

T.A.'S BOER-KILLER.

HOW THE BRITISH RIFLE IS MADE, AND HOW IT WORKS.

At the present moment, when the fate of our South African colonies, to say nothing of our national prestige, practically depends upon the trustworthiness of the rifles carried by our khaki-coated Tommies, a few words as to the manufacture and performance of these weapons may not be unwelcome to your readers (recently said a well-known Army Ordnance officer to the "P.W.")

As every man knows, the present service rifle, the Lee-Metford, began to replace the old Martin-Henry about the year 1890; but it was fully six years later before the entire military service, both volunteer and regular, was using the same weapon.

The Lee-Metford, which for rapidity of fire is practically a ten-chambered revolver rifle, consists of three principal parts. The stock, which is of the best Italian walnut, and is subdivided into the butt and fore-end; the barrel and the lock. Of these, the woodwork is, of course, the simplest of construction. By a most ingenious arrangement of the lathe, the entire butt is cut out of an oblong piece of wood in slightly more than "no time"; while the "fore-end" is similarly evolved with equal rapidity, the whole of the joinery needing only a brisk sandpapering and polishing in order to fit it for service.

The construction of the barrel is considerably more complicated. The Lee-Metford barrel is made from a solid steel bar of a circular section. The bar is, in the first place, considerably shorter and thicker than the shape it will finally assume; the necessary elongation being effected by bringing it to a white heat and passing it over a steam anvil, where in a few minutes it is rolled and hammered into the required length. In this way the clumsy looking block of mild steel (measuring 2 feet by 1½ inches) is speedily converted into an unbored rifle barrel, nearly four feet in length, and terminating in a thickened end, measuring about one-tenth of its entire length.

Next follows the process of boring out the barrel, an operation requiring no little skill on the part of the workman. The boring is conducted by means of a pair of drills, working from either end and meeting in the middle. They are kept cool by means of a stream of soap and water, which is forced into the barrel by hydraulic pressure. As soon as the barrel is rough-bored, it is polished ready to receive the rifling. The accuracy expected of the driller and polisher will

be best appreciated from a description of the test employed to check his workmanship.

The barrel is placed in a vertical position, and its lower end made airtight. A close-fitting gauge is then inserted at the top of the bore, when, if the bore is mathematically correct, the gauge should not only be supported by the air within the bore, but, upon the removal of the seal from the base of the barrel, should drop easily through the same, from top to bottom without wedging.

Before a barrel goes to the "rifer," it is enclosed in a strongly protected firing cell. Here it is repeatedly proved, with the aid of charges many times heavier than it will actually be required to carry in battle, a test which is again repeated after the process of rifling.

The process of rifling a barrel is that by which are cut the spiral grooves, which run inside the bore from breech to muzzle, and are designed for the purpose of causing the projectile to rapidly rotate, gimlet fashion, in its flight. For the benefit of the uninitiated, it may be explained that this twist not only enables the bullet to cut its way further into its billet, but also gives it a much longer and more accurate flight. The grooves thus cut are seven in number, but the process by which they are produced



See "OUR ILLUSTRATIONS." OSMAN DIGNA.



SERGEANT SAMUEL GOURLEY.
Died from wounds received in an engagement with the Boers at Rendsberg.



THE LATE PRIVATE JOHN AITKEN CONNELL.
Killed in an engagement with the Boers at Rendsberg, South Africa.

is unfortunately too technical for the unprofessional reader.

After polishing and "browning" (the latter in order that no tell-tale glint of steel may betray the marksman to his enemy), the barrel is ready for attachment to the "body," "bol," and "magazine." The "body" is that part of the rifle which holds together its component parts; the "bolt" is a small edition of the common or front-door bolt of our own houses, and, in addition to extracting the spent cartridge, contains a "striker," by which the cartridge is exploded. Most important of all, however, is the "magazine."

To draw a familiar simile, the main idea of the magazine mechanism is an extension of the principle of the metal sovereign purse. You put your ten cartridges in, one by one, upon a species of spring platform, which will always hold the last cartridge ready to hand. The chief difference is, that whereas in the sovereign purse the coins are withdrawn by hand, the Lee-Metford magazine is emptied automatically. It is provided with an ingenious mechanism which causes it to discharge its contents, one by one, into the breech of the rifle as soon as the preceding cartridge has been ejected by the action of firing.

The magazine is further fitted with a "cut-off," by means of which the rifle can be fired and re-loaded in the ordinary way, shot by shot, until such time as the soldier finds himself in a tight corner. Then the "cut-off" is pulled out, and Tommy knows he can face the forthcoming rush with the confidence which comes of having ten lives up his sleeve without the trouble of reloading.

THE FOOD OUR ARMY CONSUMES.

SOME ASTOUNDING FIGURES.

There is a very interesting article the "Times" on the provisioning of our army in South Africa. The basis of the arrangement is that there shall be four months' supplies always available at the seat of war for 116,000 troops and native transport helpers and 51,000 horses and mules. At the present moment there are only three months' supplies on hand in South Africa, but the additions necessary to bring the totals up to the four months' limit are being despatched with speed, and that limit, once reached, will be maintained as long as may be thought necessary. Of the enormous quantities of food which go to make up a four months' supply for this number of men and animals

few persons can have even the remotest idea. The one item of preserved meat alone stands at 12,000,000 lb, and of biscuit there is the same quantity. Coffee stands at 100,000 lb, tea at 200,000 lb, sugar at 2,200,000 lb, compressed vegetables at 800,000 lb, and salt at 400,000 lb. One article of diet which has been found particularly suitable for troops on active service is a preparation of meat and vegetables cooked together. Of this a single contractor is sending tons at the rate of half a million each month. Of condensed milk, sweetened and un-sweetened, the four months' supplies represent 350,000 tins.

Particularly interesting is the item of jam. This commodity was first given to the British troops in the Sudan expedition of 1884 and 1885, and it was afterwards supplied to the Ashanti expedition. It was reported on very favourably on each occasion, for not only was it regarded with favour by the troops, but it was found to be a distinctly healthy food, especially on account of its anti-scorbutic properties, an important consideration in the absence of a good supply of fresh vegetables. Jam has therefore taken its permanent place as one good thing among the others for troops to fight on, and the quantities to be kept in South Africa as a four months' reserve amount to no less than 1,450,000 lb, consigned in tins each containing a single pound. In regard to the liquids the list provides for 80,000 gallons of rum, 12,000 bottles of whisky, 32,000 bottles of port wine, nearly 40,000 lb weight of limejuice, a vast quantity of "sparklets" for making soda water, and eighty tons of alum for purifying spring or river water of which the quality may be doubtful.

Of tobacco, the quantity sent out by the War Office for the four months is 40,000 lb, this, of course, being quite independent of the amount contributed by private donors. It should be said, however, that the troops have to pay for the tobacco supplied by the War Office, doing so at the rate of 1s per pound, so that, no doubt, they will be doubly pleased to get free gifts from the British public. Of ordinary hospital supplies the quantities are based on the supposition that 10 per cent. of the troops are always either sick or wounded, though, happily, this percentage is never reached. In the way of disinfectants, also, it is assumed that during each four months there will, or may, be required 6000 lb of carbolic acid powder, 20 tons of chloride of lime, 10,000 gallons of lizl, and ten tons of McDougall's disinfecting powder. Still another item on the list is that of 80,000 lb of candles. For the horses and mules there are provided, for the same period, 25,000 tons of hay, 31,000 tons of oats, and 3000 tons of bran.