The WIRELESS WORLD

"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 August Number.)

SPACE forbids my telling much of the minor communications which were provided by the ever-present C.W. set. Once we were moving forward rapidly it was impossible to provide the long telephone lines required by the anti-aircraft system, to link up "spotting" parties with guns, and guns with other guns. A big system of C.W. communication was therefore provided for "Archie", and gave splendid service. The Royal Air Force, too, had a complete system of C.W. ground communications between Brigades, Wings and Squadrons. These did good work, but a description of their activities is not within the scope of these articles.

The retreat of the enemy in the opening days of November was marked by nothing if not by its celerity, and the corresponding speed of our advance lead to a real clamour for wireless sets of all descriptions.

Requests were even received for wireless facilities for the use of R.T.O.'s. at railway stations! During the last few weeks of the war the aether in the zone of the British Armies was in a terrible state of agitation. Wireless sets with infantry, artillery, cavalry, tanks, armoured cars, scouts, anti-aircraft guns, all were working at red-hot speed.

And then, not unexpectedly, but suddenly all the same, so dramatic was its significance, came the message from the Eiffel Tower which rang down the curtain on the world-war. At 5 a.m. on the morning of November 11th, when the operator on spark or C.W. set was drowsily wondering how soon the day's attack would mean another day's "S.O.'s." and "D.'s." came the message—"Marshal Foch to the Allied Commanders.—Hostilities will cease at 11 a.m.————." That message was *delivered* in well over half the cases, delivered to the fighting troops by wireless. And in the tumultuous crash which followed, in the repetition of the message by the thousands of wireless sets in the army, one recalled another wireless message. Date—August 4th, 1914, a big German land station to ships at sea:—"War has been declared with Russia, France, and England, England, England, *England*."

With the delivery of the orders for the armistice the real work of the W/T Section, R.E., was done. I cannot, however, refrain from recalling how, soon after eleven o'clock that memorable morning, direct communication was established by wireless between our G.H.Q. and our headquarters of armies, and those of the Germans. Messages were soon exchanged concerning the safe passage of German officers to arrange certain details of the armistice conditions, to hand over material, reveal unexploded land mines, etc. This direct communication between the two sides continued for some time. When our troops set off on their long march to the Rhine, great use was made of wireless sets of all kinds to provide communication between scattered units on

the move. Their success in that capacity is the last chapter in the history of the "W/T.R.E."

The foregoing pages have attempted to present an account of the development of trench wireless, from the early sets on the Somme to the huge organisation, forming part of the Signal Service, and numbering some three thousand men and a hundred officers at the time of the armistice. I have tried to give the reader some idea of the results obtained, which exceeded the expectations of the most sanguine wireless enthusiasts. In an historical account it is difficult to find place for a detailed description of technicalities. This as well as an account of the difficulties and heroism of the operators, to whom all credit for success is due, I hope to treat of later, with some account of the work of Wireless Observation Groups, and listening sets.

A Trench Station.

The development of wireless with the army was far from reaching finality by November 11th. On the contrary, if the war had been further prolonged, a few months would have seen vast changes. The number of sets would have been doubled, perhaps trebled.

"Hullo Sparks! Got any messages through?" Sparks can afford to smile.

Having completed a brief historical account of field wireless sets with the armies in France, I propose now to give the reader an idea of the various technical difficulties encountered and overcome.

It will have been seen from the maps given in previous articles, that the wireless communications were arranged on the "group" system. The arrangement for working and controlling the spark sets in an army corps are shown in Fig. 1. Each corps used one wavelength of the three—350, 450 and 550 metres—available. Although this looks cumbersome on paper, in practice it was usually found that divisions such as those marked 49th and 32nd could carry out communication with brigade stations without interference. Any trouble, however, arising from jamming was attended to by the "directing" station concerned, divisional, corps, or army. The word of the "D.S.'s." were also on the watch for carelessness in ciphering messages and mistakes in procedure, as well as to assist with their more powerful sets, in case a brigade station could not be roused by its division.

Difficulties of manufacture delayed the production of an improved spark trench set, which would have made it possible to give each divisional group a separate wavelength and thus improve communication. Fig. 2 shows the al-

