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S E C R E T .

MINUTES OF THE ONE HUNDRED AND THIRD
MEETING OF THE WAR COMMITTEE HELD
AT 10, DOWNING STREET, S.W.
ON FRIDAY, 28th. JULY, 1916, AT 11.30. a.m.

PRESENT.

The Prime Minister, (in the Chair)

<p>The Rt. Hon. The Earl Curzon of Kedleston, K.G., Lord Privy Seal.</p>	|	<p>The Rt. Hon. E.S. Montagu, M.P., Minister of Munitions.</p>
<p>The Rt. Hon. The Viscount Grey K.G., Secretary of State for Foreign Affairs.</p>	|	<p>The Rt. Hon. A. Bonar Law, M.P. Secretary of State for the Colonies.</p>
<p>The Rt. Hon. The Lord Hardinge of Penshurst, G.C.B., G.C.M.G. G.M.S.I., G.M.I.E., K.C.M.G., G.C.V.O., Foreign Office.</p>	|	<p>The Rt. Hon. D. Lloyd George, M.P. Secretary of State for War.</p>
<p>The Rt. Hon. A.J. Balfour, O.M., M.P., First Lord of the Admiralty.</p>	|	<p>* General Sir W.R. Robertson, K.C.B., K.C.V.O., D.S.O., Chief of the Imperial General Staff.</p>
<p>Admiral Sir H.B. Jackson, K.C.B., K.C.V.O., First Sea Lord of the Admiralty.</p>	|	<p>* The Most Hon. The Marquess of Crewe, K.G., Lord President of the Council.</p>
	|	<p>* The Rt. Hon. The Earl of Crawford and Balcarres, President of the Board of Agriculture & Fisheries.</p>

Lt. Col. Sir M.P.A. Hankey, K.C.B.,
Secretary, Committee of Imperial Defence.

Lt. Col. W. Dally Jones, Assistant
Secretary, Committee of Imperial Defence.

* Attended in connection with the subjects with which
they were respectively concerned.

S E C R E T.

WAR COMMITTEE.

AGENDA.

Meeting to be held at 10 Downing Street, on FRIDAY,
28th JULY, at 11.30 A.M.

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1. STATEMENTS ON THE POLITICAL, NAVAL, MILITARY AND
MUNITIONS SITUATIONS AS REQUIRED.

2. THE ALLOCATION OF HEAVY ARTILLERY TO RUSSIA.
(Memorandum by the Minister of Munitions -
already circulated.)

3. THE EMPLOYMENT OF THE 97th. AMERICAN BATTALION OF
CANADA.
(Raised at the request of the Secretary
of State for the Colonies).

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2, Whitehall Gardens, S.W.

July 27th., 1916.

THE MILITARY SITUATION

Prime Minister called on Sir W. Robertson.

Sir W. Robertson reported as follows: —

East Africa: — there was nothing new. He had not heard very regularly, but had asked General Smuts to wire every day. The latter had asked Belgium to let him have their 10,000 native troops, when their operations were concluded.

Egypt: — Some 8000 to 10,000 Turks were concentrated at Katia. We had 30,000 to 40,000 troops and there was nothing to be anxious about.

Prime Minister said that General Sir G. Murray did not seem to think very highly of these troops.

Sir W. Robertson observed that they were the same material as those in France, and Sir G. Murray had had them for six months. Possibly they were affected by climatic conditions.

Prime Minister presumed that they were not all in Cairo.

Sir W. Robertson said they were quartered in different parts of the country, and produced a map showing their stations.

Mr. Balfour asked if there was any chance of our being able to give the Turks a drubbing.

Sir W. Robertson hoped so in about a fortnight's time. Our difficulty was the water supply. Our men could not drink the local water, whereas the Turks were accustomed to drink this brackish water.

Caucasus: — the Turks had been pushing on towards Prowanduz, with not much object because it would not lead them anywhere. The Turks had 200,000 men and the Russians 300,000.

Transcaucasia: — there was nothing to report.

Mr. Balfour asked if there was any information about Erzerum.

Sir W. Robertson said they had not heard yet. Erzerum was a big place and presumably would contain a large amount

of munitions and stores which the Turks would not be able to take away. At present they only knew of the capture of a store at Sipikoi which was outside Erzingan. The next move of the Turks would be to Kharput. Erzingan was important as a road centre. He thought that there were about 20,000 Turks in Europe. The reported move of Turks through Sofia was probably only a German idea to threaten the Austrians. Four trains only had been reported, and would not carry very much.

Eastern Front: - There was nothing beyond what had appeared in the papers. The Russians had 139 divisions and 32 Cavalry divisions, and the Germans and Austrians had 94 divisions and 21 Cavalry divisions. The Russians had been bringing troops down from the north, and they might soon expect more work on the Pruski salient, with Lemberg as the objective.

Prime Minister observed that it looked as if they proposed to sweep round with their left now on the Carpathians.

Sir W. Robertson. Western Front: - The Germans had brought ~~down~~ⁱⁿ another division against us. They now had 20 divisions additional to the original 8 divisions. France and ourselves each had 23 divisions, but not all were being used because the front was not broad enough. The Germans had moved some heavy guns from Verdun, but had only moved 1 division from there, and 9 from further north. Our information was that the 1917 class were in the ranks, and that the depots having been emptied were being filled by the 1918 class. They were now getting the Landwehr in the front line.

Mr. Balfour supposed that the German line must be very thin in parts, and asked if anything could be done at these points.

Sir W. Robertson was afraid not. We could not do anything unless

we broke their line on a big front and kept the movement going. He quoted the example of Fouquier where the Australians had got forward, and had had to come back. The ammunition supply had been going very well; except the 18 p. and 60 p. ammunition the income had been greater than the expenditure.

