

THE ROYAL ENGINEERS JOURNAL.

Vol. XXVI. No. 1.



JULY, 1917.

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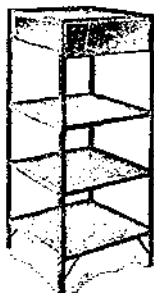
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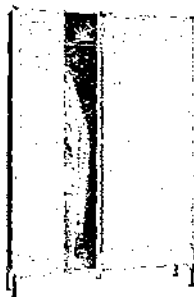
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DEEDS OF THE ROYAL ENGINEERS.*

(Continued from the June number of the "R.E. Journal").

CHAPTER VIII.

ROYAL ENGINEER COMPANY HISTORIES.

(The greater portion of this chapter has been reprinted from an article by Colonel B. R. Ward, R.E., in the *Supplement to the R.E. Journal* for April, 1911).

THE scheme for delimiting the historical spheres of influence of the various companies, outlined in the following chapter, has been referred to the War Office, and has received the approval of the authorities of the Corps.

The following notes are published in order to assist in compiling Company Histories as laid down in Army Order No. 77 of April, 1910. Conolly's *History of the Royal Sappers & Miners* is our chief authority for the early history of the companies of the Corps. The Public Record Office in Chancery Lane, W.C., contains pay lists, muster rolls, and letter books of the old Royal Military Artificer Companies, and should be searched as opportunity offers. I have lately been through Conolly's *History*, and have spent three days searching in the Record Office with the following results:—

At first no numbers were given to the companies. They were known by the name of the station to which they were posted. In 1806 the Corps consisted of 12 companies designated by numbers (see Conolly's *History*, 2nd Ed., Vol. I., p. 157). As Conolly points out, however, these numbers soon became obsolete owing to the long-established custom of designating them by stations. It is therefore more satisfactory to number them in order of formation and to disregard the numbers given in 1806.

For instance the Gibraltar Companies were in 1806 numbered the 9th and 10th, whereas the 1st Soldier Artificer Company was raised at Gibraltar in 1772, and the 2nd Soldier Artificer Company was formed at the same station in 1786—a year before the raising of a corps of six companies of the Royal Military Artificers. On the 11th September, 1793, a warrant was signed for raising a corps of Royal Military Artificers for service abroad—in Flanders, the West Indies, and Upper Canada (see Conolly, Vol. I., p. 88). It is very difficult

* Compiled in the R.E. Record Office.

to trace the companies of the Corps through the long war which lasted till 1815. At this time the Corps consisted of four battalions of eight companies in each battalion (*Conolly*, Vol. I., p. 184). In 1817 a complete battalion was disbanded (*Conolly*, Vol. I., p. 247). In 1831 two Canadian companies were disbanded (*Conolly*, Vol. I., p. 286). In 1833 the number of the companies was reduced from 17 to 12 (*Conolly*, Vol. I., p. 290).

In 1837 the number of the companies was the same—twelve—but the establishment of the individual companies was somewhat lower (*Conolly*, Vol. I., p. 306). In 1838 we appear to have reached the low-water mark of the Corps during the 19th century; for on the 1st July, 1839, a company numbered the 10th was added to the establishment (*Conolly*, Vol. I., p. 344) and from this time onward the numbers of the Corps steadily increased.

For purposes of writing company histories, it will probably therefore be best to reserve the numbers one to nine for all the 18th century companies, and for those raised during the revolutionary and Napoleonic Wars.

From a letter dated 18th October, 1787, which I found in the Record Office in the letter book of the Gosport Company of Royal Military Artificers, the order of the six companies to be raised in that year is given as follows:—

Portsmouth.	Plymouth.	Woolwich.
Gosport.	Chatham.	Guernsey and Jersey.

If we number the Gibraltar Companies 1 and 2, Portsmouth becomes 3, Gosport 4, etc., and the Guernsey and Jersey Company becomes No. 8.

It is a curious coincidence that the present 4th Company of the Corps is stationed at Gosport. The Corps of Foreign Service Companies authorized in 1793 may be numbered 9, and the doings of the various companies throughout the Great War may be credited, so far as they can now be disentangled, to the first eight companies who furnished detachments for service abroad, or to the 9th Company in the case of entirely new organizations.

After the formation of the 10th Company in 1839, the tracing of the companies by means of their numbers is comparatively plain sailing.

The following table shows my suggestion for delimiting the historical spheres of influence of the first nine companies of the Corps:—

Present No.	When Formed.	Reference.	Original Title.
1.	1772	<i>Conolly</i> , 2nd Ed., Vol. I., p. 1	The Soldier Artificer Company.
2.	1786	„ „ „ p. 43	2nd Soldier Artificer Company.

Present No.	When Formed.	Reference.	Original Title.
3.	1787	Conolly, 2nd Ed., Vol. I., p. 64	The Portsmouth Company of R.M. Artificers
4.	"	" " " " "	The Gosport Company of R.M. Artificers.
5.	"	" " " " "	The Plymouth Company of R.M. Artificers.
6.	"	" " " " "	The Chatham Company of R.M. Artificers.
7.	"	" " " " "	The Woolwich Company of R.M. Artificers.
8.	"	" " " " "	The Guernsey and Jersey Company of R.M. Artificers.
9.	"	" " " " p. 88	The Corps of Foreign Service Companies of the R.M. Artificers.

Further information about these companies and about their successors as renumbered in the years following the Napoleonic Wars will be found as follows:—

1st Company.—Conolly's *History*, 2nd Ed., Vol. I., pp. 86, 88, 106, 119, 120, 123; Vol. II., pp. 127, 243, 529.

The book in the Record Office numbered W.O. 54/310 is a *Description Book of Royal Military Artificers* enlisted from 1783 to 1807. The earliest enlistment in this book is that of Thomas Elliott, a mason who enlisted at Gibraltar for the Gibraltar Company on the 27th February, 1783.

No letter books of either of the Gibraltar Companies are in the Public Record Office. As the Gibraltar Companies did not form an integral portion of the Corps of Royal Military Artificers till 1797, it is possible that their early records were kept at Gibraltar. It would be interesting to know if any of these records are still in existence.

2nd Company.—Conolly's *History*, 2nd Ed., Vol. I., pp. 106, 119, 120, 123, 470; Vol. II., pp. 127, 128, 172, 177, 229.

The two Gibraltar Companies were subsequently known—temporarily only—as the 9th and 10th Companies (*see Conolly*, Vol. I., p. 157); *History of the S.M.E.*, p. 54.

3rd Company.—"The Portsmouth Company of the Royal Military Artificers."

The volume in the Public Record Office numbered W.O. 55/1061 is the letter book of this company from 1792—1808. No doubt much interesting information is to be obtained from this volume, both as to the interior economy of the company, and particulars of drafts sent on active service. The following later references to the 3rd Company of the Royal Sappers & Miners are to be found in

Conolly's volumes, 2nd Ed., Vol. I., pp. 261, 269, 471; Vol. II., pp. 195, 198.

4th Company.—"The Gosport Company of the Royal Military Artificers."

The volume marked W.O. 55/1060 in the Public Record Office is a very interesting letter book of this company from its formation in 1787 to 1810. The second letter in the book is a copy of the letter written by the Master-General of the Ordnance on the 18th October, 1787, directing that a Corps of Royal Military Artificers and Labourers should be raised at the following places:—

One company at Portsmouth.	One company at Chatham.
One company at Gosport.	One company at Woolwich.
One company at Plymouth.	One company at Guernsey and Jersey.

As the companies are mentioned in the above order officially, the Portsmouth Company may be taken as the 3rd Company, and the Gosport Company as the 4th Company of the Corps. Subsequent references in Conolly's 2nd Vol., 2nd Ed., are as under:—pp. 27(?), 56, 177, 195, 198, 490.

5th Company.—"The Plymouth Company of the Royal Military Artificers."

Conolly, 2nd Ed., Vol. I., pp. 64, 65, 73—76, 82, 105, 111, 117. The records of the Dover Company belong to the history of the 5th Company, as the Dover Company appears to have been formed from the Plymouth Company (Conolly, Vol. I., p. 105).

Subsequent references to later 5th Companies of the Corps are to be found as follows in Conolly's *History*, 2nd Ed., Vol. I., pp. 272, 276, and Vol. II., pp. 69, 127. See also *History of the S.M.E.*, p. 6.

6th Company.—"The Chatham Company of the Royal Military Artificers."

The volume marked W.O. 54/313 in the Public Record Office is entitled *Description of the Company of Royal Military Artificers and Labourers commanded by Colonel William Spry, Chatham Barracks, October, 1787*. The book contains a record of enlistments from 1787 to 1814. Subsequent references in Conolly's *History*, 2nd Ed., Vol. I., pp. 261, 265 (the Corfu Company), 290, 291. *History of the S.M.E.*, p. 54.

7th Company.—"The Woolwich Company of the Royal Military Artificers."

Conolly, 2nd Ed., Vol. I., pp. 64, 65, 73, 99, 112, 114, 116, 121, 157, 184, 248. The records of the "Spike Island Company" should be kept by this company (see Conolly, Vol. I., p. 144). The Spike Island Company was temporarily numbered the 7th in 1806 (see Conolly, Vol. I., p. 157). Subsequent 7th Companies are alluded to in Conolly, Vol. II., pp. 24, 179, 182, 326, 490.

8th Company.—"The Guernsey and Jersey Company of the Royal Military Artificers."

Conolly, 2nd Ed., Vol. I., pp. 64, 65, 73, 132, 157 (this company was temporarily numbered the 8th in 1806), 184, 248. Subsequent 8th Companies are alluded to in *Conolly*, Vol. I., pp. 470, and Vol. II., pp. 182 and 198.

9th Company.—"The Corps of Foreign Service Companies of the Royal Military Artificers."

Conolly, Vol. I., 2nd Ed., p. 88. A Nova Scotia Company first appears in 1796 on p. 104.

Some of the recruits for this company are mentioned in the volume in the Public Record Office marked W.O. 54/311 entitled: *Description of the Corps of Royal Sappers & Miners*, Vol. III. This book contains enlistments in the Corps from 1807 to 1814.

Information regarding the early history of the next 23 companies of the Corps will be found as under:—

C. I.—*Conolly's History*, 2nd Ed., Vol. I.

C. II.—*Conolly's History*, 2nd Ed., Vol. II.

Present No.	When Formed.	References.
10 ..	1839 ..	C. I. 344 ; C. II. 182, 198.
11 ..	1841 ..	C. I. 379, 470 ; C. II. 121, 128, 178, 182, 198.
12 ..	1846 ..	C. I. 469.
13 ..	1824 ..	C. I. 265 (Survey Company).
14 ..	1825 ..	C. I. 266 (Survey Company).
15 ..	1846 ..	C. I. 469.
16 ..	1825 ..	C. I. 267 (Survey Company).
*17 ..	1847 ..	C. I. 479 ; C. II. 235.
18 ..	1847 ..	C. I. 479.
19 ..	1848 ..	C. II. 16 (Survey Company), 166.
20 ..	1848 ..	C. II. 16, 166.
21 ..	1849 ..	C. II. 28, 163.
22 ..	1849 ..	C. II. 28, 69, 163.
†23 ..	1855 ..	C. II. 255.
24 ..	1855 ..	C. II. 255.
25 ..	1855 ..	C. II. 255.
26 ..	1855 ..	C. II. 255.
27 ..	1856 ..	C. II. 491.
28 ..	1856 ..	C. II. 491.
29 ..	1856 ..	C. II. 491.
30 ..	1856 ..	C. II. 491.
*31 ..	1856 ..	C. II. 491.
32 ..	1856 ..	C. II. 491.

* *History of the S.M.E.*, p. 54.

† *The Training of a Recruit for the Royal Engineers*, Part I., p. 34.

The history of the first mounted units of the Corps will be found in the *History of the S.M.E.*, pp. 52—54, and in the *R.E. Journal* for 1908, Vol. VIII., pp. 231 and 374.

Up to the present time—May, 1917—the only R.E. Companies whose history has been compiled with any degree of completeness are the 2nd, 4th, and 23rd Companies.

The history of the 23rd Company was published in *The Sapper* from May to August, 1910, and was subsequently reprinted in *The Training of a Recruit for the Royal Engineers*, Part I., pp. 34 to 74.

The history of the 2nd Company was commenced in the January number of *The Sapper* for 1913 and was completed in three parts in the March number of the same year.

The history of the 4th Company appeared in *The Sapper* of June, July, and September, 1913.

It is hoped that other histories will be compiled as opportunities present themselves for conducting the necessary investigations.

It should also be borne in mind that opportunities for obtaining personal recollections of the doings of companies in past campaigns become less and less frequent as years go by. Such opportunities should therefore be seized by all officers and men interested in the history and deeds of the companies to which they belong.

The official histories of R.E. Companies are guarded in the R.E. Record Office.

Personal recollections or historical studies intended for embodiment in Company Histories should be sent for safe custody to the Officer in Charge R.E. Records, Chatham.

MONO-RAIL CAR, IRISH TYPE.

DESIGNED BY MAJOR A. C. FINNIMORE, R.E.

By LT.-COL. A. A. CROOKSHANK, R.E.

THIS mono-rail was designed for use on the Somme-Ancre battle-field, *i.e.* on a rough sea of deep and soft mud. The 60-cm. Decauville light railway, if laid on the surface in the usual manner, soon disappears into the mud when man power is used. The man power also has been known to disappear into the mud. If heavy trollies are used necessitating animal power, then the track must be stone ballasted or given some form of hard roadway; and stone ballast, owing to the demands of roads, is often not procurable. If procurable it is expensive to maintain both in men and materials owing to the damage done by the animals' hoofs.

The next stage—if still heavier trollies or long up gradients are used—is machine power (petrol or steam). This necessitates scraping the Decauville sleepers and re-sleepering with long wooden sleepers either placed very close together or with stone ballast in addition. It is a very expensive type of track, and in any case machine power could not possibly be used in the forward trench area for which this mono-rail was designed.

Again a flat formation say 3 ft. wide involves a lot of work over ground which consists almost entirely of shell holes with narrow knife-edge ridges in between. A single rail carried on posts or hand-driven piles is quickly laid, is cheap in material, provides a firm and durable foundation and is air-photo proof (the line would photo as an infantry track of wooden gratings); it is also economical in power and silent running. The 60 cm. Decauville track has none of these advantages.

The Irish outside car pattern trollies would, of course, take up, from broad-gauge rail head or lorry head or horsed-wagon head 400 lbs. of first line trench requirements, such as rations, munitions or engineering materials and would bring back wounded or salvaged articles.

