

The
**WIRELESS
WORLD**

**WAR WIRELESS
IN ITALY**

**BORNEO
WIRELESS
STATION**

**THE AMATEUR
POSITION**



**"ANTI-SULPHURIC" ENAMEL
RESISTS ACID FUMES, Etc.**

Digitized by Google

**GRIFFITHS BROS. & Co. (London) Ltd.
MACKS ROAD, BERMONDSEY, S.E. 1st.**

Original from
UNIVERSITY OF MICHIGAN

“W/T. R.E.”

An Account of the Work and Development of Field Wireless Sets with the Armies in France.
By Capt. B. F. J. Schonland, O.B.E., R.E., late Staff Officer (Wireless)
1st Army, France.
(Continued from July Number.)

THE village of Paschaendale has a commanding view of the country on the Roulers Plain below it, and our possession of the village and ridge in December, 1917, made things very uncomfortable for the Boche. Unfortunately the country on our side of the ridge was, as is well known the most terrible slough, quagmire and quicksand that has ever existed. To lay cable above ground was useless, as it was cut by enemy fire as soon as laid, so a “C.W” wireless set was installed in Paschaendale village and from a tiny aerial kept in communication with Ypres, eleven kilometres away. In spite of very heavy shelling it gave prompt information of targets for the artillery for many days. Eventually the whole set was blown up by a shell. A new one was installed a little way back, and the same communication kept up. The work of this set was invaluable.

In the first battle of Cambrai, November, 1917, our sudden attack with Tanks took the enemy completely by surprise. Wireless sets were carried forward in some of the Tanks and then removed, small masts erected and good communication obtained with their “base.” The advance was so rapid that the sets with infantry battalions and brigades had a big start over the telephone communications. Though lines for the latter were laid at a “gallop” once the trench system was crossed, for

several hours the B.F. sets did the necessary transmission of situation reports and orders. The enemy’s sudden counter-blow on November 29th resulted in the cutting of the main trunk telegraph and telephone lines between the two army corps affected, within a few hours of the first attack. As a consequence the wireless stations in the sector had a very busy time. Not only were they flooded with traffic, but they had constantly to retire and to re-erect their stations. The experience gained by all concerned, in the way of traffic disposal and regulation under conditions of abnormal pressure, was great. It led to changes in organisation which were felt the following year, when such cases of traffic “flooding” the stations were of almost daily occurrence.

No mention has so far been made of the Power-Buzzer, an instrument which we adopted from the French and later improved. In some respects hardly a “wireless” set—for it was part of a method of signalling by conduction through the earth—this, too, was manned and run by the wireless sections. It may shortly be described as an induction-coil “buzzing” a current into the earth by means of two earth-pins a hundred yards or less apart, connected to the coil by well-insulated cable. This buzzed current spreading out along the earth’s surface was picked up by two similar earth-pins connected to a three-valve amplifier. As the Power-Buzzer required no aerial wires

and could work over a range of from one to three thousand yards it was much used for the very forward infantry communications over areas where the enemy's barrage fire was intense. Its working was, of course, affected by the nature of the country between it and the amplifier. Owing to its extreme simplicity, portability, and the ease with which the length of cable could be repaired if broken, the Power-Buzzer was very successful in trench-warfare. It was often carried over with the second wave of attacking infantry, both for raids and for actual attacks. It could always be found in a hole near or in the front line, sometimes in a forward post in front of the front line; a hole dignified by the name of dug-out, that served the operator for shelter, bedroom, dining-room, office, and home generally.

Like the B.F. set, the Power-Buzzer was in every attack in 1917, though still nearer the enemy—so near that a story is told of a German who seized one of the earth-pins during a fight and remained fixed to the spot, earth-pin glued to his hand, while the operator kept his key pressed and another disarmed him! Even the mud of Flanders, though restricting the range, could not prevent the Power-Buzzer from saving the forward communications of the Naval Division in the battle of Ypres. Some idea of the small distances involved in such work, distances which could be covered in no other way may be gathered from the case of the Power-Buzzer in Bullecourt in May, 1917. Bullecourt, as readers may remember, was the high-water mark of the 1st Battle of Arras, and round this little village raged one of the most furious struggles the war produced. Even after the enemy's direct attacks had ceased he kept shelling it all day and all night. Communication with the village was well-nigh impossible over one stretch of five hundred

yards. This stretch was spanned for several weeks by a Power-Buzzer installed in a dug-out in the village. The earth-pins were some fourteen yards apart, also in the dug-out.

