnity paid by China. By the treaty of Simonosaki, this indemnity was fixed at \$150,000,000; if from this sum is taken the \$94,000,000 representing the expenses of the war, it will be seen that Japan has a balance in her favor of \$56,000,000.