The object of the design is to carry loads up to 400 lbs. weight on a single track consisting of a light rail such as the Decauville 9-lb. rail. The rail is laid on pickets, driven vertically. The ground therefore requires no levelling.

The only preparation normally required for the rails consists in drilling or punching in the flange, two holes at each end and one every 6 ft. along each rail. The rails are then fixed to the pickets by nails.

The car consists essentially of:—

(1) A Trolley or Bogey (with two wheels normally).

(2) A pair of cross beams.

(3) Two trays suspended from the cross beams.

In the present design the Bogey consists merely of two boards on edge with distance pieces or chocks. The wheels revolve on bolts put through both boards. The cross beams are of deep section tapered for lightness, and stiffened by cross bracing to take the thrust when the car is pushed along by a man leaning against one arm of the cross beam.

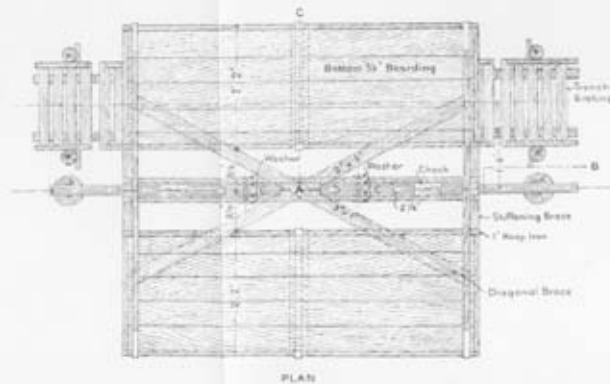
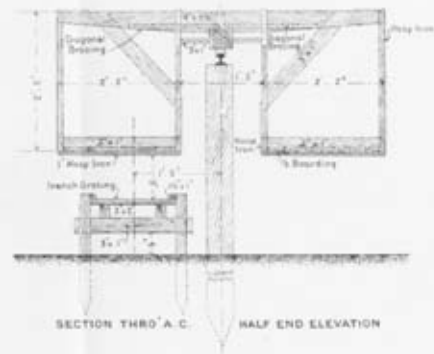
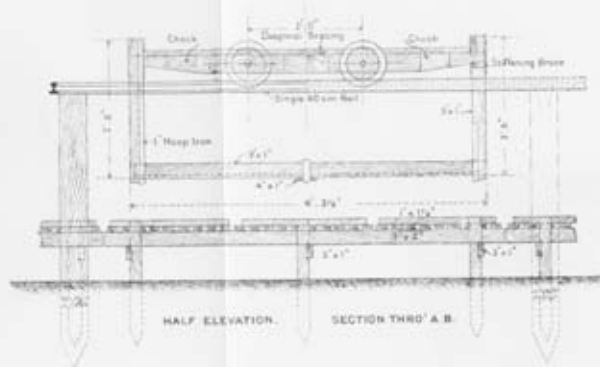
The trays, which should be of the lightest possible description (consistent with strength sufficient to carry a man on a stretcher), depend for suspension upon straps of hoop iron only. A wooden frame is fixed at each end to prevent swinging. It is intended to take no weight through its own fastenings. The trays should be low enough to bring the centre of gravity of the whole car when empty slightly below the top of the rail, so that the car will remain in stable equilibrium. When loaded the centre of gravity will generally be lowered considerably, and the stability correspondingly increased.

Double flanged or pulley wheels with flat tread and coned flanges with ample clearance between them for the bulb of the rail give the best results.

The height of the rail need be no more than sufficient to keep the trays off the ground when swinging slightly. A clearance of 1 ft. is ample for this. The rail need not be therefore much over 2 ft. higher than the pathway, while in places as in gully crossings, it can be kept level (although the pathway may dip several feet) merely by using longer pickets.

The stretchers are carried one on each side of the tray. If one side is heavier than the other balance can be adjusted by moving a rifle or portion of equipment or clothing from the heavy to the light side. A difference of only a few pounds does not materially affect the car, while on the move. More accurate balancing than this is therefore unnecessary.

A car fully loaded can be pushed by one man easily on the level and for short distances up slopes not exceeding $1/20$. For steeper slopes than this or for long up slopes, a second man is necessary. The second man can push on the off side if there is a double pathway. Otherwise he must pull on a rope made fast to the front cross beam near the bogey. If sharper curves than 25 ft. radius are to be negotiated, or if high speeds are likely, as on long down



MONORAIL CAR (IRISH TYPE)

TO RUN ON A SINGLE 60 CM RAIL (9 LBS.)
DESIGNED BY CAPTAIN A.C.FINNIMORE,R.E.
TO CARRY TWO STRETCHERS OR 400 LBS.
DEC. 1916.



MAP - MONORAIL CAR (IRISH TYPE)

grades, where the cars can be allowed to run by gravity, buffers of flat iron must be fitted to diminish the risk of collision with a post if the car should swing too much. There is however very little tendency to swing except on curves ; on the latter a guard rail can be fixed to the side of the post to limit the swing and at the same time act as a brake if the car should be travelling fast enough to swing out against it.

This is unlikely to occur unless the car is travelling at over 15 miles per hour, a speed which is not entertained in the design although probably quite safe on straight stretches or on specially designed curves with the posts set at an angle to correspond with the probable tilt of the car.

A GOODS CLEARING-HOUSE SYSTEM.

A PAPER was read at the Society of Engineers by Lord Headley, F.S.E., M.I.C.E. (Ireland), on 7th May, dealing with a proposed Goods Clearing-House System.

The high rates charged by the railways of this country for the inland transport of all classes of merchandise, general goods and agricultural produce, have for many years past exercised a most baneful effect on our trade progress. It is not going too far to say that our commercial activity has been to a large extent paralyzed by the exorbitant cost of transferring produce of any kind from one place to another. Our inland transport rates are more than double what they are in Germany, and are greatly in excess of those in any other country in the world—this should not be so and need not be so. We cannot blame the locomotive, which furnishes us with cheap power over long distances, but we can blame the misuse of the locomotive which is put to shunting work, for which it is unfitted.

Nearly the whole of the wasteful expenditure is due to terminal extravagance and neglect to take advantage of those economical methods which modern engineering science has provided, but which seem to be ignored by railway companies.

It is some eight years ago since Mr. A. W. Gattie and Mr. A. G. Seaman introduced to the public notice the extremely ingenious system of electro-magnetic machinery by which heavy goods and merchandise can be handled as readily as cheques are dealt with by the clerks at the Bankers' Clearing House. During those years explanatory lectures have been delivered in many parts of the country, and practical demonstrations with full-sized machinery in full working order have been frequently given at the works of the New Transport Company at Battersea.

The application of this mechanical sorting and distributing machinery is capable of doing away with the extravagant waste of time, space and money inseparable from the clumsy methods of loading, unloading, shunting, etc., at the termini of all our great railway systems. By means of lofty clearing houses, the third dimension is utilized by escalators, lifts, and electric cranes, which deal with the sorted goods with the utmost dispatch. The machinery does its work so that there can be no congestion, and a few minutes suffice to load or unload trains or motor lorries. Congestion is the product of immobility.

Some idea of the vast utility of the system may be gathered from

the fact that street congestion would be relieved by the substitution of 5,000 motor lorries for the 120,000 vans which at present block the thoroughfares of London—especially the narrow streets of the City. This, doing away with a large number of slow and cumbersome vehicles and substituting less than 5 per cent. of their number of swift and compact motor lorries, seems far preferable to knocking down houses and spending fabulous sums in street widening.

The actual waste, or dead loss, to this country due to the antiquated methods at the railway terminals such as shunting, misapplication of power, etc., resulting in the non-development of our resources to anything like their just proportions, has been estimated at over £1,000,000 a day.

The problem, therefore, before the scientist and the engineer is one of the greatest importance as affecting the future commercial welfare of this country.

It may be mentioned that Mr. Marconi is one of the founders of the company formed to exploit the above-mentioned inventions and that such authorities as Dr. Hele-Shaw, M.INST.C.E., F.R.S., the late Professor Ayrton, M.INST.C.E., F.R.S., Mr. James Swinburne, M.INST.C.E., F.R.S., Sir John Purser Griffith, M.INST.C.E., have carefully gone into the system and examined the machinery, and have expressed the greatest admiration. The Kaiser's emissaries, Dr. Johannes and Herr von Schawen, who visited the works of the New Transport Company in June, 1914, just two months before the war broke out, spent a long time in careful examination, and took back to Germany a very full report of what they regarded as an "unequalled method of mobilization."

It will not reflect much credit on our acumen or perspicacity if we allow our worst commercial enemies to exploit the invention of Englishmen to their own advantage before we have carefully examined into its merits to see if it is not possible to utilize it to our own advantage.

REVIEWS.

PAGES D'HISTOIRE, 1914—1917.

(Librairie Militaire Berger-Levrault, Paris: 3, Rue des Beaux-Arts).

Continued from R.E. Journal for June, 1917.

The Editors of the *Pages d'Histoire* series have found it necessary once more to alter the main title of these volumes. No. 126 and the succeeding numbers of the series are published under the main title *Pages d'Histoire*, 1914—1917; No. 124 of the series also bears the dates 1914—1917.

The 123rd, 125th and 127th numbers of the series contain the official communiqués issued by the French Central Government to the Provincial authorities during November, 1916, December, 1916, and January, 1917, respectively, and are the XXV., XXVI. and XXVII. Volumes dealing with this particular matter. Each of these numbers contains appendices giving the text of congratulatory telegrams sent by or to the President of the French Republic during the months to which they refer.

The 124th number is entitled *La Hollande et la Guerre*; it contains thirteen short chapters from the pen of Monsieur Louis Piérard dealing with the situation in Holland. In a short preface Monsieur Piérard informs us that the volume under review contains a summary of the impressions found on his mind concerning the attitude of the Dutch people regarding the Great War, during his sojourn of two and a-half years in Holland.

The people of Holland, he tells us, continue to live their quiet, happy lives and many appear to take little interest in the great tragedy being enacted at their very doors. Some there are who even wear badges in their buttonholes inscribed with the injunction: "Spreek mij niet over den oorlog" (Don't mention the War to me). We are reminded, however, not to lose sight, on this account, of the magnificent spirit of charity which the Dutch, as have the Swiss, shown for 30 months and more in succouring the helpless victims of the War. On the whole the Dutch detest the *Moffen* (their equivalent for *Boches*) from the bottom of their hearts; they admire France tremendously, but towards Great Britain they display a distrust which at times is puerile. For Belgium they have sincere compassion mixed with a curious feeling of jealousy and with an air of contemptuous and amused affectation of superiority.

The view is expressed that the Dutch Government has to a certain extent sacrificed the interests of the labouring and middle classes by allowing some of the large farmers and exporters to make undue profits out of the situation created by the War. But it is undeniable, says Monsieur Piérard, that the Dutch Government have observed the most scrupulous neutrality and that Jonkheer Loudon, the Dutch Foreign Minister, has shown great firmness and skill. In view of the extremely difficult position in which Holland has been placed, practically between

an anvil and a hammer, it is necessary to make allowances in judging the attitude of the Dutch people.

The first chapter in the volume deals with the Dutch Press. It is pointed out that there exists side by side with the strictly correct official attitude of neutrality another, the moral or immoral neutrality of the citizen, of the *man in the street*, a reflection of which is to be found in the broad sheets issued daily from the Dutch Streets of Ink, and in the periodical literature of the country. Apart from the attitude of such newspapers as the *Telegraaf*, the *Amsterdammer*, the *Dagblad van Zuid-Holland* and the opinions expressed by contributors to the leading papers published at The Hague and Amsterdam the Dutch Press shows, according to Monsieur Piérard, on the whole a pusillanimity unworthy of a race that has played so great a part in the history of the world and of a people that has for long ages been imbued with such high ideals regarding liberty. These remarks, it is pointed out, are not intended to apply alone to that part of the Dutch Press which is openly and perfidiously Germanophil and forms the mouthpiece of German propaganda. It has been established on irrefutable documentary evidence that certain papers circulating in the Dutch rural areas are entirely controlled by the German Military Authorities in Belgium. Some of the newspapers published in Rotterdam, The Hague and Amsterdam have, it is suggested, shown, as a rule, excessive prudence in dealing with questions affecting the belligerents. Their *leit-motiv* has been as follows:—All the Great Powers are jointly responsible for the War, they have all been guilty of breaches of international law and of acts of cruelty.

The second chapter deals with the violation of the neutrality of Belgium. Monsieur Piérard states that since the violation of the neutrality of Belgium and the commission of the diabolical acts of which the Kaiser's troops have been guilty in Flanders, in the Walloon country, in Lorraine, and at the gates of Paris itself, those who do not live in fear of their own shadows have not hesitated to declare that the name of Germany stinks so offensively in the nostrils of honourable men that not even all the perfumes of Arabia will ever be able to drown the evil smell.

In some cases the views expressed in the Dutch Press on this subject have been strongly condemnatory of Germany but, on the other hand, there are other newspapers which have maintained an attitude of reserve, excusing themselves from expressing an opinion on the pretext that they were merely vehicles of information. Nevertheless although not prepared to criticise the conduct of Germany, the same papers have not hesitated to attack Italy, when the latter entered the lists against the Central Powers. Fortunately, says Monsieur Piérard, the public opinion of Holland has found means to make itself heard through channels other than the Press. Leagues have been founded and these have been carrying on active propaganda work.

The third chapter deals with the Dutch mobilization; it opens with the warning: "O Nederland, let op U saeck" (Oh Holland, beware!). "One is reminded," says Monsieur, "on the banks of the Amstel and of the Lek, of the note of grave warning sounded in the old psalm of Valerius." The Dutch Army was mobilized on the 31st July, 1914, that is to say, even before the date that the Belgian Army was called out. Since then it has been continually increased in numbers

(notably in 1915 by a Law extending service in the Landsturm); subjected to intensive training; equipped with the most modern appliances that the present War has shown to be necessary for an army. The only fear which exists is that there may not be sufficient ammunition in hand and that long range guns may be able to bombard Amsterdam from the borders of the inundation zone. No one would wish, says Monsieur Piérard, that Holland should be forced into a position to exhibit to the world the fighting capacity of her new army or that she should be drawn into the conflict, except in the event of her independence being threatened or her honour assailed. No one desires Holland to go through experiences similar to those suffered by Belgium. Moreover, the defence of Holland, based as it is on a scheme of inundation, *i.e.*, on the Waterlinie, would involve the sacrifice of one of her richest provinces, a province as difficult to defend as the Belgians found the task of defending their own province of Luxemburg. In spite of this adverse military situation, there are Dutch people who feel, and say outright, that their country ought from the very outbreak of the War to have at once gone to the assistance of poor Belgium, so odiously attacked and tortured.