Lord Grey asked if the 18 p. ammunition which had been exploded at Audmick had been taken into their account.

Sir W. Robertson considered that it had.

Salonica: — He explained that he had attended the conference on the Military Convention ^{in Paris} but considered that his time had been wasted. The French had said that Roumania was going to do all sorts of things which they had not done, and now the Roumanians repudiated everything to which they were supposed to have agreed. At the beginning of the Conference Colonel Prudeaux said he had no authority to sign a Convention but only to discuss the general terms. He (Sir W. R.) had had out the question of shipping, and as regards the French, they now only wanted 2 ships. They had prepared a Convention to the effect that the Allies would do what they could on the frontier while Roumania was mobilising on the understanding that Roumania was to send her 15,000 men against Bulgaria on her Southern frontier. They had given Roumania everything she asked, in order to get them in, and now they said that they would not declare war against Bulgaria. The arrangements for action from Salonica therefore no longer held. Germany was now taking all the corn she could get from Roumania. If Roumania did not come in now she had better stay away altogether. In that case we should be just as we were at present. There would be no object in our taking the offensive against Bulgaria, as Bulgaria was stronger than us, unless she showed

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a disposition to attack Roumania. The Military Convention did not work on the basis of the telegram received that morning. (App. 103)

Prime Minister remarked that the basis of Sir W. Robertson's agreement had gone. He proposed to discuss the telegram.

Lord Curzon asked if it had been clearly laid down that Roumania should attack Bulgaria from the north.

Sir W. Robertson replied that it was in the convention. The Salonica force and the Roumanian force were to work together.

Lord Grey said that there were two points which he wished to raise. The first was the line about Mr. Bontario's intention to declare war against Austria-Hungary only. The question was whether we were to insist that, or must we insist that war was declared on Bulgaria.

Lord Curzon pointed out that the Roumanian argument was that war on Bulgaria would come of itself.

Mr. Balfour thought we should say that no action would be taken by us on the frontier, but that if Roumania acted against Bulgaria, then we would come in.

Mr. Lloyd George stressed that we had only undertaken to hold Bulgaria on the frontier, not to break the line. We had not promised a great offensive.

Sir W. Robertson did not quite agree. He quoted from the Military Convention the words "the effective junction of forces at the earliest possible moment."

Lord Grey had the feeling that it would be better to waive the point for the moment, but that we should say to Mr. Bontario that we agreed to his proposal provided that all ^{Roumanian} ~~Roumanian~~ frontiers were closed except the Russian. They must understand however that we cannot take action from Salonica unless they are at war with Bulgaria.

Mr. Lloyd George referred to the adoption of an 'active defensive' during

the Roumanian mobilization.

Prime Minister said that we had no knowledge of the value of the Roumanians for fighting purposes. The first essential was that they should close their frontiers, so as to prevent supplies going through to the other side.

Lord Grey next referred to Article 5 of the telegram that was given in the telegram. He said that we could not undertake to carry on war until Roumania had got the things she wanted. Nor could we give Roumania better terms than the powers had themselves. Regarding the second paragraph of the Article, he thought we might go so far as to say that the four powers would not make peace with Austro-Hungary except with the consent of Roumania. The case was different from that of Portugal because Roumania had stipulated what she must have, and Portugal had not made any stipulation. Roumania came in on a promise, and was afraid that we might conclude peace without giving her what she stipulated. After her experiences she thought she might have a guarantee of getting what she wanted.

Mr. Lloyd George said that Roumania was suspicious of Prussia. When the time came, Italy would get something, Prussia would get something, France would get something, and Roumania was afraid she would get 'left', and wanted a guarantee.

Lord Grey suggested putting it this way "If the other Powers get their desiderata, Roumania shall get hers."

Lord Grey commented on the enormous demands she was making.
(after some general conversation)

Lord Grey said that if we agreed to Article 5, we should find ourselves obliged to go on fighting in order to give Roumania the desired territories.

Mr. Balfour said that Roumania was asking for territories that she was not entitled to, and asked why they should favour her particular

Lord Crewe emphasized the danger of our being obliged to go on.
Mr. Lloyd George suggested that Roumanian desiderata might be met proportionally.

Lord Crewe said that Roumania was making her claims as a great power. It would seem hard on Serbia, if Roumania was put in on the same terms as Russia.

Mr. Balfour pointed out that the state of affairs was different, because Roumania need not come in, and Russia could not go on without us.

Mr. Lloyd George dwelt on the desirability of bringing Roumania in, because she had 60,000 men, and that was worth something.

Mr. Bonar Law supported the formula suggested by Lord Grey, that Roumania should have her desiderata provided the others had theirs.

Lord Grey pointed out that there were only three powers of which one could say to the other two, that they must stop.

Prime Minister was in favour of leaving the Article as it was. Roumania could not enforce her requirements.

Lord Grey did not like that.

Mr. Lloyd George remarked that Russia might 'sell' Roumania. She had done it before, and would not hesitate for a moment.

Prime Minister asked if anything had been done as to our desiderata.

Lord Grey replied that they had been formulated as regards Asia Minor, but that was dependent on the Arab rising.

Lord Curzon had a proposed formula which added the following to the first paragraph of the Article (5) "provided always that the territorial demands of the four governments have been realized."

Lord Crewe thought that Serbia would be a danger in this case.

Prime Minister said let them wait until they were asked what their territorial demands were.

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(A general conversation took place on the terms of peace.)
Lord Grey said that no official publication was possible as to the terms of peace.