This narrative has now been brought up to the close of the year 1917. The probationary or at least the youthful stage of the development of the W/T section R.E. was over at the end of that year. As I have tried to show, it had gradually grown from nothing to an organisation which was proving daily of incalculable value to the fighting troops. In spite of prejudice and difficulties, it was now plain that the salvation of forward communication in battle lay in wireless telegraphy.

My account of the work of wireless with the Signal Service in France must now be continued for the year 1918. The reader will have seen how, from a small beginning, a large organisation had sprung up. Great expectations were entertained of the work this organisation would do in 1918. That these were justified the sequel will show. During the winter of 1917-1918 the training of officers and men in the sets was brought to a very high pitch of efficiency, while the sets themselves were improved and increased in number and in power. The experience already gained in battle led to the design and production in large quantities of a number of new types of forward sets, notably a special pattern of continuous wave set and a very small portable spark set, known as the "loop" set. Events showed that sets could not be produced fast enough, so great was the demand during the epic fighting of the last year of the war.

The opening of the year brought with it the proud German boast of their great offensive which was to drive the Allies into the sea. In the mists of

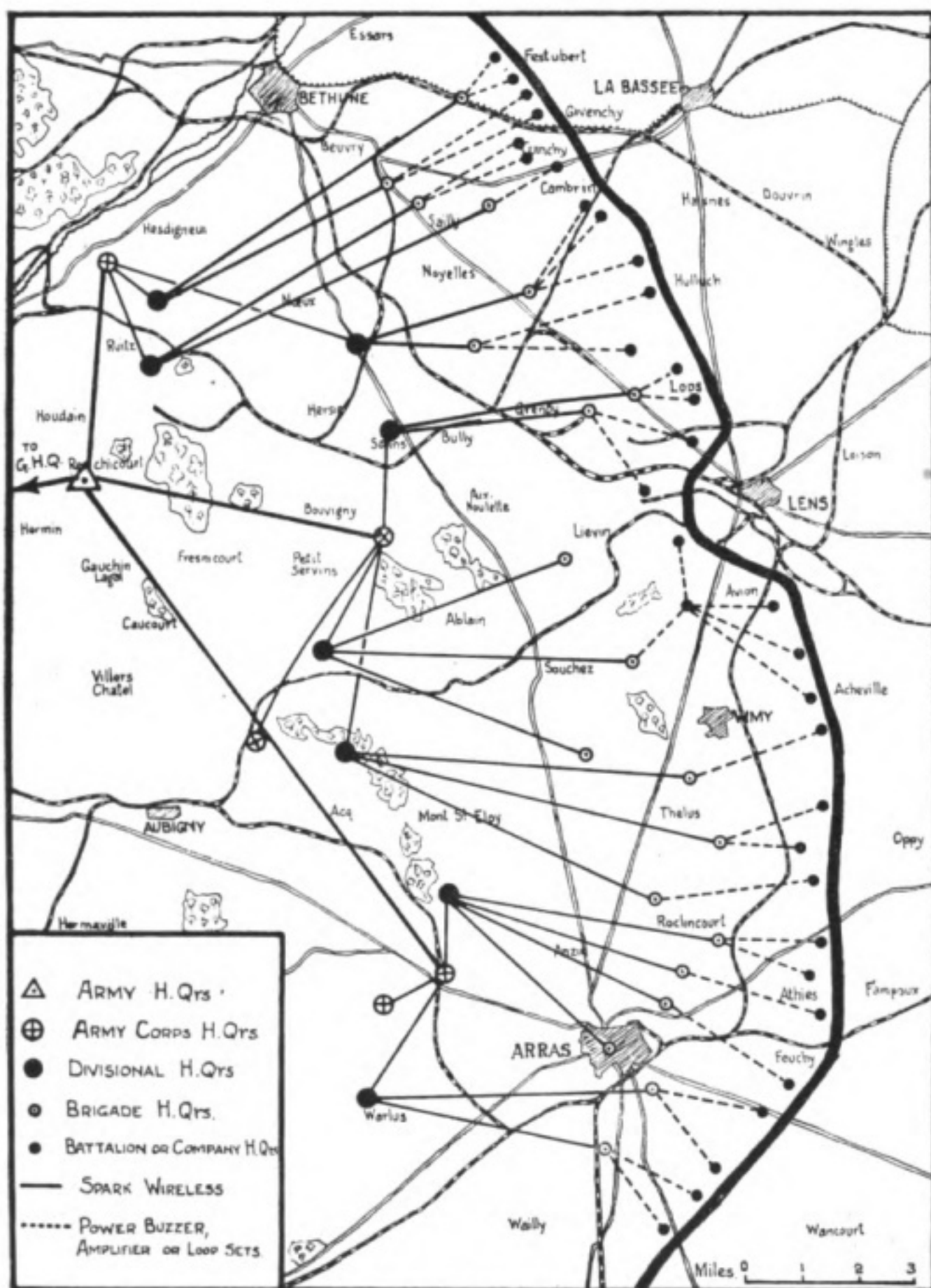
the morning of March 21st the expected attack from the Hindenburg line took place. Thanks to his elaborate preparations which included the provision of many light motor wireless sets the enemy succeeded in driving us back to within a few miles of Amiens. His wireless sets were working day and night, a veritable wireless "barrage," but our own were by no means idle. In spite of inevitable disorganisation, the difficulties of keeping accumulators charged, etc., our sets were everywhere of great value. One incident in the retirement should be historic. A battalion of the 37th Division, at Epinedes-Dallon, near St. Quentin, was ordered to cover the retirement of the division, and supplied with a trench set with which to keep in touch with headquarters. The battalion bravely did its work, though eventually surrounded by overwhelming odds. They held out until a message was received from the divisional general, thanking them for this great stand, whereby the retirement of the remainder had been safely accomplished. Back came their reply, "Goodbye, we are going to fight our way out."