It is urged that the moral effect on neutral countries would have been great had Holland thus ranged herself on the side of Belgium. This action would have appealed to Neutral Powers as an eloquent symbol, representing as it would have done the spontaneous fusion into a Defensive League of the small nations against the Colossus, the felon neighbour. It is perhaps now too late for Holland to play the part that the Dutch friends of Belgium would have wished her to do; however, the moderate section of the Dutch Press continues to point out that if the end the Germans have in view is still directed towards the absolute military hegemony, in Europe, of Germany and the relegation of Belgium to a condition of tutelage under German sway then the interests of Holland are indeed seriously menaced. Germany established in undisputed possession of Zeebrugge or Antwerp would mean the early death of Holland as a Power. Eminent men in Holland such as Colenbrander, the historian, and Niermeyer, manager of the *Gids*, have not hesitated to express the opinion that their country should range itself on the side of the Entente Powers the moment that Germany shows any clearly defined intention of permanently retaining Belgium under her own control and governance. But to-day when Germany is on the defensive it is hardly likely that any official declarations will be made on the subject.

The danger that Holland runs at the present time is, says Monsieur Piérard, of another kind. It arises from the promiscuous U-boat and aerial warfare being carried on by Germany against belligerent and neutral merchant shipping alike. So far as the attacks on Dutch vessels are concerned, it is pointed out that the patience of the Dutch people has been tried to the utmost, and soon they may no longer be able to suppress their rage. It is suggested that even now, without declaring war, there is no reason why all exports from Holland to Germany should not cease at once. The seriousness with which the present situation is viewed throughout the Low Countries is reflected in the speech made by Queen Wilhelmina at the opening of the Session of the States General in September, 1916, and the comments made, at the same time, in the Press.

Monsieur Piérard states that to-day there is no longer any doubt that the famous 'alarm' sounded in Holland on the 31st March, 1916, was due to German machinations. The simple step taken by the Dutch Commander-in-Chief of recalling men from leave (too large a proportion of the army being so absent) was cleverly utilized by German agents to set afloat rumours alleging diplomatic tension between Holland and her Western neighbour, the disembarkation of British troops at Flushing and at other Dutch ports, etc., etc. It was hoped thus to befooled Dutch public opinion and to cause Holland to rush into the arms of Germany, whose troops would then have at once marched into Queen Wilhelmina's kingdom. But the Dutch are difficult people to befooled.

The fourth chapter is entitled "Pan-Germanism and Holland." Take up the Pan-German literature that has poured out from the printing presses of Europe, both before the War and since its outbreak, and it will be seen that its pages teem, as Monsieur Piérard points out, with sentiments threatening the existence of the little kingdom of Holland. Attention is also drawn in this chapter to the fact that in many text-books on geography and in atlases published in Germany it is claimed that Holland, as well as Belgium, the Grand Duchy of Luxemburg, Denmark and Switzerland naturally form part of Greater Germany, *i.e.* the Teutonic Empire of Pan-German dreams. The German publicist, Fritz Bley, has openly declared that the Germans were fools to give their consent, in 1815, to the constitution which erected Holland into an independent State. Monsieur Piérard also calls attention to the remarkable collection of documents relating to Pan-Germanism made by Monsieur C. Andler, in which a fairly complete exposition of the German faith on the subject of Holland's future is to be found. Constantin Frantz, it can be seen therein, goes so far as to insinuate that Holland is unable by herself to administer and derive full advantage from her vast Colonial empire and, in consequence, collaboration with Germany is absolutely essential to her.

Monsieur Piérard gives in this chapter extracts from communications containing the views of German philosophers, publicists, etc. No wise Dutchman can, after reading the views expressed in the various extracts in question, have any doubt as to the general feeling in Germany towards his country and as to the intentions of those who wish to direct the policy which, it is hoped, may lead, to the founding of the Great Teutonic Empire on the settlement of the peace terms at the conclusion of the present world-wide conflict of arms.

Germany has prohibited almost entirely the export into Holland of coal and metallurgical products, materials which are essential to the industries of the latter country. If now Dutchmen lull themselves into a soporific state owing to a false sense of security, they will not fail, within a short time, to have a rude awakening.

The fifth chapter deals with the popular feeling in Holland concerning the War. In spite of their distant kinship, the Dutch have nothing in common with the Germans. The Amsterdam workman, the Rotterdam docker, the cultivated middle classes of The Hague and of Dordrecht hold the *Mof* and Prussianism in intense horror. The peasantry in certain regions alone may, perhaps, possess some vague feeling of attachment to the country of Bismarck; this attitude may be accounted for by the fanaticism born in them out of the propaganda promoting the idea

of the return to a theocracy, of which Germany has been represented to them as the guardian angel.

The Dutch are above all things neutral. They have a particular leaning towards neutrality; but, however, prudent, patient, and reserved their attitude may be, they are strongly imbued with a sense of justice, with a love for liberty, with a hatred of oppression and of the use of brute force.

Although "*peaceful penetration*" of the Teuton, on an extensive scale, into the Universities and into the business life of Holland has been in progress for some time, nevertheless a very large majority of the *intellectuals* of Holland have from the beginning of the War ranged themselves spontaneously on the side of the Entente Powers. There can be no doubt that the cartoons of Raemackers, and the powerful articles of the *Telegraaf* and of the two *Amsterdammer* are a true reflection of the strong current of natural sympathy for the Entente group of belligerents.

The sixth chapter is entitled *La Cour, l'Armée, l'Aristocratie*. Ter Spill, the Dutch deputy, who was recently fined 15 florins for the rough handling he gave a *Mof*, moved in the Upper Chamber of the States General that the question relating to the succession to the Dutch throne should be legislated for at once. It is pointed out that the seven or eight claimants to the Dutch Crown are practically all German princes. The Dutch urge that in the event of a failure, in the direct line, of the present reigning family they should be at liberty freely to choose the dynasty that should take its place, as indeed was the case when they elected the representative of the House of Orange in whose descendants the Crown is now vested. The Dutch are deeply attached to Queen Wilhelmina and her little daughter, the Princess Juliana, but are very lukewarm in their attachment to the Prince Consort, owing to the fact that he is of German extraction.

The Dutch Constitution happened to be under revision at the time that Ter Spill's motion came before the States General; however, the Government opposed the discussion of the subject of the succession to the Crown.

Attention is drawn to the fact that the *Deutsche Orde* is of Teutonic origin and the Chapter of this Order consists of individuals the majority of whom are Germans resident in Germany and yet this Dutch Order was established for the special benefit of those of the "blue blood" of Holland. Monsieur Piérard states that in face of this it is perhaps not difficult to explain why it is that 150 Dutch officers are serving as volunteers at the present juncture in the German Army.

There are, of course, men of Dutch blood serving in the French Army, but these are drawn from those who had settled in France before the War and were earning their livelihood there.

At the beginning of the War, the Officer Corps in Holland, on the whole, held up German military methods as the model to be exclusively followed by them. They believed in the strategy inculcated in the German Army and in the German system of military education, and many, it is said, held the precepts contained in the Great General Staff handbook *Kriegsbrauch im Landeskriege* in as much veneration and to be as worthy of acceptance as the verities of the four great Evangelists. By degrees, Dutch officers have been changing their earlier views on this subject; they now display sincere admiration for the magnificent military virtues

of the French and their power of organization. They are also favourably struck with the prodigious effort made by the Britishers.

It is no secret that the people of the Low Countries have a horror of militarism, at the same time it is true that certain officers do not hide the fact that their sympathies are with Germany in the present War. Nevertheless, Monsieur Piérard is convinced that in the case of an attack on Holland by Germany, the Dutch Army, imbued as it is with a proper sense of patriotism, will defend its country with vigour.

The seventh chapter is entitled *La Hollande et le Blocus*. The Dutch Government, it is pointed out, has made loyal efforts and adopted stringent measures to suppress traffic in contraband goods between Holland and Germany. Some idea of the extent to which smuggling has been carried on may be gathered from the fact that at three sittings of the Correctional Tribunal of Ruremonde held on the 20th, 25th and 29th June, 1916, no less than 330 persons were found guilty of exporting or attempting to export merchandise on the contraband list to Germany. Smugglers are said to have been making large fortunes in Holland. It is urged in the Dutch Press that the most effective means for dealing with the traffic in contraband would be to give soldiers and customs officials a monetary reward equivalent to 25 per cent. of the value of goods seized by them.

Monsieur Piérard gives detailed information regarding the great increase which has taken place in the export from Holland into Germany of certain classes of food stuffs. For instance, in the first quarter of 1916, about two-thirds of the fish taken into Dutch ports was consigned to Germany, whereas in 1914 only one-tenth of the total catches were exported to Germany; in the case of cheese the export increased from about 12 per cent. of the whole production in 1914 to about 92 per cent. in 1916.

The eighth chapter is entitled *La Mecque des Pacifistes*. Monsieur Piérard points out that in bygone days Brussels was noted for the number of associations of all sorts,—philanthropic, sporting, musical, etc., that flourished in the Belgian capital; but it is now rivalled in this respect by Holland, where the societies and associations formed are quite as numerous and cover as diverse interests. On the 8th October, 1914, the Dutch added one more to their already long list of societies and labelled it the *Nederlandsche Anti-Oorlogs Raad* (the Dutch Anti-War League), or *N.A.O.R.* On the anniversary of the declaration of War this Dutch organization for procuring an everlasting peace published a list of 1,000 of the other *leading societies* that have affiliated themselves to it for the purpose of carrying out its policy—one which is analogous to that of our own *Union for Democratic Control*. Among the affiliated societies are Pacifist Leagues, Suffragist, Blue-ribbonite, Vegetarian, and Esperantist Associations, also Chambers of Commerce, Political Clubs, etc., etc. The *N.A.O.R.* possesses an international branch; its minimum peace aims are:—

(i.). No annexation or transfer of territory without the consent of the population belonging thereto; such consent to be obtained by a plebiscite if possible.

The Powers to guarantee to the various nationalities within their kingdom or empire equality as regards civil rights, religious liberty and restricted use of their own language.

(ii.). The Powers to introduce free trade in their colonies, protectorates and spheres of influence, or at least equal treatment to all nations alike.

(iii.). Peace Conferences with a view to promoting universal and perpetual peace to be cultivated.

The Powers to create, in addition to the Arbitration Court at The Hague :—

(a). A permanent International Supreme Court of Justice.

(b). An International Commission of Conciliation.

(iv.). The Powers to reduce armaments. In order to facilitate the reduction of naval armaments, "Prize" to be abolished and freedom of the seas assured.

(v.). Foreign policy to be placed within effective control of Parliaments.

(vi.). All secret treaties to be null and void.

Excellent as are the principles contained in the above aims, the machinery which can be reckoned upon to ensure these principles being carried into effect in their completeness and without fail has not yet been invented ; moreover the task of fashioning such machinery would seem to be of a nature to defy the brains of the most Solomon-like being who has trodden or is likely to tread the soil of our habitable globe. With regard to the programme of the *N.A.O.R.*, Monsieur Piérard remarks that perhaps ridicule does not kill in Holland, but in other countries even the best of schemes succumbs to its attentions. Perhaps, he says, Wilhelm II. will bear the above programme in mind, if bad luck has it that his military and naval forces are victorious !

Monsieur Piérard tells us that the Palace of Peace at the Mecca of Pacifism is at the present time deserted and one might put up a notice board on the gate with the legend *Huis te huur* (To let). Recently he visited this edifice and inquired from the caretaker which was Germany's part. The guardian of the Palace, he says, casting a contemptuous glance at the entrance gates, replied "*Buiten het vredepalais*" (outside the Palace of Peace).

The ninth chapter is entitled *Chez les Socialistes*. There are, Monsieur Piérard points out, socialists in neutral countries, and even amongst the peoples of the Entente group, who cannot persuade themselves that International Socialism can exist without the inclusion of the group belonging to the German *Sozial-Demokratie*. They are not prepared to recognise that a deep abyss separates the French and Belgian socialists from the German socialists, a separation in which fundamental principles are involved. Notions of right and of liberty, the sense of honour are living realities in the minds of French and Belgian socialists ; they are not prepared, as are the German fraternity, to justify the vilest of turpitudes and to worship the most savage type of Imperialism.

The War has given birth, it would appear, to a new School of International Socialism the disciples of which deny that any such duty exists as that of national defence ; at the same time, they are inclined to criticize the doctrines of Marx (that of "economic determinism") and of Dietzgen (that of "dialectic materialism"). The formulas of the earlier schools of International Socialism have to-day completely lost all their value. Monsieur Piérard points out that Holland is a country in which the views regarding socialism are as narrow as the

concerning religion. The Dutch socialists have failed to look in the face the facts leading to the unchaining of the Dogs of War in August, 1914, and appear to be living in a World of Unrealities. They still persuade themselves that by the shouting of the formula, "*Geen man, geen cent voor mobilisatie!*" ("Not a man and not a penny will we vote for mobilization!") our world can be transformed into an Utopia, and War can be completely abolished.

The tenth chapter is entitled *Internés et Réfugiés belges en Hollande*. When Antwerp fell in mid-October, 1914, a stream of refugees poured into Holland and spread itself over the surface of this land, proud of its reputation for hospitality. The unhappy folk who made their way across the northern frontier of Belgium into their neighbour's territory carried with them in many cases their *lares and penates*, as well as their implements of labour; their number has been estimated at nearly a million souls. One half of them, after a few days' stay in Holland, returned to Belgium, whilst others emigrated to France and to Great Britain. Those who have remained in Holland have been distributed between the concentration camps formed for their reception; these numbered, in 1916, about 100,000 men, women and children. The presence of so many Belgians in Holland has naturally had its influence on the manners of the Dutch, and, it is said, more particularly so far as the women-kind are concerned, some of whom, despite Calvinistic imprecations levelled against showiness in attire, have shown a disposition to follow the gay fashions in dress which were the rage, before the War, in certain quarters of Antwerp. The conduct of the Belgian refugees in Holland has, it is said, been exemplary; a few inveterate offenders have naturally given trouble.

