

percussion fuzes—fuzes that is which burst not in the air but on impact. The first thing to do is to "bracket" the target—that is, to give such corrections that shells from the gun set at the longer range fall beyond the target, whilst those from the other fall short. Once a bracket has been obtained and verified by firing two or three more shots, it is reduced by shortening the range of the gun set at the higher elevation and increasing that of the second gun. Firing goes on in this way until a "short bracket" is obtained. The range is then established as midway between the ends of the short bracket; if No. 1 gun had been firing at 6,500 and No. 2 at 6,400, the true range would be 6,450. If shrapnel is to be used the correct length of fuze must also be found. Most fuzes are made to burst the shell either in the air or on impact, the former being done by time, the latter by percussion. Avoiding the use of technical terms, the percussion mechanism may be said to consist of a striker, a percussion cap, and a magazine of powder. Before the shell is fired the striker is locked in position by means of various devices so that the projectile is quite safe to handle and to transport. These safety arrangements are broken down by the shock of discharge, and nothing but a weak spring keeps the striker from firing the cap or detonator. When the shell hits the ground or a building the momentum of the striker causes it to fly forward, overcoming the resistance of the spring, the detonator is fired, the magazine is ignited, and the flash is carried down to the bursting charge. In the time mechanism there is also a striker which shears through its safety devices when the gun is fired. There is, however, no spring; the striker impinges at once on a detonator, firing it and thus igniting a ring of slow-burning compound which leads into the magazine. By means of a carefully graduated band known as the "timing ring" the slow-burning compound can be short-circuited at any point; in other words, the fuze can be so set that the shell will burst at any given moment in its flight. Fuzes are much affected by weather conditions, so that, as we have said, the correct fuze must be found before the whole battery can successfully open fire with shrapnel. For this purpose a large slide rule called the "fuze indicator" is used. It is so graduated that when in its normal position it will give the correct fuze lengths for all ranges under average conditions of weather and temperature. The observing officer orders a setting of this rule which appears likely to suit the prevailing conditions. Fuzes are set at the reading given and the result watched. If the bursts are too high or too low the rule must be altered until its readings give the correct fuze length. It will then be correctly set for all ranges on that particular day. The fuze having been found, the whole battery opens fire, the observing officer sending down small corrections for individual guns from time to time. The object of having lines of fire parallel is now apparent. If they were crossed it would be impossible to say which gun was responsible for a particular burst and individual corrections could not be made. Further, it is often necessary either to concentrate temporarily the fire of all guns on to one spot or to open them out so that they cover a wider area. If lines are parallel this is not difficult, but it would not be feasible were they convergent or divergent to begin with. In trench warfare observation is frequently done from a forward trench, and not from an observation post placed on a flank; aeroplanes are also very much used for this purpose. Special methods are employed in both these cases. The difficulty of observing, however it is done, is that the observer is displaced from the line of fire of his guns so that allowance must be made for the resulting parallax. The good observer, it need hardly be said, can only be produced by getting the right man and training him in the right way. He must watch the fire of four guns, making lightning deductions from its results, and send down his corrections clearly and rapidly, so that the greatest possible effect may be obtained with the least expenditure of ammunition. His eye must be quick and trained in gauging both distance and angular measurement, his judgment sound, and his brain capable of coming to an instantaneous conclusion without making an error.

To many who read this article it may appear that the methods which it endeavours to describe are cumbrous and must of necessity be slow. They are as a matter of fact quite otherwise. Practice makes the carrying out of them almost mechanical, whilst the calculations which have to be made are so simple that pencil and paper are often unnecessary. It must be remembered, too, that each officer and man has his allotted task when a battery comes into action so that many of the duties which appear from a description to be performed consecutively are really carried out simultaneously. Naturally the officer with the battery cannot lay out his lines of fire until the various measurements necessary are sent down

from the observing post. But since both he and the observing officer ride on ahead of the battery in a moving battle, they are able to get this work done whilst the guns are coming into action. One cannot realize how rapidly fire can be opened by any of the three methods until one has seen it done by a well-trained battery. Darkness is no bar to accurate shooting, for a lamp is fixed as an aiming point, angles from it being measured and tested by day.