Mr. Montagu asked if it would not be dangerous to adopt the formula proposed by Lord Curzon, in that Roumania might insist on knowing what the territorial demands were.

Lord Grey suggested an amendment "provided always that the territorial demands of the four powers were also satisfied." He would not say what ~~the~~^{our} demands were; they had not been formulated. It was understood that Alsace and Lorraine would be demanded by France, but their demand had not been formulated.

Mr. Bonar Law asked if it would not be possible to make the formula conditional on the desiderata of others being met.

Mr. Balfour approved of the proposed formula as far as it went, but thought they should go further, "provided that in the event of the demands of the four powers not being fully satisfied, Roumanian demands should be abated proportionally."

Lord Curzon hoped that they would not do that. Who would define what the proportion was? Roumania was making a heavy demand, and it was impossible to define a proportion.

Lord Grey proposed that they should leave it to Roumania to raise the question.

Mr. McKenna supported Mr. Balfour's views.

Mr. Balfour was not sure that Lord Grey was not right, and that it was not right to let Roumania raise the question.

Mr. McKenna was afraid that Roumania would object to Lord Grey's words. In adopting the suggestion of proportion they would forestall an objection.

Lord Curzon asked what was meant by "demands", was it

territorial, or money, and what would be the proportion.

Mr. Balfour said that that would mean an eternal wrangle.

Lord Curzon replied that that was exactly what he was trying to avoid.

Mr. Bonar Law deprecated Mr. Balfour's proposal. We wanted Roumania to come in. To get her in, we must let her think that we were winning. He did not like raising the question of proportion.

Lord Curzon suggested saying "similarly satisfied"; would that not meet the case.

Prime Minister asked Lord Curzon if he was sure he was on safe ground. What was a territorial demand?

Lord Grey replied that the four governments would have territorial demands, but ours would be very conditional; we had not formulated our demands.

Lord Howe asked how about East Africa and South West Africa.

Mr. Balfour asked how about Heligoland.

Prime Minister proposed the use of the word "desiderata".

Lord Grey amended the formula "provided the desiderata of the four governments are similarly satisfied".

Lord Howe said that supposing that it was proposed to give this or that to the other powers, and an indemnity was refused, we should be standing alone.

Lord Grey suggested the use of the word "claims".

Prime Minister approved of "claims".

Lord Grey pronounced that he did not like Article 8 at all.

Mr. Balfour asked what were the rights referred to. They were only the rights to send a representative to the conference.

Lord Grey explained that the Article meant that we should not be able to talk about indemnities without consulting Roumania.

Mr. Lloyd George thought that Roumania had certain rights. He recalled the position of Sardis in the Crimea, which

had equality of rights with the other powers. He reminded them that Roumania would be making a big subscription in 50,000 men.

Mr. McKenna demurred to Roumania having equal rights in conferences. He had attended conferences on money questions, and fortunately Italy had voted with him, but Prussia and France were against him.

Mr. Lloyd George assented, but said that Mr. McKenna's answer was final. Prime Minister read Article 8, and thought there would be no harm in accepting "war indemnities".

Lord Grey objected that Roumania was to have all this when she was only at war with Austro-Hungary. He would have thought that Prussia was most likely to object, and was inclined to leave it to them.

Mr. Lord Curzon suggested referring it to Prussia and saying "We are doubtful about Article 8, and would like your views".

Mr. Balfour thought they must cut out "indemnities" because of Belgium. Roumania had less rights than Belgium in that respect.

Prime Minister remarked that Serbia would get territory and Belgium none.

Lord Grey said he was going to send telegrams to Paris and Petrograd expressing our views.

Lord Grey then read the formula given to him by Sir G. Robertson with reference to the Military Convention:-
"Unless and until Roumania is at war with Bulgaria the basis of the military convention of Paris disappears, and the military action of the Serbian forces will not, and need not be more than that of barring and containing the Bulgarian forces on the Greek frontier."
He would telegraph this to Paris.

Mr. Bonar Law thought that it would be a great mistake if they wanted Roumania to come in.
(a general discussion took place)

Mr. Lloyd George advocated the sending of the telegram to Paris to make the situation clear with General Sarrail, but it should not be sent to Roumania.

JELLITE.

Mr. Montagu informed the Committee that he had been asked to supply a considerable quantity of jellite shells, and asked approval.

Lord Grey asked if the phosphoric acid shells had proved effective.

Sir G. Robertson replied that they had been very effective. Sir D Haig had been already authorised to use jellite.

Mr. Montagu handed a paper to the Secretary, giving the results of the bombardment, for circulation to the Committee.

ESTIMATE FOR MUNITIONS.

Mr. Montagu had one other point to bring before the Committee. The Ministry of Munitions had been charged by the Chancellor of the Exchequer with exceeding their estimates. He pointed out that their estimates must be framed on the War Office demands. He proceeded to read the figures of expenditure which gave 106,000,000 sterling for the first three quarters of the year.

Mr. Lloyd George was very surprised when he heard this statement as to exceeding estimates.

Mr. McKenna said the Cabinet would remember better than ^{the} War Committee what the estimates were. The totals gave an average of well over 2,000,000 a day. He went carefully through the figures, and put it to the Cabinet that the expenditures should not exceed that figure. He was then calculating on 350,000,000 for Munitions. He saw the man directly concerned in framing the estimates, Mr. Leve, and arranged it with him.

Mr. Montagu replied that Mr. Leve's account was that he

produced figures which gave 400,000,000 for munitions. The Chancellor of the Exchequer said that this amount should not exceed 350,000,000. Mr. Lever said he would try, but did not think he would be able to keep down to that figure.