In addition to the thousands of refugees to whom reference is made, Holland has extended its hospitality to some 28,000 officers and men who formed part of the garrison of Antwerp during the early German attacks on the famous fortress. The Dutch have never felt happy concerning the juridical situation relating to these men; the Dutch Press appears to have had a good deal to say on the subject.

The eleventh chapter is entitled *Dans les Camps hollandais*; it was written in June, 1915. It is stated that although the Belgian refugees found in some of the large Dutch towns, such as The Hague and Amsterdam, belong, as a rule, to the well-to-do classes yet the greater number of the Belgian refugees in Holland are of the poorer classes; a visit to the concentration camps which lie on a line joining Utrecht and Zwolle presents a most moving scene, for in these camps is really to be seen "Belgium in exile." Everything appears to have been done at these concentration and internment camps to cope with the dangers generally arising from unemployment, inaction, and *ennui*. Schools of instruction for the artizan classes were started in the early days of the War in these camps; up to June, 1915, 13,000 students had attended these schools. The instructors at these schools, some 300 in number, are drawn almost entirely from amongst the more skilled of the refugees themselves. During the first ten months of the War the Dutch Government spent over three-quarters million sterling on the Belgian refugees.

The twelfth chapter is entitled *Les Wallons d'Amersfoort*. Monsieur Piérard expresses the opinion that the lot of the 12,000 Belgian soldiers

interned at the end of October, 1914, at the Amersfoort Camp is one of the saddest; everything contributes towards rendering their captivity in Holland irksome. The majority of them are ignorant alike of the Dutch language and of the country. They are supplied with a certain amount of literature, but this is in a language not familiar to them; they are also provided with a few games. But no one who has been accustomed to a life of activity can play at skittles, cards or loto all day long, so that time hangs heavily on the hands of the Walloon dwellers in the Amersfoort Camp. Further, the uncertainty of what has happened to their relatives and belongings in the territories occupied by the Huns has naturally added to their mental anguish. Monsieur Piérard visited this camp; the most pressing request made to him by the interned soldiers was for information concerning their homeland.

The last chapter is entitled *Les Prisonniers d'Urk*. The island of Urk, which lies in the Zuyder Zee, was utilized in the early days of the War as the place of internment for the Belgian officers who had withdrawn their parole. It has a peace population of 2,700 souls, mostly fisher folk. The island is noted for the austerity with which worldly affairs are judged and for the strict Calvinism which prevails there; no form of labour is allowed there on the Sabbath. The interned officers were housed in a large villa and bedded down on straw palliasses. They were forbidden all intercourse with the "natives." The guard over them consisted of thirty men, all born and bred in the island, this guard being commanded by an aged naval officer of the old courteous type who, however, had received very strict instructions regarding his duties. Friends and relatives wishing to visit the interned officers have, it is said, to go through a trying ordeal to accomplish their purpose, and the latter are continually subjected to petty annoyances in connection with such visits and on other occasions also. The conditions under which the Belgian officers live in the island are compared to those under which the Great Corsican chafed at St. Helena.

It is hinted that the severity of the treatment meted out to the Belgian officers in the island of Urk arises from the fear that Germany might boycott the herrings now sent to the Fatherland from the island, if more favour was shown them.

The 126th number is entitled *La Course à la Mer et la Bataille des Flandres*. In an introduction we are told that this little volume treats in outline the operations of October and November, 1914, which are generally known as the *Race for the Sea*, the Battle of Flanders and the Battle of Ypres. The first period, that concerned with the *Race for the Sea*, comprises two great battles, i.e., the Battle of the Oise-Somme and the Battle of Arras, of which the history has yet to be written; these battles possess an importance which has not been fully appreciated. To General Foch belongs the imperishable honour of the success attained by the Western Allies at this period.

The account of these operations from the pen of Monsieur René Puaux, is subdivided into seven heads, the text being illustrated by ten sketch-maps which clearly show the positions of the contending armies in the Western Theatre at various dates between the 20th September and 1st November, 1914. The volume concludes with a short appreciation of the personality and career of General Foch.

In the first section of this volume Monsieur Puaux briefly reviews the situation on the Western Front during the days immediately after the Battle of the Marne. He states that the French Higher Command had no difficulty in divining the plans of the German Great General Staff. Faithful to the teachings of the Berlin War Academy and to the doctrines of all German military writers, the Great General Staff would, it was felt, alone aim at enveloping one of the wings of the Allied Armies. The French right wing, resting as it did on the Swiss frontier, could only be effectively assailed by German troops by the violation of neutral territory. On the other hand, the French left wing, consisting of Manoury's Army, then resting on the Oise, offered a suitable objective at which a blow could be struck under conditions affording an opportunity for manœuvre.

Manoury had been directed, on the 11th September, by the French Generalissimo to collect as large a force as possible on the right bank of the Oise. On the 17th *idem*, Joffre definitely decided to concentrate a force on the French left wing, which would be capable of dealing with the enemy's turning movement; he had on the 15th *idem* reinforced Manoury's Army by an army corps and now brought Castlenau's Army to the left of Manoury's Army. The second phase in this period of the War, known as the *Race for the Sea*, brought into full light the high manœuvring qualities of the French: the successive battles from the middle of September to the middle of November involved more marching on the part of the troops than even at the Battle of the Marne. It was the masterly strategy and the skilful handling of the Allied troops during this phase of the War that was responsible for driving the German Higher Command to have recourse to trench warfare. The belligerent armies were manœuvring on two parallel curved fronts; the fact then that the centres of these curves fell within the territory in possession of the invaders of Belgium naturally gave them an advantage.

The chords along which the German General Staff could move their troops were much shorter than the sinuous routes by which the Allied troops had to march to meet the great German outflanking movement; the German Army should, therefore, have achieved its purpose. However, Joffre lost no time; the *glissement vers le nord* was carried out so rapidly that when the Germans did reach the sea, it was at a point where the waters washed the shores of Belgium and not those of France. That the Germans failed in their object is largely due to the very excellent manner in which the French railways played their part at this memorable period. On certain lines as many as 220 trains were moved daily (up and down). During the months of September, October and November large movements of troops were also carried out by motor-car, 350,000 men being so moved over distances varying from 12½ to 64½ miles.

The second section deals with the events connected with the first movements towards the north. Between the 21st and 26th September the French front was engaged on the line Lassigny-Roye-Peronne. On the 26th *idem* the whole of the German VI. Army commenced a vigorous onslaught on Castlenau's Army (Battle of the Oise-

Somme); in the meantime, the troops under the command of Maud'huy were collecting to the east and south-east of Arras, their concentration in this region being completed on the 30th *idem*. The enemy, who had completely established himself on the Thiepval Plateau, moved northwards parallel to the French front. On the 1st October, Maud'huy sent forward the two Cavalry Corps placed under his orders to operate on the banks of the Scarpe; they established connection with the Dunkirk garrison and pushed on to Douai.

On the 2nd and 3rd October a part of Maud'huy's Army came into violent collision with a very large German force consisting of two Cavalry Corps and seven Army Corps in the region of Arras and Lens (Battle of Arras). The situation was a serious one and a new French Army Corps was quickly pushed forward by rail and detrained on the line St. Pol-Merville (St. Pol about 30 miles west of Arras). The enemy tried hard to drive the French back with the object of turning their flank. Joffre now ordered the movements in this region (concerning which instructions had already been issued) to be continued, at the same time providing further reinforcement. General Foch was sent to this region with directions to co-ordinate the movements of Castlenau's and Maud'huy's Armies, of the Territorial Divisions and of Conneau's and of Mitry's Cavalry Corps; he left Chalons on the 4th October, and established his headquarters at Doullens on the following day where he remained till the 24th *idem*.

During the period Foch was at Doullens the movement northward of the Germans and French on parallel routes continued. It was during this manœuvre that the British Army under Field Marshal French was transported to the left of Foch's command and thus once more occupied the same relative position on the Allied front that had been assigned to it in the first days of the War.

A brief reference is made in this section to the proposal made at one time that French troops should take part in the operations projected for the relief of Antwerp. Both General Joffre and Sir John French, it is stated, were of opinion that the dispersion of the French Army for the purpose of undertaking enterprises of the kind in question was to be deprecated on the ground that such operations involved, under the then existing situation in France, undue risks being taken and were, moreover, likely to prove futile. It was urged by them that a preferable course would be to assist the Belgian Army in Antwerp to withdraw on to the front on which the British and French Armies were operating.

The Belgian troops which retired on the 9th October from Antwerp to the Yser *via* Eecloo and the coast were, as a matter of fact, covered by 6,000 French Marine Fusiliers transported by rail from Dunkirk to Ghent. The British 7th Division and 3rd Cavalry Division disembarked at Ostend at the end of September; it had been intended that this force should proceed to Antwerp with the French troops which it had been proposed should be sent there. The British 7th Division eventually joined up with the British troops in the neighbourhood of Ypres and the French Marine Fusiliers fell back, in due course, on to Dixmude and played a heroic part in the defence of this place.

Up to the 23rd October it had proved a by no means easy task to maintain the Allied front intact. The fall of Antwerp released a great part

of the German troops which had been besieging that fortress. The French Generalissimo, in consequence, decided to move the French Army under General d'Urbal, which had been intended for employment in Belgium, to the north of the Lys; this army had originally consisted of two Territorial Divisions, four Divisions of Mitry's Cavalry Corps, and of one Brigade of Marine Fusiliers. It was reinforced, on the 21st October, by the French 42nd Division. The reinforcement of d'Urbal's Command by new Divisions continued during the whole period over which the Battle of Flanders lasted; these reinforcements amounted in all to the equivalent of five Army Corps, two Cavalry Corps, two Territorial Divisions and 60 heavy guns.

When the Germans launched their great offensive, on the 23rd October, 1914, with the quadruple purpose of (i.) piercing the Allied front, (ii.) reaching Dunkirk, Calais and Boulogne (whence they might bombard the British shores with their Krupp giants and prosecute an intensive submarine warfare with the object of isolating the British Isles), (iii.) outflanking the Allied front by the isolation and destruction of the Allied left wing, (iv.) completing the conquest of Belgium, in order to enable Wilhelm II. to place King Albert's Crown on his own head in the Cathedral of Ypres, the cradle of Belgian liberties, they knocked their heads against a wall of steel too solidly constructed to be broken down by their battering rams; thanks very largely to the steps General Foch had taken to ensure the proper execution of the orders of the French Generalissimo. It is these operations that are known as the "Battle of Flanders."

In the third section of the volume, Monsieur Puaux touches very briefly on the German offensive. He states that the German Armies which marched against the Anglo-Franco-Belgian front were animated with an ardent and excellent offensive spirit: they consisted of new formations that had not yet been under fire. These German troops were ignorant of the defeat suffered by their countrymen on the Marne; on the other hand, they were well acquainted with the fall of Antwerp and the triumphal and rapid march of German Armies through Belgium, and this knowledge naturally caused them to be greatly elated. The idea that France would be completely crushed within a few weeks had not yet vanished from their minds. The check on the Marne was only temporary, they thought, and the battle in which they were about to take part would finally establish German superiority and complete the triumph of the Teuton arms. The Kaiser proceeded in person to Thielt and to Courtrai to encourage his troops by his presence, and the German Press did not cease to impress upon its readers the importance of the operations it was pleased to refer to as the "Battle of Calais."

The fourth section deals with the attack on the coast. The German Great General Staff directed the first blows, during the second half of October, principally against the Belgian Army and attempted to pierce the Allied front between Dixmude and the sea. No doubt, it expected to achieve the results aimed at quickly and easily; assuming probably that the Belgians were completely demoralized. They hoped in a short time to realize their grandiose plan of menacing England directly: the Krupp 16-in. guns and the Austrian 12-in. guns would soon, it was expected, be bombarding Dover and Folkestone.

The French General Staff had so completely read the German mind

that the Governor of Dunkirk had early in October received instructions to complete all his defence arrangements; *inter alia*, the French 42nd Division and a Brigade of Marine Fusiliers had been sent to reinforce the Belgians, who, at that time, were holding a front of 23 miles on the Yser, on the left of the British front at Ypres.

The German attack on the Belgian positions on the Yser began almost as soon as the Antwerp garrison reached the Allied front. The principal blows were aimed on the short section of the front on the left bank of the Yser. Dixmude was as a bastion to this section of the front. Whilst the Germans were attacking Nieuport, British monitors and destroyers poured shot and shell into the German flank.

On the 20th October, the Germans began a systematic bombardment of Dixmude, and thereby effected a certain amount of material damage in the town. After this preparatory artillery bombardment the infantry attack was launched; it was on this occasion that the dense column formation was first used in the attack by the Germans. For this reason the name of the Yser stands as the symbol of despair, and the butchery that resulted from the adoption of the formation in question has caused a stigma, which can never be removed, to be attached to the German Higher Command.

The flower of the youth of the German Universities were serving in the ranks which were mowed down on those fields. Although the first great onslaught on Dixmude was held up neither the plan of attack nor its method of execution was in any way modified.

The Belgian centre was seriously menaced by the intensity of the blows which fell upon it; the Germans had succeeded in getting 10 battalions and some artillery into the loop of the Yser. On the 24th October, 15 successive assaults were delivered against Dixmude by German troops. The French 42nd Division was pushed forward to support the Belgians who had been obliged to fall back on to the Beverdijk. On the 25th *idem*, the enemy's attack relaxed somewhat. On this date, the Belgian General Staff, acting in concurrence with the French Higher Command, decided to inundate the low-lying region in front of the Nieuport-Dixmude Railway in which the Belgian front now rested, and orders were given accordingly. It would appear that the Germans at first failed to realize the importance of the steps taken by the Belgian General Staff in the matter of the inundations. Within a short time the German soldiers saw water percolating into trenches and on reporting the matter were ordered by their Higher Command to pump out the water and to line the bottoms of their trenches with clay to make them water-tight.

On the 28th October, the sluices on the Beverdijk were opened and the water at once began to flood the region adjacent to the railway south of Nieuport. But before the inundations could form a sufficient protection to the Belgian front it was subjected to violent attacks and the defenders were put in great jeopardy; the Belgian artillery suffered severely during these attacks. Fortunately, French troops were able to move up in the nick of time. On the 31st October, a counter-attack by the French 42nd Division stemmed the German tide. The nights of the 30th and 31st *idem* were particularly trying to the defenders on the Yser front.

The German attacks were now broken and the inundations began to take their toll in men, guns and material belonging to the enemy. As a parting shot the German heavy artillery bombarded Furnes; no doubt as an exhibition of their rage in being disappointed of their quarry. The French Higher Command now handed over the guarding of the line of the Yser to a Territorial Division, which relieved the 42nd Division on the 2nd November; the latter Division was then moved to the south of Dixmude.