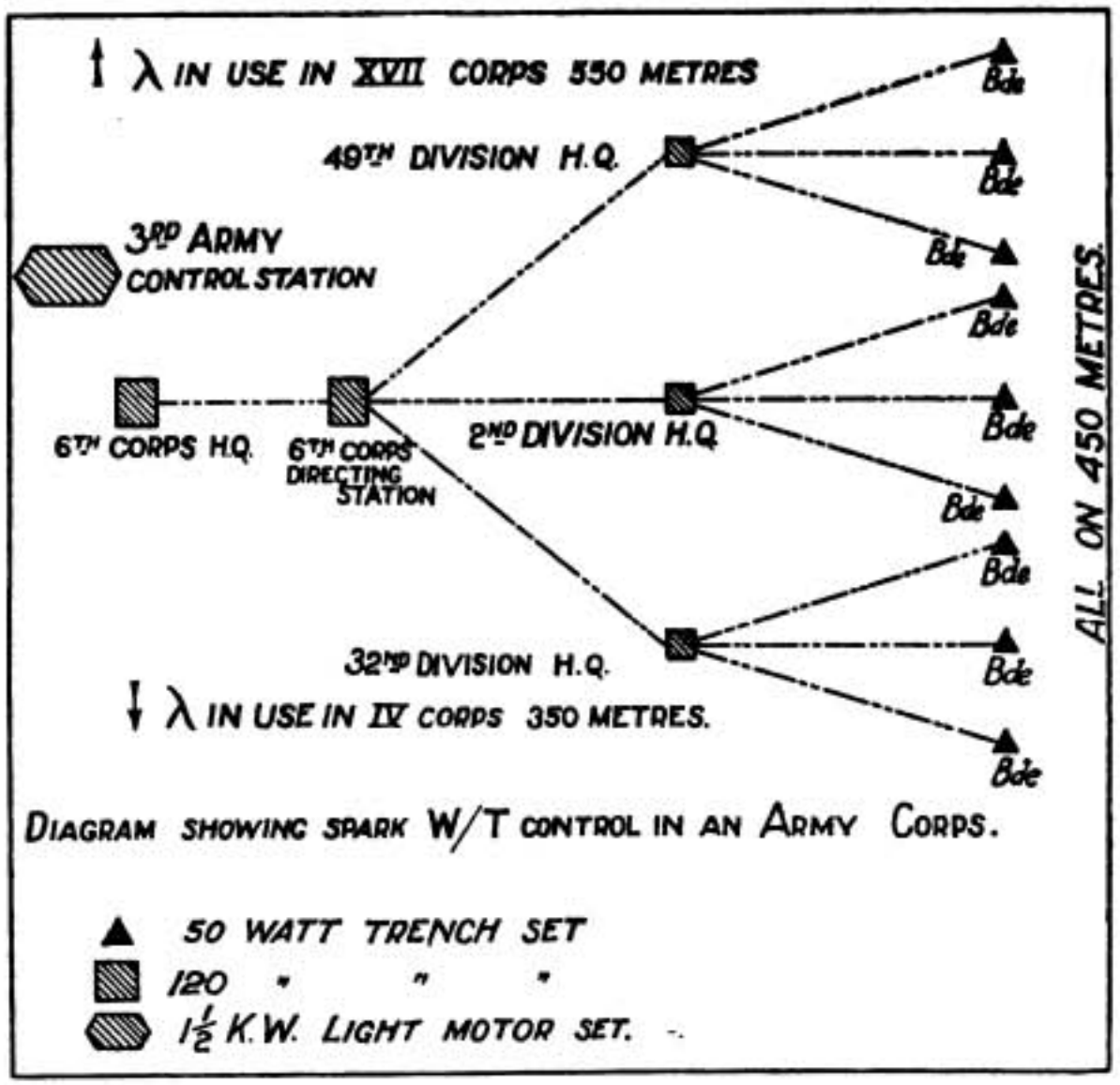

Fig. 1.

lotment of wavelengths amongst the various arms of the service.

The group system was also applied to C.W. sets with the artillery, though owing to the larger number of possible wavelengths (about thirty) the number of stations in a group rarely exceeded five. A complete scheme, involving " circuits " with only two stations using a particular wavelength, would have been introduced as more sets became available. Fig 3 shows a typical army corps C.W. system.

The C.W. wavelengths used by forward sets varied from six hundred to two thousand metres, though in general only 700-1,400 metres were employed in cases where short aerials had to be put up. Jamming from " 550 " spark sets troubled 600-700 metres C.W. if used in the vicinity. It was, however, found possible to utilise wavelengths only twenty-five metres apart, for stations working in the same area. To ensure that the correct wavelengths were kept, a system of daily transmission of standard wavelengths from G.H.Q. or Army H.Q. was introduced, and standardised valve wavemetres were kept on every station.

During the last few months of the war so many C.W. sets were used that almost every available wavelength was in use. To control these stations adequately, and to watch their communication, would have required about thirty control stations. Though the Canadian corps, whose wireless was a model of efficiency and successful organisation, made a C.W. receiver capable of simul-

ALLOTMENT OF WAVELENGTHS AMONGST VARIOUS ARMS OF THE SERVICE

SPARK		CONTINUOUS WAVE	
λ. METRES	USED BY	λ. METRES	USED BY
65 and 80	Loop sets	600—2000	Artillery
100—300	R.A.F.		Anti-Aircraft
350, 450, 550	B.F. Trench sets		Scouts and observing parties
600—1000	Tanks and Cavalry		Tanks
1100	G.H.Q. & Army H.Q.		R.A.F. ground stations

Fig. 2.

taneous reception on seven wavelengths, the general method employed was for the control station to search round each wavelength and listen in for so many minutes.