Mr. McKenna said he had circulated the figure to the Cabinet.

Mr. Lloyd George did not wish so long as they were not made public, because they conveyed a reflection on the Ministry of Munitions.

Mr. McKenna said that they must come out some time.

Prime Minister said that then it could be explained that the situation had changed.

EXPLOSION OF AMMUNITION

Mr. Montagu informed the Committee that he had received the report of the Officers who had been sent to investigate the explosion at Audriest. It appeared that the precautions recommended to the War Office had not been well worked upon. One recommendation had been that cartridges should not be stored in the same building as the shells. France had said it was impossible to act on this, and it had not been carried out. Yet the configuration showed how the spread of fire was facilitated. There were other things not carried, recommendations as to roof-cover, spaces, traverses and sand bag walls. This was due to the reluctance of France to give the space. Where any of these precautions had been taken there was little ill result from the fire. He understood that it was the intention to rebuild this store on a larger scale. The German airmen knew the locality of the store, and what damage they had done, and could go there again. Therefore he called the attention of the Committee to this matter. He would give the report to the War Office.

Mr. Lloyd George agreed, and said he would send a man over to France

to look into the matter, at the same time that he enquired into the question of ammunition transport which required investigation.

Prime Minister reminded the Committee that Worship was a source of anxiety in this country.

Mr. Lloyd George agreed, and similarly there were sources of anxiety over the water. He had a man looking into the question at home, and he could go over to France.

OUTPUT OF MUNITIONS

Mr. Montagu called attention to the figures of output, which were interesting from the fact of disclosing the enormous increase in the output from May 1915 to July 22nd. The grand total ^{year} weekly average of 121,543 of all sizes. The output for the corresponding period this year was 1 1/4 millions of shells, fused and complete, which ten times as much as the year before.

Prime Minister asked if this ammunition had been issued to the War Office.

Mr. Lloyd George replied that it had been. This increase showed the importance of transport to deal with it, and the point was that the system of transport to the front was faulty.

Mr. Balfour stressed that he was going to have a Committee on boat transport that afternoon, and suggested the attendance of Lord Derby.

Lord Curzon remarked that that arose out of Mr. Pender's report. Mr. Pender would be at the Committee.

Mr. Lloyd George said there was the further question of sending up the ammunition from the port after it had been landed.

Mr. Montagu then proceeded to give the figures of stocks, which showed a stock on 25th June of 8,229,000 shells and 4,255,000 on the lines of communication. On July 29th, after the heavy fighting the stock was reduced to 5,652,100, and on the 1st c. 1,812,507, that was

To say that there was still a stock of 7,000,000.
Prime Minister observed that the diminution in one month was large: viz. — from 12½ millions to 7½ millions. He presumed it was due to the expenditures on the recent advance.

Mr. McKenna calculated the expenditures as over 40% of the stock in one month.

Mr. Lloyd George said that the French said we had wasted ammunition in past operations, but it must be remembered that then we had been operating on a front of 16 miles by 2, whereas now we were concentrating on a front of 4 miles.

Mr. Montagu handed a return of figures to the Secretary for Communication to the Committee.

Prime Minister approved of this return being sent round in a Cabinet box, but it was not to be printed.

HEAVY ARTILLERY FOR RUSSIA.

Mr. Montagu referring to the memorandum issued to the Committee (App. ¹⁰³) said that the position had altered in one respect. With regard to the output of 6" Howitzer ammunition, in September the estimate had been for 70,000 rounds a week, but that must be revised now, and the estimate, which was conservative, was for 90,000 rounds a week. Since this estimate was formed, by a curious coincidence, the War Office requirements had been revised, and were exactly coincided with the output: viz. 90,000 rounds. The question was whether they wanted to send all this ammunition and guns ^{required} to France before sending to Russia, or would they postpone the completion of requirements in France, and send some to Russia.

Mr. Lloyd George replied that Sir D. Haig protested strongly against taking anything that was expected in France. The German had now brought round many heavy guns to the scene of the present fighting, and now had as many guns there

as we had. If they stopped their offensive against Verdun, they would send round more from there. If, then, we were to give up some of our requirements to Russia, it would be very dangerous for us. Although Russia had been supplied with 4.5" howitzers, he understood that they had never used them, whereas Sir D. Haig used them very much, and was clamouring for more. He used them for the purpose of barrage. Our people were using them, and the Russians were not using them. He suggested that before sending any more 4.5" howitzers they should ascertain whether Russia was now using them, or was going to use them. The only report from Russia on the 4.5" that he had seen, said that they objected to them as being too light. On the other hand our own people were using them freely. Now as regarded Salonica, if there was to be an attack there, and we sent out 40 to 50 guns, they would want there all the ammunition they could get.

Sir W. Robertson said that if Russia really wanted 4.5", we could let her have them.

Prime Minister enquired what Russia was asking for.

Mr. Lloyd George replied that she wanted 6" guns.

Mr. McKenna asked about Mr. Belariff's fear of the Germans making a push against Russia in the autumn, and Russia not being able to stand against it.

Mr. Lloyd George declared that Sir D. Haig said that the suggestion was rubbish. If the Germans had intended pushing the Russians back, they would have begun operations by now. There could be no fighting on the eastern front after October. Russia had plenty of 18", and only wanted heavy guns. The Russian output of shells was only 20,000 a month.

Sir E. Grey remarked that Germany could not go for Russia while she was held on the west. He asked where Russia

expected to get all she wanted from.

Mr. Lloyd George said that we had promised something early in the year, and this would be carried out unless France wanted it. The French had been advised to go in for the new high velocity but would not do it then. They were only beginning their new programme now.