French troops almost immediately made an attempt to regain the right bank of the Yser, but the Germans had been strongly reinforced and were able to drive back the French to the left bank of the river, at the same time gaining a footing in Dixmude. The French Territorials who had been pushed as far forward as Lombartzyde, withdrew, on the 12th November, to the bridgehead on the Yser at Nieuport. Nevertheless, the *Schlacht von Calais* was lost to the Germans.

The fifth section of the volume deals with the operations on the front Dixmude-Ypres. On the 20th October, the Germans had their XXIII. and XXVI. Army Corps opposite this front. On the same date the part of this front between Dixmude and Bixschote was held by two Territorial Divisions (belonging to Dunkirk) and the part between Bixschote and Ypres by the British 1st Army Corps. The French 4th, 5th, 6th and 7th Cavalry Divisions were employed in advance of this line.

On the 25th October, the two Divisions of the French 9th Corps, one of which had been to the right and in advance of the British 1st Army Corps and the other in reserve between Ypres and Poperinghe took over the positions held by the British 1st Army Corps on this front.

The French 9th Corps and the 31st Division delivered an attack on Poelcapelle and Passchendaele on the 26th October. The French troops made progress in this region and also in the direction of Gruyterzale, but had to give ground at Bixschote. A prolonged contest raged for the possession of the latter place and it changed hands several times during the closing days of October and the first week of November. Hot fighting, with occasional calms, continued until the 10th November, on which date the Germans launched their great offensive, the culminating episode of the operations on this front. This offensive was directed against the Allied positions on the Yser Canal between Dixmude and Bixschote. The French were at first obliged to retire on the line Korteker Inn-Hetsas. Foch sent forward reinforcements to this locality; the French concentrated their efforts on the operations in progress on the line Dixmude-Ypres; merely holding, for the time being, the German offensive south of Ypres. As the result of hard fighting, by the 15th November, the Germans were completely driven back from the left bank of the Yser Canal.

The sixth section of the volume deals with the operations south of Ypres. It was to the south-east and south of Ypres that decisive results were obtained. In this region the Germans pushed their attacks with unprecedented brutality; they hoped, by piercing the Allied front in this locality, seriously to threaten the communications of the British Army and a part of the French Army. On the 23rd October, the part of the front east and south-east of Ypres was held by the British 4th Army Corps, whilst the British 3rd Army Corps held the front

Messines-Armentières; a British Cavalry Corps was south of Messines at this time. The German XXVII. Reserve Army Corps and XIV. Army Corps faced the British 4th and 3rd Army Corps respectively and there were four German Cavalry Corps in front of the British Cavalry Corps. On the 24th October the British 1st Army Corps reinforced the 4th Army Corps, and at the same time an Indian Brigade was pushed up to the north of Messines in support of the British cavalry.

By the 30th October, the German attacks had inflicted such casualties on the British that it became necessary to send French troops to reinforce them. By degrees the French 9th and 16th Army Corps and 9th Cavalry Division became absorbed in the section of front held by the British troops. And on the 20th November, the whole of the Ypres salient was being defended by the French.

The Battle of Ypres practically came to an end on the 15th November; the German offensive in this sector having completely failed, with a loss to them of more than 120,000 men.

In the seventh section of the volume the results of these operations are briefly reviewed. Monsieur Puaux says that in smashing the German attack between the Lys and the North Sea the Allies definitely defeated the offensive plan of campaign of the German Great General Staff.

The concentration of more than *eleven army corps*, the presence of the Kaiser on the battlefield, the proclamations and orders of the German Generals all demonstrate how great was the importance which was attached by the enemy to the operations dealt with in the volume under review. Therefore the complete miscarriage of the German offensive acquires more than ordinary significance. The check suffered by the Germans was of political as well as of military importance. Had what remained of the Belgian Army been driven out of Flanders, the Germans would have been able to crow loudly that they had wiped out, at least, one of their adversaries. This satisfaction was denied them. Further, the Allied success prevented the Germans from acquiring gun positions and naval bases on French territory for the attack on England.

These operations also afforded convincing proof of the complete solidarity that existed between the French and British Higher Commands.

The continuance of the hold that the Allies were able to maintain on the front Nieuport-Ypres-Arras had the further advantage that they were able thus to secure more firmly the safety of Paris, in the event of a German thrust against the French capital.

The Allied victory in Flanders was the complement to and the rounding off of the victory on the Marne. On the 15th September, Wilhelm II. and his Great General Staff may still have had illusions and may still have nourished vain hopes regarding the ultimate success of German plans. On the 15th November, such could no longer have been the case; the battle had been lost to them.

In the short appreciation on General Foch's personality and career, which appears in the final section of the volume, Monsieur Puaux says that the Commander whose name will for ever remain associated with the operations connected with the Race for the Sea and the victory in Flanders, operations leading to very far-reaching consequences, was that of a soldier well known to students of War. Many are the officers

in the French Army who have derived advantage from his instruction, whilst he was Professor of Tactics at the École Supérieure de Guerre, and still more numerous are those who have imbibed useful lessons from his two voluminous works, *Les Principes de la Guerre* and *De la Conduite de la Guerre : la Manœuvre pour la bataille*. These works are a living embodiment of the spirit of their author. Brightness, good-will, uprightness are the attributes of his moral nature ; ingeniousness, preciseness, wideness in the range of scientific knowledge represent the qualities of his talents.

General Foch has deep faith in the Napoleonic doctrines ; his faith, however, is not of that narrow kind which seeks to interpret the sense of the original phraseology of the Great Captain's maxims literally, but it is rather of that broader kind which endeavours to apply the principles contained in these maxims in the light of the most recent technical developments which have added so enormously to-day to the powers of armies in relation to the offence as well as the defence. As was the case with Napoleon who paid attention only to main considerations, economized troops, and made the most of superiority in morale, so also has it been with Foch. Foch's works are full of trite sayings, and a study of the multiple phases of the manœuvres on the Yser reveal how skilfully Foch, the General, has applied the lessons contained in the works of Foch, the author. It is too early in the day, Monsieur Puaux points out, to write of the operations conducted by the subject of this short memoir on the fields of Artois and on the Somme. He contents himself with reminding us of the motto inscribed on the portals of one of the French fortresses : *Le Passé répond de l'Avenir*—the Past justifies Great Expectations in the Future.

The 128th number contains a diary of the events of the War during the period 1st July to 31st December, 1916 ; it is the fifth volume of the series dealing with this particular matter.

W. A. J. O'MEARA.

THE CALCULATION AND MEASUREMENT OF INDUCTANCE AND CAPACITY.

By W. H. NOTTAGE, B.SC.—(Published by The Wireless Press, Ltd. 2s. 6d.)

The important part that the inductance and capacity of an electrical circuit play when alternating currents are propagated along them was early recognized. In telephony and in wireless telegraphy, as is well known, the transmission and propagation of alternating currents of much higher frequencies are involved than those required for ordinary telegraphic purposes or those utilized in connection with electric currents for illuminating or power purposes. The progress made in the sciences of telephony and of wireless telegraphy, as also the treatment of practical problems connected with these two branches of the electrical industry, naturally led in due course to a deeper and deeper study of the theory connected with the generation and transmission of high frequency alternating currents, and many exceedingly valuable contributions have been made

by mathematicians, physicists and electrical engineers to the literature on the subject. These contributions being scattered in the pages of a very large number of volumes of the Proceedings of scientific societies, such as the Institution of Electrical Engineers and the Physical Society of London, in technical journals and periodicals such as *The Electrician* and *The Wireless World*, and in the publications of certain national institutions such as the Bulletin issued by the Bureau of Standards, Washington, the formulæ, etc., contained in these contributions are not readily accessible for every-day use. The author of the work under review has brought together from various sources a large number of formulæ and many of the methods of measuring inductance and capacity in a form which cannot fail to be useful to those who have to deal with problems connected with high frequency alternating currents. The work in question is divided into six chapters, and concludes with a series of useful tables. The subjects treated in the several chapters are as follows :—

Chapter I.—The Calculation of Inductance.

Chapter II.—The Calculation of Capacity.

Chapter III.—The Measurement of Inductance.

Chapter IV.—The Measurement of Capacity.

Chapter V.—High-Frequency Measurements.

Chapter VI.—Appliances for Use in Measuring Inductance and Capacity.

It is perhaps inevitable that in the first edition of a work of this kind a few misprints should have crept into the pages of the volume. A very large number of the formulæ have been checked and but few errors have been found; those discovered are either patent or of trivial importance, for example, on page 10, in the formula (7a) for the inductance of a damped wave at high frequencies the value of L_0 , the continuous current inductance, is found by formula (6), whereas the value actually substituted is that for L_0 given in formula (4), being the continuous-current inductance for a low-frequency alternating current. In the part of Chapter II. dealing with the capacity of radio-telegraphic antennæ in formula (18), on page 47, for the average potential in absolute units of a single straight wire the last term is given as '307, whereas in the original paper by Prof. Howe (published in *The Wireless World*, December, 1914, and January, 1915, and *The Electrician*, August and September, 1914) this term is given as '309; this misprint is repeated in the subsequent formulæ dealing with the same subject.

The errors in question in no way detract from the value of the work under review and it should therefore find a place on the bookshelves of all interested in problems connected with high frequency alternating currents, and particularly of those who have to deal with the practical side of telephony and of wireless telegraphy.

W. A. J. O'MEARA.

NOTICE OF MAGAZINE.

REVUE MILITAIRE SUISSE.

No. 3.—March, 1917.

ON CAVALRY.

German Cavalry at the Battle of the Marne.

The article on the above subject in the number of the *Revue* under review is a continuation of the article begun in the number of the *Revue* for February, 1917 (*vide R.E. Journal* for June, 1917); it is accompanied by a sketch-map of the region east of Paris, lying between the Seine and the Aisne, as far as and including Chalons. It is pointed out that Von Kluck, in abandoning his march on the 4th September, 1914, on a geographical objective, in order to strike at the French Armies, would appear superficially to have been acting according to the dictates of sound strategy. However, Paris was, at that time, something very much more than a mere geographical objective; it was an entrenched camp and was bound to be a serious menace to any army which might move so as to leave it on a flank without detaching a very considerable containing force to watch it.

The change of direction in the march of Von Kluck's Army, says the author of the *Revue* article, must have been approved if it was not actually ordered by the Great General Staff. It seems inconceivable that the latter could have acted without being in possession of very precise information concerning the situation as regards enemy forces in and about the French capital.

The author of the *Revue* article asks: Was Von Kluck ill-served by his cavalry as regards information services? Was he ignorant concerning the concentration of the 6th French Army? Finally, did he not make a mistake in not leaving the whole of Von der Marwitz's cavalry on his right flank, when he deflected his army in the direction of Comlommiers? The author of the original article states that he believes he can, without fear of contradiction, reply negatively to the above questions.

When further details relating to the events of that period of the War are available they should throw a flood of light on the matters raised in the first two of the above questions.

The situation, in the first days of September, 1914, was as follows:—The retreat of the 6th French Army, formerly known as the Army of the Somme, had brought it by the 3rd September, 1914, on to the line Dammartin-Pontoise (covering Paris on the north and approximately 11 miles therefrom), where it came to a halt and faced northwards.

It had in front of it Von Kluck's Army which extended from Creil to Nanteuil; this line was, at Dammartin, about $7\frac{1}{2}$ miles from the French line.

It was on the date last mentioned that the decision was arrived at to alter the direction of Von Kluck's march. Von Kluck, it is said, could not have been ignorant of the fact that the 6th French Army was before him. The German cavalry was feeling for the enemy and ought to have come in touch with the French troops in question. Since the 1st September cavalry patrols had spread themselves well over this region. True, on the German right these patrols must have been much hampered by the extensive forest region to the north of Paris. It is recorded that a German patrol, strength unknown, got as far as Pontoise. More to its left other patrols reached La Chapelle en Serval, Survillers, St. Witz and may be the high ground adjacent to the Senlis-Paris main road and the Creil-St. Denis railway. A good view of the region to its south is obtainable from the last-mentioned locality.

Further to the east the country is quite open and affords a clear field of view. Here the German cavalry patrols were pushed well forward along the depression between the Creil-St. Denis and Nanteuil-Paris railways. On the 1st September a number of German squadrons passed through Ermenonville. On the 2nd *idem* the Germans occupied Lagny-le-Sec (about 23 miles north-east of Paris); patrols were sent forward towards Dammartin and Villeneuve, and some of them reached the vicinity of Gonesse (about $6\frac{1}{2}$ miles from northern outskirts of Paris) on the 4th *idem*.

The region of Meaux was also scoured by the German cavalry; patrols entered Plessis-L'Éveque, Chanconin and Penchard, where the high ground affords suitable observation points.

When General Gallieni learnt, on the 4th September, that the Germans had altered the direction of their march, he ordered a concentration of the 6th (French) Army on its right. This concentration brought the 7th (French) Army Corps to Louvres (about 12 miles north of Paris), De Lamaze's near Menil-Amélot (about $4\frac{1}{2}$ miles south-east of Louvres) and the Territorial Divisions on to the line Tremblay-les-Gonesses (its flanks being about 5 and 3 miles south of Louvres and Menil-Amélot respectively).

The German cavalry should have obtained information concerning the situation in the above region, certainly at least regarding the flanks of the position occupied by the French troops.

The bulletins issued from Berlin announced, with a note of triumph, that since the 3rd September the cavalry of the I. (German) Army had pushed out its "patrols right up to the borders of Paris."

Apart from the information obtained from other sources, Von Kluck ought to have learnt of the concentration of Manoury's Army then in progress from his own cavalry.

It must be borne in mind that the IV. (German) Reserve Army Corps was not taken by surprise. It was the artillery of this corps that first came into action towards noon of the 5th September, from the heights of Monthyon against a French battery which was leaving Yverny (about 5 miles west of Meaux). Although Von Kluck could not have been

ignorant of the presence of Manoury's Army on his right flank, he was evidently unaware of how it was composed and of its strength. The latter information could not have been obtained for him by a force of cavalry even larger than that he had with him, even if it could have been more boldly handled. Nor could any cavalry have definitely informed him that the enemy was far from being in a state of demoralization, but was making preparations for an energetic offensive. Nor could cavalry have discovered for Von Kluck that in the immediate future further formations of new troops would be issuing from Paris to increase the dangers which already threatened his army in the first days of September.