Jamming between the two systems, spark and C.W., in use in the same area was not excessive, provided two such stations were not very close together and that excessive C.W. ranges were not attempted. At the same time every C.W. operator breathed a sigh of relief when KBU (Bruges) ceased his activities on a thousand metres as a result of our Flanders advance last year.

Personnel and equipment of wireless stations were organised finally as wireless sections, forming part of the Signal Company with an Army H.Q., Army Corps, H.Q., or Divisional H.Q. Provision was made for the repair of instruments and the charging of accumulators with each of these units and in the end our wireless equipment was more than adequate.

(To be continued.)

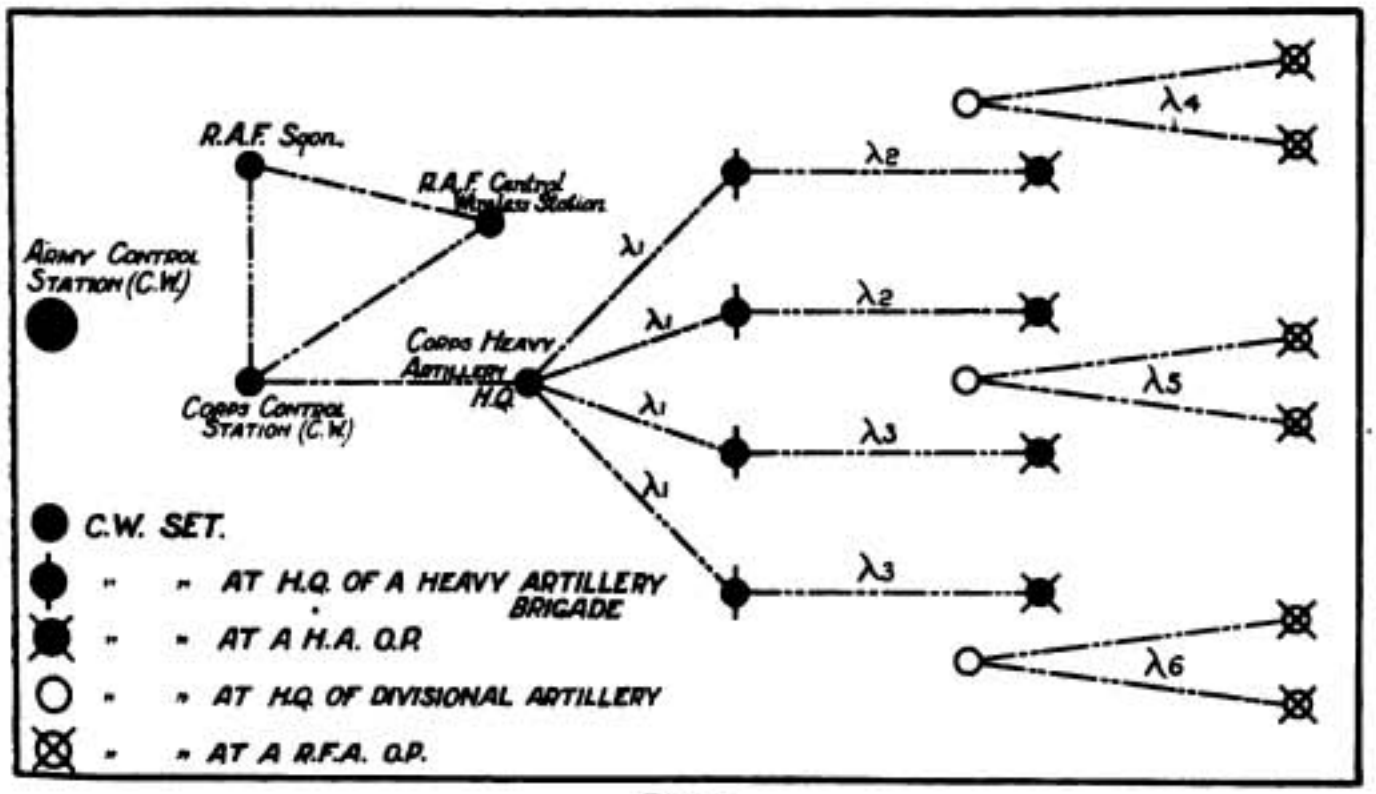

Fig. 3.