Mr. Montagu stated that the French had no proper repairing arrangements for their guns.

Mr. McKenna stated that Mr. Bark had put forward a promise of a supply this year.

Mr. Lloyd George said that what we told them was that up to December we should want every gun we could get, but that after April we could let them have 300 big guns. He considered this a very big offer.

RANGE
LONG GUNS.

Mr. Lloyd George wanted to raise the question of long range guns. Long range 6" guns were wanted at the front; the Ministry of Munitions were manufacturing a new type, and it would take some time to get them. He thought they might get some from the Coast Defences, or perhaps the Army might spare some.

Mr. Balfour asked the First Sea Lord what he said to this.

Sir H. Jackson said "No".

Mr. Lloyd George suggested that the Admiralty should have a representative at a conference on the subject which was about to be held.

Prime Minister concurred.

SOLDIERS FOR AGRICULTURAL WORK.

Prime Minister referred to a paper then circulated to the Committee by the President of the Board of Agriculture and Fisheries.

Mr. Lloyd George thought the Adjutant General would like to make some remarks on the paper before they discussed it.

Sir M. Hankey suggested that Lord Crawford might like to make some explanation of the paper then.

Lord Crawford said he might perhaps summarise the question. The proposal generally was, instead of making the farmer apply for and bring in the men, to take the men in bulk to the farmer. The harvest outlook on the whole was bad, but in great areas it was distinctly on the upgrace. The question was how far this means of securing the crop would justify the employment of soldiers as proposed.

Prime Minister thought the question should be deferred until the next meeting, to give time for examination, when Lord Crawford might attend.

Mr. Balfour asked about the employment of prisoners.

Lord Crawford explained the difficulty of retaining them. They could get away so easily, it was different in foreign countries.

Prime Minister asked about the employment of women.

Lord Crawford said they had tried this, but without success.

Mr. Balfour alluded to the dislike to their employment by the farmers, who also would not have aliens.

AMERICAN BATTALION

Mr. Brownlow asked that the question might be deferred. He had received a message from Sir S. Hughes saying that he would be here on Sunday morning. He thought they could not settle the question until Sir S. Hughes came.

Mr. Lloyd George hoped that they would not stop the employment of the battalion because they were American.

Mr. Brownlow explained that Sir S. Hughes' answer before was hasty, and that if the battalion did not come, he would give trouble. The Foreign Office was frightened to employ them. He asked why they need be called the "American" battalion. He queried the benefit of running the risk, at the time of the American elections, of giving offence to the United States for the sake of getting 3000 or 4000 men.

DARDANELLES AND MESOPOTAMIA COMMISSIONS.

Prime Minister referring to the Commissions which had been formed, said that he had agreed to put naval and military representatives on them. He was going to put men who were on the retired list on them, the object being not to have men who had been personally engaged in the war. For the Navy he suggested the names of Sir W. Lacey, and Sir Lyrriam Brille.

Mr. Balfour suggested Sir R. Knox would be a good man.

Sir H. Jackson said that better the men named by the Prime Minister had not touch. He thought Sir R. Knox would be a good man for the Dardanelles.

Mr. McKenna suggested that he had had a van with Lord Fisher.

Sir W. Hankey said he had been Lord Rosebery's Chief of the Staff.

Prime Minister considered that that would be quite sufficient.

As to the Generals: they all agreed that Sir H. Lytton would be a good man for Mesopotamia. Now, whom should they take for the Dardanelles? He suggested Lord Bichston.

Sir W. Robertson said he was a very clever man, but he was not a practical soldier. He suggested Sir H. Smith-Dorrien.

Prime Minister said he would rather have a man who had not been employed at all.

Sir W. Robertson enquired what was the objection.

Prime Minister said all sorts of objections might arise in the form of comparisons between the eastern and western operations.

Sir W. Robertson urged that Sir H. Smith-Dorrien had had great Indian experience, and would be a good man for Mesopotamia.

Mr. Bouverie observed that Sir E. Carson said that Sir H. Lytton had been of no value in Ireland.

Prime Minister suggested Sir A. Hunter.

Sir W. Robertson said Sir A. Hunter would do. But he was now in command at Aldershot, and could not run about.

Prime Minister said that supposing for any reason it was found necessary to remove Sir J. Maxwell, was there any command for him over here.

Sir W. Robertson said there was no command vacant.

Mr. Balfour thought that they should have someone to take care of Lord Kitchener's case, on the Dardanelles Commission.

Prime Minister agreed, he felt strongly that they must protect his interests.

Sir W. Robertson said there was nobody else suitable besides Sir H. Smith Formica and Lord Nicholson.

S E C R E T.

WAR COMMITTEE.

DRAFT CONCLUSIONS of a Meeting held at 10 Downing Street, on Friday, July 28, 1916, at 11.30 a.m.

ROUMANIA. (1) The Chief of the Imperial General Staff informed the War Committee that in accordance with the Conclusion reached on July 20th (W.C.56, Conclusion 1) he had attended a Conference of Allied Military representatives in Paris. At the outset of the Conference Colonel Rudeano, the Roumanian representative, had stated that he had no powers to conclude a Convention, but only to discuss the matter with the Allies. The Conference had then proceeded to prepare a draft Convention providing inter alia for offensive operations from Salonica based on the understanding that operations would also be undertaken by a Russo-Roumanian Army to the southward. According to the telegram from the British Minister at Bucharest, No. 607, dated July 26, however, Roumania was now only willing to declare war on Austro-Hungary, consequently the whole basis of the Paris draft Convention has disappeared. The War Committee agreed that the Secretary of State for Foreign Affairs should send a telegram to Paris in the following sense:-

"Unless and until Roumania is at War with Bulgaria the basis of the draft military Convention of Paris disappears, and the military action of the Salonica forces will not and need not be more than that of observing and containing the Bulgarian forces on the Greek frontier."