To the fact that the Great General Staff altogether failed to appreciate the resources of their enemy and to depreciate his tenacity and prowess was it due that Von Kluck was allowed to go off on a wrong tack. The Germans appeared to have been absolutely confident that they would be in Paris within a week. It was further assumed that the British Army was no longer a serious factor in the military situation. The Germans had been able to beat off the first attack of the Army of the Somme quite easily and doubtless felt that any further attacks of the enemy would be repulsed with similar ease. The author of the *Revue* article expresses the opinion that the action taken by the German Great General Staff is to be attributed rather to an error of judgment than to want of information regarding the enemy. The cavalry was not concerned in these false psychological speculations.

In the previous article on this subject it was shown that of the three cavalry divisions of Von der Marwitz's Corps only the 4th Division had been left on the Ourcq with the IV. (German) Reserve Army Corps. So far as reconnoitring duties were concerned, this division was amply sufficient to meet all requirements. The author of the *Revue* article is of opinion that nothing would have been gained by leaving the whole of Von der Marwitz's Corps with the IV. (German) Reserve Army Corps on this occasion. Indeed, he feels that the skilful use which was made of the cavalry south of the Marne between the 6th and 10th September affords evidence that no mistake was made in breaking up the Corps as actually carried out.

It is pointed out that the situation in relation to the Battle of the Marne of greatest interest, as regards the subject under discussion, is that connected with the progress of events on the German right wing on the evening of the 5th September.

The movement which had begun on the 4th September had brought Von Kluck's Army on the following day on to a line parallel to and south of the road Crecy-Esternay (Crecy about 28 miles east of Paris; Crecy to Esternay about 34 miles). The II. (German) Army Corps, which formed the extreme of Von Kluck's command, was on the 5th September facing the British Army. The IV. (German) Army Corps, and the two divisions of Von der Marwitz's Cavalry Corps were to the south-east of Coulommiers (about 37 miles east of Paris). Von Richthofen's Cavalry Corps was to the south, La Ferté-Gaucher (about 53 miles east of Paris) and had the III. (German) Army Corps on his left. A part of the IX. (German) Army Corps (forming the left of the German

I. Army) was at Esternay and the remainder was to the north of this place. Von Kluck's outposts stretched from Villers sur Morin, by Mortcerf, Vaudoy, to St. Bon.

Von Bülow's Army was echeloned on the left and to the rearward of the I. Army; its X. Reserve Army Corps was at Montmirail, the X. Active and the Guard Army Corps stretched along the road Montmirail-Chalons. The left of Von Bülow's Army rested on Vertus. The VII. (German) Army Corps was retained as a reserve to the north of Montmirail. Von Hausen's Army (XII. Active, XII. Reserve and XIX. Army Corps) continued the German front from Vertus to a point just south of Chalons.

The French Generalissimo had indicated the lines of the Seine-Aube and the region north of Bar-le-Duc as the front on to which the Western Allies should fall back. The French 3rd and 4th Armies occupied approximately the front Bar-le-Duc—Vitry-le-François. The 9th Army (Foch) was concentrated between Mailly and Sezanne. On its left, the 5th Army extended from Sezanne as far as Villiers-St. Georges.

The British Army having retired too far to the south was somewhat *en l'air*; it experienced some difficulty in taking up its proper alignment. It had two Army Corps along the road Rozoy-Paris and one about Lagny (on the Marne). Its outposts were placed along the northern borders of the Crecy Forest.

There were gaps in the above fronts on both sides. The Germans had a gap of about 9 miles between the IV. Reserve Army Corps and the II. Army Corps; its width continued to increase as Von Kluck's enveloping movement progressed. At the period of the advance on Provins, the isolation of the IV. Reserve Army Corps was complete.

It was this situation that the French Generalissimo endeavoured to take advantage of; this is clear from his famous *order du jour* of the 4th September.

The gap between the 5th French Army and the British was wider still—Villiers-St. Georges is about 19 miles from Rozoy. The only troops available for maintaining *liaison* at this part of the front consisted of Conneau's Cavalry Corps, located at that time south of the Forêt de Jouy. The roads from Coulommiers and La Ferté-Gaucher to Provins pass through this gap, and it was here that Von Kluck pushed in his masses to envelope the French left, leaving the British on his right as being of no account in the situation.

Joffre's directions were extremely lucid. Manoury's Army was to cross the Ourcq and advance on Château-Thierry. The British were directed on Montmirail, whilst the remaining French armies were each to advance northwards and attack the Germans immediately in front of them.

The German Reserve Corps on the Ourcq appeared likely to be isolated and crushed and the German communications to be threatened.

Von Kluck expected that he would be able to contain the British with his II. Army Corps and to push his IV. Army Corps into the left flank of Franchey D'Esperey's Army.

The execution of the plans prepared for the opposing armies is next

examined. On both sides the 6th September had been selected as the opening day for a great battle; the first collision actually took place on the Ourcq at midday of the 5th *idem*.

Manoury attempted to drive Schwerin's IV. (German) Army Corps on to the river. In spite of this threat Von Kluck continued his enveloping movement towards the south of the Marne at dawn on the 6th *idem*. The II. (German) Army Corps, to which had been assigned the duty of containing the British, attacked them with great vigour very early in the morning. At the same time the IV. (German) Active Army Corps continued its march in two columns on the roads Coulommiers-St. Just and Coulommiers-Provins; the advanced guards of this corps reached the Melun-Provins road by 8 a.m.

Von Richthofen's cavalry advanced on the left of the IV. (German) Active Army Corps. The 6,000 sabres of this corps were collected to the south of Chartranges astride the road to Provins. Five patrols were sent out by it; their mission was to endeavour to destroy the railways between Melun and Montereau, some 25 to 30 miles distant. It was expected that they would be able to penetrate through the gap left between the British Army and the French 5th Army; but they failed to do so. Two of the patrols returned, whilst three of them were captured; the officers in command of the latter were later brought before a War Council at Chalons, an episode which led to reprisals on the part of the Germans. After the patrols in question had started off on their mission, the main body of Von Richthofen's cavalry moved off towards Provins, to take part in what the Germans at that time seemed to believe would be the final battle of the War—one German officer of high rank was so bold as to announce that he would spend that evening at Fontainebleau.

On their way southwards, it was first necessary for the Germans to take possession of the village of Courtacon which was being defended by French cyclists, belonging probably to Conneau's Cavalry Corps. Some German Chasseurs of the Guard were the first to enter the village named. It was alleged that some civilians in the village had fired on the German troopers and on this excuse a torch was applied to the houses.

The village of Les Murets was next found to be an obstacle to further progress by the Germans; a French battery had taken up a position there. A Uhlan regiment attempted to attack it, but was held up by wire entanglements and had to retire. At 8 a.m. the French battery withdrew and the village passed into German hands. Champcenest further to the south also fell into the invaders' hands, but the German southward progress ceased here. The French resistance now began to be more and more stubborn; it was no longer rear-guards which the Germans had to deal with, but an army preparing to pass to the offensive.

Orders arrived for the German cavalry to halt; its main body was at this time at Beton-Bazoches (about 17 miles west of Provins). On its right the advance of the IV. (German) Army Corps also came to a standstill. The IV. (German) Reserve Army Corps which had been heavily attacked at midday on the 5th September, had on the following day to give ground, particularly on its right wing which was being

outflanked. This corps was obliged to retire eastward from Brègny on Vincly and found itself driven into a corner on the Meaux-La Ferté-Millon road, about 3 miles from the banks of the Ourcq.

Manoury had pushed the French 8th Division, to the south of Meaux, into the gap between the British Army and the IV. (German) Reserve Army Corps.

Von Kluck's Army was jeopardized ; consequently, without loss of time, he ordered his II. Army Corps to move to the support of the German troops in difficulties west of the Ourcq. At 10 a.m. the II. (German) Army Corps broke off its engagement with the British and marched towards the flanks of the IV. (German) Reserve Army Corps. Under the circumstances the IV. (German) Active Army Corps abandoned its march on Provins (its advanced guards, as already stated, had reached the Melun-Provins road). It turned about and retraced its steps northwards ; but it did not go to the assistance of the Germans engaged to the west of Ourcq (near Vincly). Its advanced guard halted on reaching La Ferté-sous-Jouarre ; at the same time the main body came to a halt in the neighbourhood of Rebais (some 7 to 8 miles south of the Marne). It is suggested that this may have been because the Germans feared that the British might attempt to take advantage of the situation and make a vigorous effort to occupy the gap in the German front.

The withdrawal of the German IV. Reserve and II. Army Corps (consisting of 80,000 men) left a gap of more than 25 miles between the Ourcq and Cerneux (west of Villiers S. Georges) where the right of the III. (German) Army Corps rested. The II. (German) Army Corps when retiring northwards had only left weak rear guards on the Grand Morin.

To cover the gap last referred to, the dangers arising from the existence of which were fully appreciated by the German General Staff, use was made of the two cavalry corps. Two divisions of Von der Marwitz's Corps were assigned to the sector Crécy-Coulommiers ; they had in front of them the whole of the British Army. These divisions were able to continue their duties in this sector up to the morning of the 7th September. Von Richthofen's Corps remained at Beton-Bazoches ; it had in front of it Conneau's cavalry and the left wing of the French 18th Army Corps. In spite of the presence of the IV. (German) Army Corps south of the Marne, the German cavalry ran, in the opinion of the author of the *Revue* article, considerable risks in the position in which it now found itself. It was, he says, due rather to the inactivity of the British than to the dispositions made and the nature of the *terrain* that the two divisions of Von der Marwitz's Corps were able to maintain their ground throughout the 6th September. It would seem that Field Marshal French only became aware of the retirement of the German II. and IV. Army Corps on the evening of the date last mentioned.

The British cavalry, it is said, was well placed on the British right, and it is asked why did the German retirement escape notice ? Was it that the patrols were not well handled ? Was it that the British aviators ceased their activities ? Can it be that Field Marshal French

failed to realize that the fighting in progress on the banks of the Ourcq since the previous evening was really closely connected with the battle which was taking place south of the Marne? Whatever may have been the cause, whether the rear guards of the II. (German) Army Corps and the German cavalry were skilfully handled or whether the British were too passive, the fact remains that it was only in the evening that the British advanced guards reached the Crécy-Coulommiers road (representing an advance of about 6 miles on the right wing and 3 miles on the left wing).

The enemy was more aggressive against Von Richthofen's cavalry, nevertheless the latter was able to hold on to the villages of Champcenest, Les Murets and Courtacon. General Franchey D'Esperey had learnt of the retirement of the two German Army Corps even later than Field Marshal French; it was only on the morning of the 7th September that this information first reached the French General in question. It was contained in reports made by French aviators. Thus it was that the Germans were able to effect a hazardous retreat practically without molestation. The German cavalry, says the author of the *Revue* article, played its rôle admirably. The Allies were unable to pierce the German screen and made no progress on this part of the front.

In the Esternay sector violent fighting took place between the German III. and IX. Army Corps and the French 18th and 1st Army Corps; the latter towards the evening began to establish their superiority. Foch's Army generally held on to its positions; his centre was engaged with the Prussian Guards, his right wing with the Saxons. The German VII. Army Corps remained to the north-west of Montmirail and did not come into action.

During the 7th September the situation of the two German Cavalry Corps became critical. The gap in the German front behind them increased in width, the IV. (German) Army Corps retired from Rebais in the morning, crossed the Marne and took up a position, in three groups, east of the Ourcq and made ready to come into action. From the casualty lists it would appear that units of the German IV. Active Army Corps took part in the fighting on banks of the Ourcq on the 7th September; however, its main body did not come into action till the following day.

The pressure exerted by Manoury's Army, which had been reinforced by the French 61st Division (brought by rail into the region of Nanteuil-le-Haudoin) and came into action on the left wing, made itself distinctly felt by the Germans. The latter evacuated the country to the mouth of the Marne and the German cavalry was by degrees relegated to its proper functions. Fortunately for this cavalry, says the author of the *Revue* article, the British were not sufficiently active. Consequently Von der Marwitz held his positions at Crécy and at Coulommiers for a part of the day; he would have probably held on to them still longer had not Von Richthofen, in withdrawing his Corps, uncovered the former's left. Von der Marwitz's right was at this time also threatened by the French 8th Division, which was attempting to push in between the rear-guards of the German II. Army Corps and the

cavalry, he therefore fell back from the Grand to the Petit Morin. The German cavalry occupied the points of passage on the latter river and held on to them until the following day (the 8th September).

The British Army made slow progress. Its cavalry, operating on its right, linked up with Conneau's cavalry about Jouy-sur-Morin (about 22 miles north of Provins). The British 1st and 2nd Army Corps reached the La Ferté-Gaucher-Coulommiers road in the evening. The British 3rd Army Corps had at that time alone crossed to the north of the Grand Morin; it spent the night in the region north of Crécy.

Von Richthofen's cavalry had had great difficulty in withdrawing from the fight during the morning. The Chasseurs occupying Champcenest and Les Murets had been violently attacked; the German cavalry had at the same time to hold the French and British cavalry at bay.

The left wing of the French 18th Army Corps seriously threatened the Germans, who were in fear that the passages of the Grand Morin in their rear might be seized by the enemy. Therefore at 11 a.m. Von Richthofen ordered a retreat to the Petit Morin; his Corps crossed the river at Jouy and at La Ferté-Gaucher and established itself in the sector La Sablonnière-Boitron. Von der Marwitz's Corps shortly afterwards arrived in the region to the right of this sector.

In the evening of the 7th September, therefore, four cavalry divisions were massed on a front of about 9 miles; they had the rear-guards of the German II. Army Corps on their right and that of the IV. Army Corps in the region of Hondevilliers-Viels-Maisons, on their left.

The French and British cavalry did not continue their pursuit beyond the Grand Morin. The Allied cavalry seem to have passed the night of 7th—8th September at La Ferté-Gaucher.

The German III. and IX. Army Corps also felt the reaction caused by the retirement of the German IV. Army Corps. About 8 a.m., the pressure of the French 5th Army caused them to begin a retrograde movement northwards; they passed the night on the Mont Dauphin Plateau, between the Grand and Petit Morin. Their rear guards held on to the slopes north of the Petit Morin, maintaining contact with the French troops.

On the day in question (7th September) the right wing of the French 5th Army advanced some distance to the north of Esternay. Foch's Army, in spite of the furious attacks of the Germans, maintained its position.