After his attack further north and his suicidal attempt to take Paris, the tide turned against the Boche. The fourth British army in front of Amiens caught the enemy napping. The way wireless was used to "camouflage" our attack I hope to mention later. Our advance, owing to secrecy and careful preparation, was swift. The wireless sections of divisions, corps and armies were ready for a speedy advance, and had an enormous amount of traffic to deal with. One station, for example, dealt with 1,100 messages in six days, most of which messages had to be coded and de-coded. The pack-sets and motor wireless sections with the cavalry had work in plenty. Captured enemy

wireless sets became a drug on the market!

So the advance went on until three armies, the First, Third and Fourth were "going over the top" together. The story of their advance is well-known—how the First Army pushed forward to Cambrai, turning the enemy's flank while the two armies below fought their way to the Hindenburg line, broke through it, and pushed on. What was "Sparks" doing all this time? The answer is best given by the two maps reproduced herewith. The first shows the distribution of spark sets and Power Buzzers on the First Army front just prior to the August offensive. I have not included the continuous wave artillery wireless system in this, for fear of complicating it. In the second map, which shows the same front after the offensive had started I have included the continuous wave system on a part only of the front. The reader will realise that the efficient working and control of so many stations in such a small area was a big problem. "Sparks," as you see, was busy! But he got busier still as the advance went on. Through Cambrai, St. Quentin, Douai, still we pushed on, faster and faster until the last few weeks when Lille, Valenciennes, Roulers, Mons, and Maubeuge saw our victorious troops.

As the advance quickened its pace it became more and more difficult to maintain even the most vital telegraphic communications with the troops. The Germans in their retreat had in most cases wrecked their own elaborate system of telegraph routes. Where the routes were not wrecked the wires were often touched with acid, and the poles carefully sawn half through. These little tricks of the wily Hun often gave trouble, while his habit of blowing up cross-roads and flooding the country by the destruction of locks and dykes



The First Army front just prior to the great offensive of August, 1918.