NEW BRUNSWICK LEADS

Her Land Settlement Scheme after War ahead of all others, says London Chronicle

MR. J. SAXON MILLS, writing in the London Daily Chronicle, says that New Brunswick, one of the smallest provinces under the Dominion of Canada, is first in the field with a definite plan of land settlement after the war. When we speak of Canada and colonization, we are apt to think solely of the middle or prairie provinces. Some of us have almost overlooked the existence of these maritime provinces, with their milder climate, their almost illimitable resources, and, what is rather important, their handiness for our own shores. New Brunswick is only just on the other side of the big pond, and is close neighbour to nearly 100 millions of English-speaking people. All this should make the New Brunswick scheme very attractive to Englishmen who want to get to a newer country and yet not go too far away from the old Mother-land.

In the prairies most of the Crown Lands are held and administered by the Federal Government, but New Brunswick has kept control of hers, and she has at her disposal a wide enough area of fertile and unoccupied country to provide healthy and comfortable homes for—I believe I am speaking accurately when I say tens of thousands of new settlers. The moment her Government heard of the movement for securing all would-be emigrants from the United Kingdom for the British Oversea Dominions, it got right to work. It has spent quite an inconsiderable time in talking, and if the war should end by next late spring or summer New Brunswick will be ready with her scheme. Can any other part of the Empire say that?

Setting to work at once, the Provincial Government established an Advisory Settlement Board,



Allies: "Our cards are on the table; show yours."

—From the New York Times.

which was soon about the country looking for the land most suitable for the purpose, and in a marvelously short time such land was discovered. Some of us who belong to that very live Empire rendezvous, the Royal Colonial Institute, had a little talk the other day with the Hon. J. Murray, the very able Minister of Agriculture in N. B., and we heard a good deal about this excellent proposition. "The scheme

briefly," he said, "is the establishment of community settlements, each community to accommodate from one hundred to two hundred and fifty families, depending on the size of the area of suitable land that



GEORGE AS THE DRAGON.

—From the Bystander.

is available in each locality. Each of these communities will radiate from a central farm, operated by the Government for the purpose of supplying instruction, employment, necessary implements, and teams for the new settlers—a system which we believe will in a large measure do away with the necessity of each settler having to purchase a full equipment of his own for the first ten years."

On this central farm provision is going to be made for a school, church, butter and cheese factory, blacksmith's shop, post-office, and other public conveniences, and the co-operative principle will be applied in the marketing, and indeed in many other departments of the communal life and work. Very cosy these little villages will be, and I was much interested to hear about the contemplated religious arrangements. The communities will, as far as possible, each consist of members of the same religious creed. There will be a Roman Catholic community with its central church, perhaps an Anglican community, and it is thought that the various Nonconformist denominations, the "fancy religions," as the recruiting sergeant expresses it, might manage to combine in a form of worship which would occupy another church or chapel. This arrangement is perhaps calculated to stereotype religious differences, but what does that matter if people are happy and contented?

Stage Weeps are Tricky

STAGE emotions are not what they should be, declares Mr. George Jean Nathan in a recent article.

To blame this condition of affairs, as our current-drafting playwrights are forever so affectionate in blaming it, entirely upon the audience, seems a trifle short-sighted even to one, like myself, and who appreciates only too well from long and intimate contact the vulgarity and opalescence of the listless groups of bedizened pot-wallopers who smell out of court by their very patronage all that may be beautiful and worth while in drama. Why should sound thinking, thought that sparkles and crackles like burning diamond dust, ideas that, like so many rings of smoke, dissolve into wistful smiles and musings—why should these be believed irrevocably to be not the food of which theatrical amusement and stimulation are made? The notion that the emotions of a group of persons gathered into a theatre-auditorium to witness drama will respond only—or at least chiefly—to a like set of emotions displayed upon the platform before them is pretty poor psychology. The notion that such an audience may be made to cry only by showing it an actress sniffing or be made to feel joyful only by exhibiting to it an ingenue sticking her nose gleefully into a bouquet of sweet peas and meanwhile hopping on one foot, seems a sorry conceit. And by audience, in this connection and by way of reassurance, is meant not what Dryden, in another direction, described as souls of the highest rank and truest understanding, but that mob something which is ever given less to caviar than to sausage.