The German VII. Army Corps does not appear to have moved from its position north of Montmirail. The author of the *Revue* article sums up the situation as follows:—"Again on this day (*i.e.*, 7th September), the German cavalry fulfilled its task most amply. Although it had to withdraw, still it did not allow itself to become in any way entangled; no part of the envelopment which threatened it came to anything."

The events of the 8th September were contradictory in nature. On the one hand, whilst this was the date on which the five days battle reached its maximum intensity; on the other, it was the date on which Von Kluck withdrew two additional Army Corps to the north of the Marne, without bringing them as a whole into the fight on the banks

of the Ourcq ; he would thus seem to have considered the battle already lost.

The French 6th Army had been reinforced by the 62nd Division, which prolonged its left wing, and which, with the co-operation of three divisions of Sordet's Cavalry Corps, was employed for the purposes of enveloping the German right wing. The 4th Army Corps which had been taken away from Sarrail's Army was also about to take up a position in the French line. Matters were not, however, altogether satisfactory so far as Manoury's Army was concerned. The German IV. Active Army Corps had crossed the Ourcq and had come into action. It attacked along its whole front ; and Betz was retaken from the French, who in their turn incurred the danger of being outflanked. It looked for a moment as if Joffre's plans were about to miscarry. The French now expected that the German III. and IX. Army Corps, which had retired northward, would intervene in the indecisive combat. However, the Germans were content with throwing three infantry regiments and two artillery regiments into the fight, in passing, whilst the bulk of these two corps continued their march to the north. It has been represented that the reason for the adoption of this course was owing to the fact that it had been decided to carry out urgent defence works in the Aisne position. If this is so, it is evident that Von Kluck had, after the 8th September, no longer any illusions on the situation. He probably felt his position was more compromised than it appeared to be to the French.

The withdrawal of the III. and IX. Army Corps on the morning of the 8th September had created a new gap in the German front which it was necessary to fill up. The task of doing so was assigned to the German cavalry. The front it had to look after was longer than the numbers available justified ; it extended from La Ferté-sous-Jouarre to Viels-Maisons (about 16 miles). On its right, detachments of the German II. Army Corps were doing their best to bar the advance of the French 8th Division on the road Meaux-La Ferté-sous-Jouarre. On its left, a part of the German VII. Army Corps came finally into line.

The Petit Morin is bordered by high banks, the northern of which commands the southern. The line of the river was an easy one to defend, but the points of passage were numerous and it was necessary that all of them should be held.

Von Richthofen had in front of him the British Army of 120,000 men which was marching from the Grand Morin towards the line Viels-Maisons-La Ferté-sous-Jouarre ; his headquarters, at Hondevillers, were connected by telephone with the headquarters of brigades and also with those of the regiments holding the points of passage. Von der Marwitz's Corps occupied the right sector.

Each group had infantry and artillery with it. The bridges at Sablonnière and at Bellot were held and the 5th (German) Cavalry Division, with a battalion of Guard Jägers, were detailed for the defence of the Orly Sector on the right. The fighting was exceedingly tough. An attempt was made to dig trenches, but there were not enough tools ; further, the troops were as yet unaccustomed to this class of work. In

consequence, very heavy losses were suffered and towards midday some units were reduced to 25 per cent. of their strength.

The French cavalry now appeared on the scene. The Germans would have liked to deliver a charge, but the shrapnels were falling too thickly for any such form of attack to succeed. The German positions were fast becoming untenable; the French had already captured Bellot and Boitron, when at midday orders were given to the German cavalry to retire. The retreat was conducted in good order, but heavy losses were suffered during the retirement.

Von Richthofen's Corps retired to Montfaucon, leaving strong rear-guards along the southern borders of the woods between La Chapelle and Viels-Maisons.

Von Marwitz's cavalry does not appear to have had quite so bad a time. It held on to its positions and on the night of 8th—9th September was on the line La Ferté-sous-Jouarre—Basseville.

During the evening the French 8th Division and the British Army reached the Meaux-Montmirail road. The obstacle of the Petit Morin having been passed progress was more easily made. However, a whole day was spent in covering a distance of 9 miles only. As on the previous couple of days, the German cavalry successfully performed the task allotted to it; the gap between the German I. and II. Army Corps was not penetrated by the enemy, and the right wing of the VII. Army Corps was not turned.

The skilful and energetic part played by the German cavalry was of considerable value, particularly in view of the fact that the neighbouring German infantry (the VII. and X. Army Corps) had been driven out of Montmirail by the French 5th Army.

Along the whole of the front held by Foch's Army the attacks were exceedingly violent. Except the German X. Army Corps which remained on the defensive to the east of Montmirail, all the other German corps made repeated efforts to drive back the French 9th Army. The latter held its ground valiantly and only gave ground slightly in the neighbourhood of Fère-Champenoise.

The furious counter-attacks of the Prussian Guard and the Saxons may have constituted either an expiring effort to break the French line, or an effort to retain as many of the enemy troops as possible south of the Maine in order to relieve the pressure on the banks of the Ourcq. These counter-attacks may have even been undertaken to gain time in order to complete the arrangements for the retreat of the following day. The real reason may probably be disclosed when the history of the War comes to be written.

The events of the 9th September resemble those of the preceding day. The retreat of the German right wing had definitely begun; at the same time the violent attacks by the German left wing continued.

Manoury's Army and the 4th Corps of Sarrail's Army had now come into line; the French 8th Division, which had been operating south of Meaux in support of the British Army being no longer required there was transferred by rail to the extreme left of the Allied front.

The front of the French 6th Army extended from Nanteuil-le-Haudoin

to Varedes. Betz was still in German hands, but it was soon to be wrested from them.

The condition of affairs with the German troops on the Ourcq was gradually becoming worse. The British having only German cavalry in front of them were able to make more rapid progress, especially on their right. The British now wheeled to the left on La Ferté-sous-Jouarre as a pivot, and reached the Marne towards midday. Having crossed the river, the British again came into collision with Von der Marwitz's cavalry, along the road La Ferté-sous-Jouarre—Château-Thierry. Von Richthofen's Corps had gone off in the direction of Dormans, having rejoined the left wing of the German II. Army Corps.

The two divisions of Von der Marwitz's Corps were not able to maintain their positions in face of the British advance for long, and particularly as Conneau's cavalry and the French 18th Army Corps were at this time also marching on Château-Thierry—thus menacing the flank of these two divisions.

Shortly after midday Von der Marwitz informed Von Kluck that he could no longer hold on to his positions. The Germans on the Ourcq ran the danger of being cut off by the British. Von Kluck now gave orders for the retreat of his army. The retirement commenced from the left wing. A counter-attack was made *en l'air* at Bargny. By degrees the Germans drew off in the direction of Soissons; strong rear-guards being employed to delay the enemy. Sordet's cavalry was held up the following day by these rear-guards, on the borders of the Forest of Villers Coterets.

After its retreat, Von der Marwitz's Corps passed the night of 8th—9th September in the neighbourhood of Courchamp (north-west of Château-Thierry). Von Richthofen's Corps does not appear to have offered the same amount of resistance as Von der Marwitz's Corps. On the morning of the 9th September it was in position at Montfaucon and Essises. Trenches had been dug by the Germans, but these were not held for long as the progress of the French 18th Army Corps threatened to cut off Von Richthofen's cavalry from the German II. Army Corps. When the French pressure drove the Germans out of Montmirail, Von Richthofen's Corps became involved in the general retreat; it crossed the Marne at Dormans and halted for the night near Vincelles. A squadron was detached to ascertain the strength of the French force which had already crossed to the north of the Marne at Château-Thierry. This squadron was captured by the enemy after having spent two days in reaching Mont St. Père.

On the German right the battle came practically to an end soon after noon; but it continued on the remainder of the front. Von Bülow's Army was not able to hold on to its positions for long. The attacks of the French 5th Army and 18th Army Corps forced it out of its positions north of the Montmirail-Champaubert road. It retreated from the Marne by the same roads as it had advanced southwards only a few days earlier.

It was in front of Foch's Army that the battle lasted so long. As on the previous day the Prussian Guards and the Saxons attacked with great desperation. The Guards gained some ground at Mondement

and the Saxons were able to win their way to Salon. On their right the battlefield had been entirely evacuated by German troops and they therefore ran considerable risks by delaying their retreat. The French 10th Army Corps was on their left flank and had but to push forward by the heights of Courjeonnet and of Congy to bring about a disaster. However, the Germans broke off the battle in the evening.

On the 10th September the whole of the Germans to the east and west of Vitry-le-François were in full retreat on the Marne.—(*To be continued*).

THE INSTRUCTION OF INFANTRY IN BATTLE TACTICS.

The author of the *Revue* article states that many Swiss officers have recently been discussing whether the instruction and training given to the Swiss Army takes sufficiently into account the experiences of the present War and whether in the event of the Swiss Army taking the field the men and units would be capable of meeting the requirements of the situation. The conclusion that the author of the *Revue* article has arrived at is that in many particulars the training of the Swiss Army is insufficient; it is too often carried out in a haphazard manner, without any definite object in view. It seems difficult, he says, for officers and men to get out of the old rut; it is so easy and convenient to carry on in accordance with the rules long established which have become a matter of routine. An effort of imagination is wanted to start things on new lines and an application of much energy to carry matters through to a successful issue. It is just this effort and application which, it is stated, is now demanded from the Swiss Army, in view of the fact that the Swiss General Staff have recently issued (in November last), a new training manual entitled *Directives pour l'instruction en vue du combat* for the use of the Swiss Army.

The author of the *Revue* article deals with some of the more important principles enunciated in the above-mentioned manual. As regards what should be taught and the lines on which the instruction should be carried out, he points out that the rational method of preparing a programme of instruction is first to study the nature and characteristics of a modern battle, then to consider what part the various components of an army, *i.e.*, the man, the section, the company, etc., are required to play; this done, the whole scheme of instruction should be based on the requirements of the situation thus ascertained.

A note of warning is sounded against the danger of training troops exclusively for trench warfare. The opinion is expressed that, if called upon to fight, the Swiss troops would in the first days of a war certainly have to take part in old-time forms of campaigning, in which marching and fighting alternate.

It is pointed out that a large number of works have been published recently dealing with the nature of a modern battle; among them the following:—

Les expériences de la guerre actuelle. Published by the Swiss General Staff.

Die Champagne-Herbschlacht, 1915. Published under the authority of the Commander of III. (German) Army, etc., etc.

Works by Capt. Lafargue.

Accounts of the Fighting at Loos (September, 1915). Published by British War Office.

It is stated that the contents of the above, and similar publications, will furnish the necessary materials on which to build up a body of instructions. Further, much valuable matter will also be found in the many personal notes concerning the War which have appeared in the Press and in periodicals since the autumn of 1914.

The following characteristics should be borne in mind in organizing the instruction of troops:—

On the defensive: the most essential requirement is that several successive lines of defensive positions must be prepared. The present War has shown that the defenders of a position need no longer regard the piercing of a portion of their front as something so disastrous as to involve the abandonment of the whole position. But in order to reduce the risks arising from a failure to hold back the enemy on a part of a front, it is necessary that a position shall be occupied in depth and provided with suitable defence works.

Troops must be taught that the best method of utilizing such a defensive system is for every individual man, every section, every company, etc., to hold on to his or its particular portion of trench up to the bitter end, even when surrounded and the line of retreat is cut off. Tactics of this nature permit of the defender's reserves being brought up and used in a counter-attack; further, such tactics have the effect of breaking up the enemy's front into disjointed and, in some cases, into isolated sections which lose cohesion and are at the mercy of the counter-attacking troops. Success can only be obtained under these conditions if each man can be made to realize that the fate of his own side depends upon him individually and that he must make up his mind to beat the enemy. Such is the teaching of the present War; extracts are given from *Die Champagne-Herbstschlacht* and from Capt. Lafargue's *Étude sur l'Attaque* to support the foregoing views.

Another point of importance on which too much emphasis cannot be laid is the immense value on a modern battlefield of defence works. Too much time cannot be spent in teaching troops to entrench themselves rapidly and to provide themselves with suitable obstacles. A defensive line should consist of *centres of resistance* placed at intervals and connected together by lines of continuous trenches.

The chief features of the attack on an entrenched position such as just described involve the employment of as small a force as possible to mask a main *point d'appui* and the launching of a determined assault against the trenches on its right and left. Should the assault succeed and the *point d'appui* be isolated, operations in the nature of a miniature siege are next directed against the latter by a second line of attackers or by the reserves, whilst the first line attempts to continue its advance.

In order that the attack on either side of the *point d'appui* may succeed, it is evident that the defenders of the *point d'appui* must be prevented from developing a heavy flanking fire. It is one of the prime duties of the artillery, before the attack is launched, to destroy those

portions of the defence works from which such flanking fire can be brought to bear.

The defenders must naturally adopt measures to meet the enemy's attempt to destroy their flank defences. There are two ways of doing so, viz. : (i.) by organizing the flank defences in depth, or (ii.) by withdrawing the flank defences as far back as possible and masking them against artillery fire. In either case a judicious use of machine guns has been found invaluable in flank positions. Many of the accounts relating to the War tell of the effect produced on the enemy by hidden machine guns coming suddenly into action (*vide* article by Capt. Henri Carré in *Revue des Deux-Mondes* for 15th October, 1916).

On the offensive: the essential requirements as regards the attack consist in the preparation with great completeness of plans for its delivery; the organizing of the attacking troops in considerable depth; and the regulation with great minuteness of the movements of the troops and of the fire, particularly that of artillery.

Details in relation to the attack are given in the *Revue* article drawn from Lafargue's *Étude sur l'Attaque* and *Die Champagne-Herbstschlacht*.

For the attack Lafargue gives a front of 1,800 metres to a division (12 battalions).

In *Die Champagne-Herbstschlacht*, it is said, French divisions (12 battalions) attacked on a front of from 1,000 to 1,500 metres.

In summing up the author of the *Revue* article states that the requirements for the attack are as follows:—(a). In order to succeed every assault must be delivered by several *successive very dense lines*. Each *line* should consist of what have been termed *waves*; as the first *wave* of a line is expending its effort, a second *wave* following it should endeavour to complete or actually complete the task allotted to the first *wave*, other *waves* should follow each endeavouring to complete the task allotted to the *waves* which immediately preceded them, until the defence is completely broken down. (b). Although each *line* should consist of several *waves*, it should only be expected to deliver a single assault. It therefore becomes necessary to organize the attack so that a *series of lines* may follow one another, each *line* being allotted the task of carrying by assault one of the successive positions of the enemy's defence system in front of them. The *Revue* article contains a very brief summary of the plan of attack advocated by Capt. Lafargue; fuller descriptions of this plan have been published in the *R.E. Journal* for May and June, 1916, in the reviews of the *article* entitled "How can the German front be pierced?"