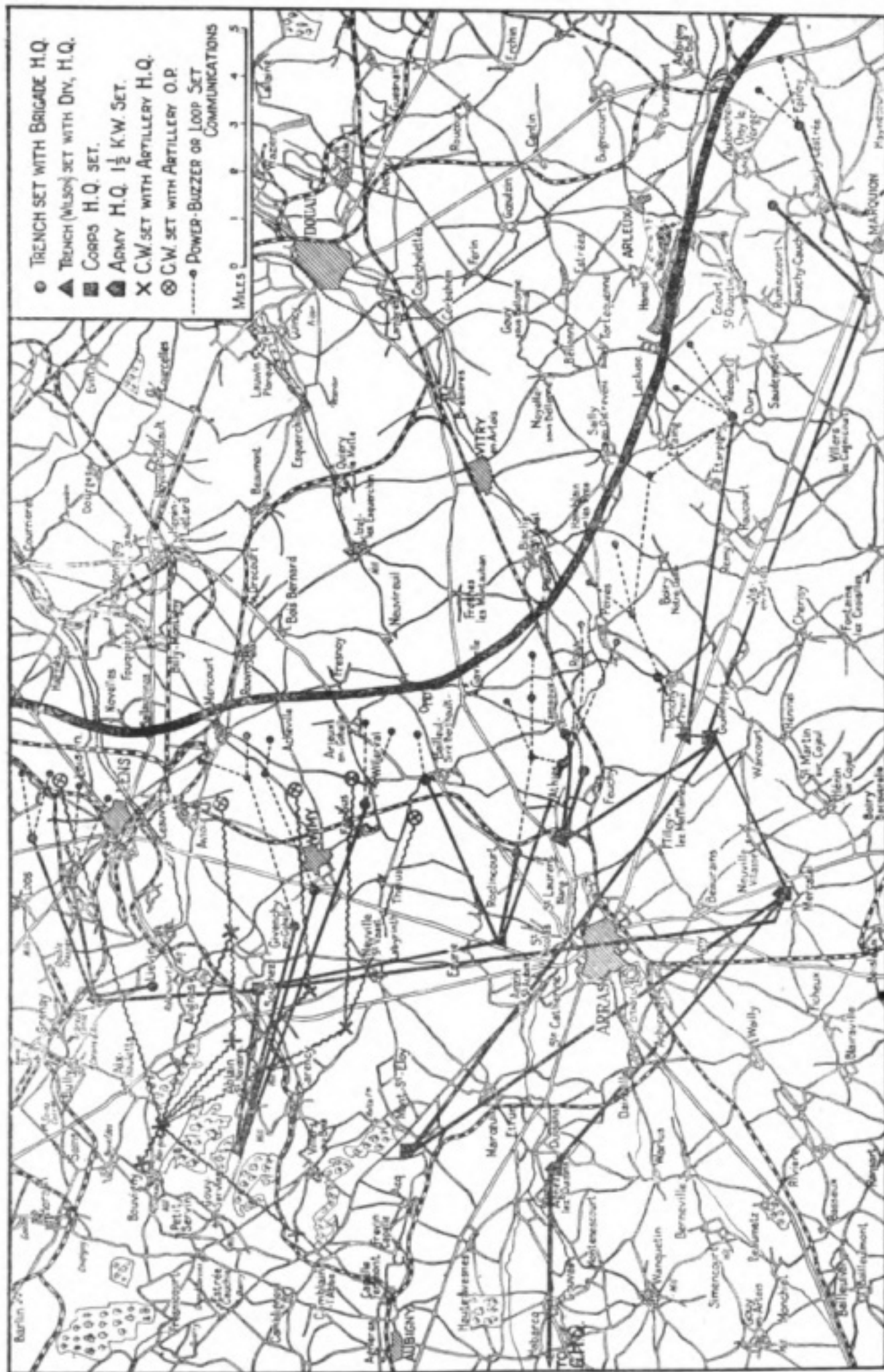
made the motor-cyclist despatch rider's life a most unhappy one.