(2) The War Committee then proceeded to discuss in detail the text of the Roumanian draft Convention in regard to the entry into the war of Roumania forwarded by the British Minister at Bucharest in his telegram 607, dated July 26, (Appendix).

The Committee agreed that the Secretary of State

for Foreign Affairs should forward to the French and Russian Governments the following observations:-

(a) Article 2. The views of the British Government are that the Allies should agree to the Roumanian proposal to make war on Austria only, provided that all frontiers ~~in~~ of Roumania, except the Russian, shall be closed, and that all commercial operations with all the enemies of the Allies shall cease on the declaration of war against Austria-Hungary. ~~but the Roumanian Government must understand that, until there is war between Roumania and Bulgaria, we shall not take the offensive from Salonica except on a scale sufficient to hold the Bulgarians.~~

(b) Article 5. The British Government propose that this Article should commence as follows:-

"The four Governments engage themselves not to conclude separate peace, or the general peace, without the Austro-Hungarian territories defined in Article 4 being annexed to Roumanian Crown, provided that the claims of the four Governments are similarly satisfied".
(Continues as in original text).

(c) Article 8: The British Government feel some doubt about this Article, particularly in regard to Roumania's claim to enjoy the same rights as the four Powers as to war indemnities. They consider that Roumania's claims to indemnities bear no comparison to those of Belgium. The British Government would be glad to receive the views of the other Governments on this Article.

JELLITE.

³
(X) The War Committee authorise the dispatch to France of shells filled with jellite.

THE EXPLOSION
AT AUDRUICK.

⁴
(X) The Minister of Munitions stated that he had received a report of officers of the Ministry sent to investigate the explosion at Audruick. The most important feature of their report was that ~~the precautions recommended by the Ministry of Munitions on investigation of a somewhat similar explosion at Rouen had not been adopted.~~ *(it appeared not to have been possible to adopt)* In ~~the sheds~~ ^{the sheds} where these precautions had been applied the damage had been much reduced. As it was the intention to re-build the store on a larger scale, and the situation

as well as the damage done by their aircraft must be well known to the enemy, the Minister of Munitions felt bound to call the attention of the War Committee to the question.

It was decided that, in the first instance, the report should be examined in the War Office, who were inquiring into the whole question of the transport of ammunition to, and its storage in, France.

THE ALLOCATION ⁵ (X) OF HEAVY ARTILLERY TO RUSSIA. The War Committee had under consideration a memorandum by the Minister of Munitions, dated July 17th, proposing a scheme of allotment of certain heavy guns and howitzers with appropriate ammunition to Russia. The Minister of Munitions reported that since he had written the memorandum the War Office had forwarded to the Ministry a revised estimate of our own needs which would absorb the whole of his surplus output of 6" ammunition, *in September.*

The Secretary of State for War considered that it would be very risky to send more of our own heavier natures of ordnance of 6" and upwards than had already been promised to Russia, having regard to our own urgent requirements. The Chief of the Imperial General Staff concurred in this view, but stated that we might be able to spare some 4.5" howitzers of which 300 had already been sent to Russia.

As there is some doubt as to whether the Russian Military Authorities have utilised the 4.5" howitzers, and whether they appreciate the value of this weapon which is much used by the British Army in France, the War Committee decided that the War Office should, in the first instance, make inquiries on this point.

LONG-RANGE GUNS.

⁶
(N) The Secretary of State for War adverted to the need which is felt both by the British and French Armies in France for more long-range guns of 6" calibre. He said that one proposal was to withdraw 6" guns from the coast defences, and that it had also been suggested that some guns might perhaps be spared by the Navy. The First Sea Lord stated that so far as he was aware the Navy had no guns of this type to spare. He undertook, however, that the Admiralty should be represented at a Conference to be held at the War Office to consider this question.

THE RELEASE OF SOLDIERS FOR AGRICULTURAL WORK.

⁷
(N) The President of the Board of Agriculture & Fisheries laid before the War Committee a Memorandum containing certain proposals for facilitating the supply of military labour for the purpose of reaping the harvest, since the arrangements hitherto adopted have not ^{proved adequate} ~~been adequate~~ ~~efficiently~~. The question was adjourned in order to give the War Office time to study it in detail.

.....

A.A.A.

2 Whitehall Gardens, S.W.,
July 29, 1916.

SECRET.

APPENDIX.

N^o 607
Extract from telegram from Sir G. Barclay, dated July 26, 1916.

"Article 1. Governments of Great Britain, France, Italy, and Russia guarantee territorial integrity of Kingdom of Roumania in the whole extent of its present frontiers.

"Art. 2. Roumania engages herself to declare war and to attack Austria-Hungary with all her forces and in conditions stipulated and defined in Military Convention annexed.

"Art. 3. The four Governments recognise Roumania's right to annex Austro-Hungarian territories stipulated and defined in article 4.

"Art. 4. (I need not trouble you with this article, which should, I think, satisfy Russia.)

"Art. 5. Four Governments engage themselves not to conclude separate peace or the general peace without the Austro-Hungarian territories defined in article 4 being annexed to Roumanian Crown.

"On her side Roumania engages herself not to conclude separate peace with Austria-Hungary except simultaneously with and conjointly with the four Powers.