Regulation of the Movements of Troops and of Fire.

In an attack then the first thing to be done is to form up the *dense lines* required for the assault along some position sufficiently near the position of the front to be carried, whence the attack can be conveniently launched. The Swiss regulations deal with this matter and are as follows:—

"Thin lines, as little vulnerable as possible, should gradually filter forward, succeeding one another and taking up their positions in the

firing line; the troops and their leaders should make skilful use of the routes to the front affording cover; full use should be made of fire effect to annihilate the enemy and to assist in the advance to the position whence the assault is to be launched. In the case of open country and in front of a very strong position, movements should take place at night and the line of troops to deliver the assault should be pushed forward as near as possible to the position to be attacked before day-break, a parallel being constructed from which this line can spring forward to the assault. Communication trenches should be constructed to this parallel from the rear, so as to provide a covered way for the successive lines which are to follow the first line."

So far as the training of troops is concerned, says the author of the *Revue* article, the following points want to be well rubbed in:—

(a). The efficacy of fire, particularly that of artillery, is nowadays such that infantry cannot advance unless every means are adopted to facilitate its progress.

For this reason, troops must possess considerable skill in utilizing the features of the ground during an advance and must adopt formations which make for suppleness in movement. Such troops moreover must be powerfully supported by their own artillery right up to the moment of entering the enemy's trenches. This feature necessitates a close bond of union between the two arms.

(b). When the attacking infantry arrives in the zone swept by hostile rifle fire, it is incumbent on the attackers to keep down this fire as much as possible as they gain ground.

This can best be done by pushing forward machine guns, which should keep as near to the assaulting lines as possible.

The Assault.

As has been stated, the troops to deliver the attack advance from the *position of assault by waves*.

The first phase consists in the advance towards the obstacles to be surmounted. This should be carried out either at the ordinary rate of marching or at the double; the sections should strictly maintain their alignment.

The first *wave* having reached the line of obstacles should open fire. During this time the destruction of the obstacles should be completed by the attacking infantry. From this moment each man must act on his own initiative, and assess his individual value at the highest possible figure.

At this stage the time arrives for the second *wave* to move forward; it may have to pass through the enemy's artillery barrage. In consequence, it falls to the artillery of the attack to afford at this juncture the most efficient support possible to its own infantry.

The attacking infantry may find it necessary to use hand grenades to destroy the enemy's obstacles, should their own artillery not have succeeded in doing sufficient damage thereto. It is therefore necessary that as many men as possible should be trained as bombers.—(*To be continued*).

NOTES AND NEWS.

Belgium.—A special correspondent writes that the lessons of the present War will be of immense practical value to every army. Ironically, he adds: "But it is necessary that I should here render homage to the advantage the German Army have possessed in one point at least. I refer to the evident progress that its leaders and rank and file have made in the special tactics employed in the War on the civil unarmed population of the occupied territories." He states that, *à propos* of this matter, he recently read, in a Dutch paper, the following remark addressed to a Prussian General:—"Laurels are more cheaply earned at Brussels and at Alost than at Nieuport and at Ypres."

He next refers to the renovation and reorganization of the Belgian Army which has been in progress since the outbreak of hostilities. The task was one which presented considerable difficulties, but the Belgian General Staff handled these with much boldness, energy and goodwill. In consequence, complete success has attended its efforts. The following remarks of a British military critic, who saw the Belgian Army in October, 1914, on the transformation which has taken place are quoted:—"Can this be the army I saw in Antwerp! Can these be the same men, the same officers! What I saw there consisted of a poor, pitiable and miserable lot of men. Here I see real, well-set-up and healthy soldiers."

Among the important steps taken in the reorganization of the Army is the introduction of a certain measure of decentralization; this is due to the fact that in the course of the present trench warfare a marked tendency has shown itself for the battalion to become a veritable tactical unit. In this connection, it is stated that some reformers there are, who have been advocating that each battalion shall have permanently allotted to it its own artillery. The writer of the *Revue* article considers that the adoption of such a course would be a mischievous step to take. In the Belgian Army the brigade is now definitely recognized as the lowest formation which possesses autonomy. These brigades are to-day commanded by young generals, men who made their mark in the early days of the War as battalion commanders.

The selection of Lieut.-General Rucquoy as Chief of Staff (in succession to General Wielemans) has, it is said, been well received by Belgians of all classes and particularly so in the army.

It is pointed out that although the official communiqués might lead one to believe that a complete calm reigned on the Belgian front, yet this is far from being the case; the Germans, it is said, have been showing considerable activity at Steenstraat and Het'sas. The new levies that have been raised have enabled the Belgian Army to take over a part of the front near Ypres, until recently held by the British troops.

Portugal.—In a contribution from a special correspondent, it is stated that two events of great political and military importance for Portugal ushered in the New Year, viz.: the Budget for the year 1917—1918 presented to Congress and an official memorandum dealing with the motives that have inspired the Government to provide Portuguese troops for co-operation with the Allies.

The Budget furnishes striking proof of the dignity and love of independence of the Portuguese people. It consists of two parts, the Ordinary and the War Budget; the former part shows a surplus of £12,000, and the latter a deficit of 26 millions sterling. The Ordinary Budget is accompanied by a review of the financial situation as affected by the War and shows the revenue raised by Portugal and the economies effected in the public services.

The War Budget possesses considerable interest. In a minute attached thereto it is explained that on the declaration of war by Germany, at Great Britain's invitation, Portugal incurred great expenditure in order to prepare her military and naval forces for active participation in the Great Conflict. The measures adopted to meet this extraordinary expenditure are set out.

A brief review is also given of the military measures which have been taken by Portugal in relation to the War.

The contribution is, to a great extent, a *résumé* of the Portuguese news given in previous issues of the *Revue*.

At the recent Conferences which have taken place at London and at Paris between Portuguese Ministers and those of Great Britain and France it was definitely decided to employ Portuguese troops on the Western front.

INFORMATION.

Switzerland.—The death is announced of Lieut.-Colonel Albert Bonnard; he retired from the Swiss Army a few years ago owing to ill-health. Lieut.-Colonel Bonnard possessed a distinct personality and spent a great part of his life in fighting for truth and liberty.

This number of the *Revue* concludes with a Bibliography which contains notices of a number of books of military interest.

SUPPLEMENT.

A further instalment of Colonel Galiffe's work, *L'Occupation des Frontières par les Troupes Suisses en 1870—1871*, is issued with the March number of the *Revue*.

Chapter II. of the section, which deals with the events up to the end of August, 1870, is continued in this instalment. This chapter deals with the measures adopted in Switzerland during the period in question. The orders for the mobilization of the Swiss troops were issued on the evening of the 15th July, 1870, calling out the first levy, which consisted of five divisions. Details of the measures adopted on the issue of this order are contained in this chapter.

The Swiss "Army of Observation" consisted of 41 battalions and 4 demi-battalions of Infantry, 30 companies of Carbineers, 11 batteries of Field Artillery, 10 companies of Dragoons, 6 companies of Guides, 4 companies of Sappers, 5 Divisional Parks, amounting to 37,423 men and 3,541 horses.

In the early days of the War an invasion of Switzerland by a French Army was most feared by the Swiss authorities and the first dispositions of the Swiss Army were carried out to meet such a contingency.

From the earliest days of the War large numbers of deserters from both the French and German Armies made their way into Switzerland and provided a certain amount of occupation for the Swiss troops.

The commander of the Swiss Army, General Herzog, learnt on the 26th July, 1870, that the French 7th Corps was being concentrated at Belfort; in order to be prepared for any eventualities which might arise owing to this concentration General Herzog drew in the troops on his right nearer to Basle, where his left rested. By the 17th August, the main bodies of the belligerent forces had moved away to such a distance from the Swiss frontier that the Swiss Government felt justified in issuing orders for the demobilization of two of the divisions of the Swiss Army of Observation. By the following day, the dangers of an invasion had still further decreased and the Government, in consequence, issued orders for the demobilization of another complete division and parts of two others. On the 24th August, the demobilization of the detachments of the two divisions last referred to was carried out, but some Franc-tireurs having appeared in Alsace, the Federal Council called up four companies of Carbineers and formed them into a battalion to do duty at Basle.

The Swiss Government still felt that it might be necessary to call out the troops again later and ordered the Cantons to take in hand preparations to meet such a contingency.

The section of the work dealing with the period from the end of August to the end of the year 1870 (Period of Observation) is subdivided into two chapters. Chapter I. deals with "The Belligerents"; it gives the dispositions of the French and German troops in the vicinity of the Swiss frontier.

Chapter II. is entitled "In Switzerland," and deals with the measures adopted in that country to meet the developments taking place in the south-east theatre of operations.

The battalion of Carbineers at Basle had been considered sufficient to provide for the situation arising from the presence of Franc-tireurs on the Swiss frontier, but the approach of a German Flying Column under Von Keller appears to have created some alarm, and, in consequence, two companies of Infantry and one company of Guides were called up on the 19th September to reinforce the Carbineers at Basle, and a brigade was also put on a war footing so that further reinforcements might be available at short notice. The Germans having withdrawn from Mulhausen, on the 20th September, the Swiss troops called up on the previous day to reinforce the Carbineers at Basle were released from duty.

Further alarms and excursions took place in the early days of October. The march of a German force on Belfort caused orders to be issued for the occupation of Porrentruy by a Swiss brigade. The approach of General Cambriels's Army towards the Swiss frontier led the Federal Council to issue orders for the reinforcement of the Army of Observation on the 21st October. However, as the Army of the Vosges retired before the German XIV. Corps, the movements ordered were not carried out.

On the 2nd November the Carbineers on duty at Basle were released from duty. But on the day following, the movement of German troops between the Vosges and the Swiss frontier recommenced. By the 4th November all the villages opposite the Swiss north-west frontier were filled with Franc-tireurs, who were retreating in great disorder, with the intention of taking refuge in Switzerland. Swiss troops were, in consequence, immediately pushed forward to occupy Porrentruy and the adjacent country. On the 9th November a Uhlan patrol appeared on the frontier in this neighbourhood and was stopped just as it was about to enter Switzerland; by the 11th November a force of 3,000 Germans had collected at Delle.

The investment of Belfort and the retreat of the French towards Lomont had produced quietude in the frontier near Porrentruy, but this was of short duration. Fresh alarms were created in the neighbourhood of Basle by the movements of the German 4th Reserve Division on its way to join Von Werder. This situation was met, without mobilizing additional formations, by moving Swiss troops from Chaux-de-Fonds further north to Porrentruy; the new dispositions were completed by the 19th November.

A part of the section of the work dealing with the events of January and February, 1871 (Defensive Period), is also included in the instalment of the Supplement under review.

Chapter I. is devoted to the Belligerents; it contains a brief reference to the operations of the French "Army of the East" under Bourbaki and of the German "Army of the South" under Manteuffel. Chapter II. is entitled "The Occupation of Porrentruy." The Swiss Government had learnt, towards the end of December, 1870, that the French were making preparations for a great stroke in the East, but the information received was vague and contradictory. Colonel Aubert was therefore sent to Porrentruy on the 3rd January to investigate matters and report on the situation. He reported on the same evening that the troops in and about that town (viz. two battalions) were in his opinion insufficient. He pointed out that owing to the great sympathy which the Swiss of this region had for France the duty of guarding and protecting prisoners and of providing for the observance of strict neutrality was very delicate and onerous. In consequence, he recommended that a brigade should be quartered at Ajoie and that in addition one battalion should also be placed in Basle. On the 4th January, the Federal Council sanctioned the retention of two brigades at Porrentruy.

In the meantime the numbers of the French troops on the Swiss frontier began to increase; on the 5th January, there were 4,500 men with artillery at Tulay, Blamont and Pont-de-Roide. The Swiss Commander at Porrentruy made a request to his Government for further reinforcements. He asked for a brigade, but the Military Department only sanctioned an addition of a demi-battalion. Some changes in the dispositions of the Swiss troops on the frontier were, however, carried out on the 5th January and following days.

During January some of the engagements between the French and German troops in the region south of Belfort took place within view of the Swiss outposts, and the wounded were attended to at Porren-

truy, where an International Ambulance had been established under a Swiss Medical Officer.

Colonel Aubert in due course submitted a report to the Federal Council; this document is remarkable for the accuracy with which the writer foretold the course of events in the part of the Theatre of Operations adjacent to the Swiss frontier. He also insisted on the necessity of certain measures being adopted to meet the eventualities referred to. Colonel Aubert's recommendations were eventually approved and put into force.

Colonel Aubert was of opinion that there was less danger of Swiss neutrality being violated by French than by German troops; and he recommended measures accordingly.

Chapter III. is begun in this instalment; it is entitled "Occupation of the Western Frontier."

The editors of the *Revue* have issued in advance a part of the appendices consisting of a series of eight sketch-maps; on these are shown the positions at various dates of the Swiss, French and German troops in the zones adjacent to the Swiss north-western frontier.—(*To be continued*).

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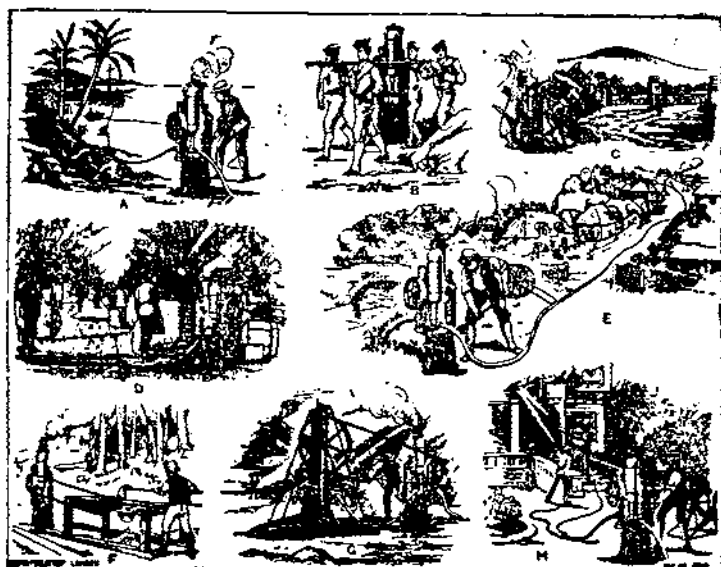
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