A detailed account of the work of wireless in the last months of the war would be a very big undertaking. The number of sets was then enormous, and new sets arrived daily from England, only to be swallowed up immediately. Besides the spark system—the "B.F." Sets, "loop" sets, Power-Buzzers, more powerful "Wilson" Transmitters and Mk. III Tuners, and the $1\frac{1}{2}$ k.w. sets at army headquarters—which was working hard everywhere, the continuous wave system was of incalculable value to artillery and other units. I can only quote some typical instances. I have referred to the "loop" set, a very small portable spark set produced in 1918 for forward work. Once our rate of advance reached from three to six miles a day, the Power-Buzzer with its smaller range was put aside, and the most forward link in the wireless chain was filled by this little set. The supply of sets at the time of the armistice had not sufficed to equip all divisions fully in this respect, but some of these tiny sets were dealing with sixty to eighty messages a day in forward positions, such as company to battalion headquarters.

The B.F. sets with brigades and division did what was expected of them. That is to say they were often at it day and night without a rest, transmitting and receiving orders for future attacks, sending back reports of attacks in progress, ordering ammunition and supplies, and generally taking the traffic while lines were being repaired. Even the spark sets at army corps and army headquarters, whose work was usually of a control nature, to stop jamming and to see that no information was divulged by careless operating, had their chance. The difficulties involved in the maintenance of line communication and des-

patch-rider services, which I have touched on above, though wonderfully overcome in most cases, meant that it was not uncommon for a batch of thirty or forty messages to be sent from the signal (telegraph) office to the wireless station for transmission. The writer remembers one evening when an army corps had a dozen messages for its divisions, all concerned with an attack which was ordered by one of the messages for the following morning. To get messages to the divisions by line telegraph was impossible all lines were "down." Bridges too were "down," and to add to the difficulty the divisions had moved forward. To find them by despatch-riders in the darkness and with roads and bridges blown up was a hopeless proposition. So the corps wireless station started up and called its divisional stations. They all replied when called, and the messages were safely despatched, all other traffic ceasing till the "S.O.'s." (Urgent Operations Priority) had been duly acknowledged. The attack next day caused the fall of Valenciennes. The efficient working of the spark wireless system meant a great deal at such a time; thanks to the work of the personnel concerned, to organisation, and to careful preparation, it never failed.

Continuous wave sets with the "gunners" were in use with both heavy and field artillery. If difficulty was experienced in laying and maintaining telegraph lines for infantry "command" purposes, the difficulty here was still more acute. The cry from the artillery was for more C.W. sets, and still more! With the Forward Observation Officer in his O.P., with the guns themselves or with the headquarters of the artillery brigade, the valves of the C.W. sets were flickering night and day, and that their success was great is beyond any doubt. One divisional ar-



The First Army Front after the British offensive in August, 1918, had started.

"W/T. R.E."

tillery brigade used practically nothing but C.W. sets for its communications to O.P.'s and batteries for at least three weeks on end, giving up laying telephone line altogether. It was still using C.W. only when last I heard of it.

A striking example of wireless as sole means of communication is afforded by the Canadian Independent Force. A most formidable collection of armoured cars, machine guns and pompoms mounted on cars and lorries, this force would "sail out into the blue" once the fighting became open enough, engaging machine-gun nests and anti-tank guns with great success. One car carried a C.W. set which kept the force in touch with a special set at a convenient headquarters behind our line, sending back reports and keeping the force itself informed of the progress of events elsewhere. That it was possible to keep such a detached force in close touch with the commander of the main body of attacking troops is a remarkable de-

monstration of the value of wireless in modern warfare.

Similar service was rendered by C.W. sets provided for parties of scouts working as special observers all along the front, and sending back reports by wireless. These reports which were concerned with the progress of our operations, the movements of the enemy, and possible targets for our artillery, were sent and acknowledged without the slightest trouble over distances varying from ten to twenty miles. A collection of the messages sent by only one such station during a day of battle makes interesting reading. From the first message:—"Our men over (the top) 5 a.m. enemy barrage (come) down 5.05 a.m. our troops reached—and—," onwards through the heat and turmoil of the day's battle, the messages show how perfect and rapid was the wireless communication. The staff frequently expressed their appreciation of the continuous success of these sets.

(To be continued.)



Photo.

Wireless Directing Artillery.

A.I.A.