"Art. 6. Roumania engages herself not to erect fortifications opposite Belgrade in a zone to be determined later, and not to maintain within that zone any but forces necessary for police service.

"Art. 7. Roumania engages herself to compensate the Serbians of the Banat who, abandoning their properties, should desire to emigrate within two years from the conclusion of peace.

"Art. 8. Roumania, 'au même titre que' by Great Britain, France, Italy, and Russia, shall enjoy same rights for all that relates to pourparlers, armistice, preliminaries of peace negotiations, conference, protocols, and war indemnities.

"Art. 9. Contracting parties engage to keep the present convention secret until the conclusion of the general peace."

Col. Jones. 105

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SECRET.MEMORANDUM ON THE ALLOCATION OF HEAVY ARTILLERY
TO RUSSIA.

At the adjourned Conference on Munitions held at the War Office on Saturday, the 15th July, a moving appeal was made by General Belaieff on behalf of the Russian Government for immediate assistance in heavy artillery. The case for this appeal rests on three propositions:—

1. While it is admitted that, in view of the conditions on the Eastern Front, an enormous establishment of heavy artillery is not so essential as on the Western Front for the purpose of destroying the enemy's trenches, they are required for putting out of action whatever heavy artillery the enemy may bring into the field against the Russian Army. The present equipment is quite inadequate for this purpose.

From a statement recently prepared by the Master-General of the Ordnance, I gather that if the standard of equipment of the British Army on the old scale (*i.e.*, ignoring the new scale asked for by General Headquarters) is taken as a basis, the Russians will be able to equip their 160 divisions in the following proportions by the end of November:—

Field Howitzers.—About 51 per cent. of British standard.
Medium Guns and Howitzers.—34 per cent. of British standard.
Heavy Guns and Howitzers.—7 per cent. of British standard.

This standard will be completed for the 72 divisions of the British Army, with allowance for reserves, before the end of the year. The new programme now put forward by General Headquarters represents an increase of 100 per cent. in the case of medium guns and howitzers and of 50 per cent. in the heavy artillery on the standard here referred to.

2. The output of Russian factories, though increasing, is quite unable to make good the deficiency.

The latest figures of output of field howitzers and medium and heavy guns and howitzers compare with those of France and Great Britain as follows:—

	Under 5-inch calibre.	5-inch or over.
Russia (May)	56 home 12 foreign	11 home 12 foreign
France (May)	16	52
United Kingdom	154	228

3. The lack both of field howitzers and of heavy artillery has not only brought the present Russian offensive to a standstill, before Kovel, as soon as it encountered strongly fortified German positions, but it means that the Russian army will not be in a position to resist a German offensive, supported with heavy artillery, in the autumn. It is urged that such an offensive is almost certain, if the Germans succeed in arresting the present Allied movement on the Western front, for the Central Powers will certainly strike where they are likely to obtain the greatest military results, *i.e.*, against that member of the Alliance which is relatively the weakest in proportion to the length of front defended. Moreover, apart from military results, a success on the Russian front would have far-reaching political effects. If such an attack is made in November or December, it will then be too late for either France or Great Britain to render any

[855]

B

assistance in the essential matter of heavy artillery. Any aid that is to be effective must be rendered *now*. "If the Russians have not means of resistance against German aggression will not the French and British programme be fulfilled too late?"

General Belaieff, therefore, asked that Russia might be given before the end of the year 600 additional 4.5-inch howitzers, 100-6-inch howitzers, 100-8-inch howitzers, and as many howitzers of larger calibre as possible.

In reply to General Belaieff's appeal, the Secretary of State for War stated that the minimum requirements of the British army would not be met until the beginning of 1917, and the full programme which General Headquarters had now decided to be necessary would not be fulfilled until some months later. The Army Council were, however, prepared to give some assistance to the Allies before the new programme was completed, and to allocate to them some 200 medium and heavy howitzers of various calibres during February, March, and April 1917. The Secretary of State would not definitely promise these howitzers to any of the Allies at present, but proposed that they should be allocated at a conference of the Allied Commanders-in-Chief when the time comes to consider the campaign of 1917.

As a contribution towards immediate needs, it was stated that we could spare some 30-5-inch howitzers and a number of additional 4.5-inch howitzers. I understand that since the conference the Army Council have been considering the proposal to give in addition 24 of the 4.7-inch guns which are being withdrawn from France.

These proposals do not, however, seem to me adequate to meet the need so forcibly stated by General Belaieff, and, in view of our present strength, and of our increasing output of heavy guns and ammunition, I would suggest that we ought to consider whether more generous assistance might be given at once to Russia out of our present resources.

The main question for decision is whether we should regard the "minimum requirements" before doing anything for Russia or help Russia even at the risk of delaying our own equipment. If the latter answer is given I would submit the following proposal for the consideration of the War Committee. The figures given are those available in the Ministry of Munitions, and may be somewhat modified by the fuller information of the War Office, but it is believed that they substantially represent the position.

Guns and Howitzers.

It is suggested that during July, August, and September 72-4.7-inch guns, 100-6-inch howitzers (either 30 cwt. or 26 cwt.), 180-4.5-inch howitzers, and 24-9.2-inch howitzers should be shipped and prepared for shipment to Russia in the following months:—

	4.7-inch Gun.	4.5-inch Howitzer.	6-inch Howitzer.	9.2-inch Howitzer.
July	24	60	20	8
August	24	60	30	8
September .. .	24	60	50	8

The 4.7-inch guns would be withdrawn from France and replaced by 60-pr. (this has already been decided on). The 4.5-inch and 9.2-inch howitzers would be from new production, and the 6-inch howitzer from new production, or as regards 86 by withdrawing the 30-cwt. howitzers from France and replacing by new production. This substitution would not affect the totals except that it would involve some delay, and the numbers mentioned would not actually be available until a few weeks after the indicated dates.

The effect of this proposal on the equipment of the British Army is shown in the following table:—

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TABLE (A).

	—	4.5-inch.	Total available for British Army.	4.7-inch.	60-pr.	Total of both Natures available for British Army.	6-inch Howitzer.			—	9.2-inch.	Total available for British Army.	
							6-inch, 30-cwt.	6-inch, 26-cwt.	Total available for British Army.				
In France 1st July	652		88	240		86	..	106		..	88	
In East 1st July	96		..	24		..	..	Nil		..	Nil	
Balance of guns which should be available 8th July, including pre-war but excluding any casualties	..	411	1,159	..	197	549	..	..	100	292	..	28	116
		Issue of New Guns—		Issue of New Guns—			Issue of New Guns—			Issue of New Guns—			
		To Russia.	To British Army.	To Russia.	To British Army.		To Russia.	To British Army.		To Russia.	To British Army.		
July	60	34	24	46	571	..	30	50	342	8	10	126
August	60	40	24	66	613	..	30	70	412	8	12	138
September	60	20	24	65	654	..	30	70	482	8	12	150

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The 60-pr. has been included in this table to show how the long range field gun position would be affected by withdrawing 72—4·7-inch guns. The combined total of 60-pr. and 4·7-inch guns at present in the field is 352 (264 60-pr. plus 88—4·7-inch). By the end of September the total available will have risen to 654 60-pr. If only 520 of these are in the field the position will be 50 per cent. better than to-day. The total demand on the basis of 72 divisions fully equipped and with reserve is 720. For 60 divisions it would be 600. The table shows that there are already a considerable number of guns available in excess of the number actually overseas.

As regards 4·5-inch howitzers, the existing programme is for 16 howitzers per division, but it is probable that the army would accept a basis of 12 per division for the present. Equipment at the latter rate would require 864 for 72 divisions or 720 for 60 divisions. The supply would seem to leave an ample margin over the latter figure.

In the case of the 6-inch, the proposed allocation would raise the numbers in the field from 200 to 350 (allowing 132 at home in transit, &c.) at the end of September. *It would delay the completion of equipment on the old programme less than a month.*

As regards the 9·2-inch howitzers, assuming that, say, 25 would still be in this country at the end of September, the equipment overseas would have risen from 88 to 125.

The proposal would, roughly speaking, delay the completion of the old programme of equipment in these natures by about one month, and this delay would occur in the less busy season.

I am advised that this scheme could be carried out as regards traction, sights, spare parts, range tables, &c., if tractors could be provided by the War Office for the 6-inch howitzers. It is assumed that an adequate number of these are being manufactured for all the equipments to be delivered on the old programme, and that, therefore, the 100 howitzers for Russia would be provided for.

Ammunition.

The question of ammunition is a more difficult one on which to formulate definite proposals, as it is less possible to forecast for many months ahead the output of completed rounds. It must be remembered that the table following is based on rounds per gun throughout France—guns in action and out of action; it is not likely this year that any more offensive on an extended scale requiring initial bombardment on a larger front will be entertained except, perhaps, in Salonica.

I hear from the Russians that equipment, formation of units, and transport are so important, and often take so long, that they would prefer guns in advance of ammunition to neither.

The case of the 4·7-inch guns is clear. The proposal would mean the entire removal of this gun from France, so that the Russians could have the whole of the present supply, which is just developing to its maximum. The present issues to France are about 15 rounds a gun a day. The output will probably develop in the near future to nearly 20 rounds per gun per day.

As regards the other three natures, there are two possibilities:—

1. The Russians might be promised (as is the case of the 300—4·5-inch howitzers handed over this spring) that they should get the same ration as that available for the British army. If this were done the allocation would not affect the ration received per gun by the British Forces in the field, but would only postpone part of the anticipated increase in equipment.

2. On the other hand, it may be urged, in view of the conditions already referred to, that the Russian heavy artillery would not need so large a ration as heavy artillery on the Western front, and it is suggested that while no definite promise should be given to the Russians about ammunition, the supply should not increase beyond, say, 12 rounds per gun per day for the 9·2-inch and 15 rounds for the 6-inch, and 20 rounds for the 4·5-inch howitzers. By limiting the allocation to Russia in this way the available supply of ammunition would be concentrated on our own artillery, and increase the ration per gun on our front. The actual supply during the last six weeks, after allowing equipments for new units at the rate of 100 rounds a gun for 6-inch and 9·2-inch and 200 rounds a gun for the 4·5-inch, has averaged for the guns in the field 22 rounds per gun per day for the 4·5-inch, 32 rounds per gun per day for the 6-inch, and 14 rounds per gun per day for the 9·2-inch howitzers. These compare with the old programme demands at the rate of 20 for the 4·5-inch, 20 for

the 6-inch, and 12 for the 9·2-inch howitzers. The 6-inch figure is high owing to the delay in the output of guns, the ammunition being on the whole rather more forward. The new programme lays down 25 rounds per gun per day for each of these natures. So big a jump cannot immediately be provided in the case of the 9·2-inch.

Assuming the allocation suggested above, and that there will actually be in the field in France on the British Front 350—6-inch, 720—4·5-inch, and 125—9·2-inch howitzers, the total ammunition requirements *at the end of September* will be as follows:—

	6-inch.	4·5-inch.	9·2-inch.
United Kingdom (full ration on new scale)	61,250	126,000	21,885
Russia (reduced ration)	10,500	53,200	2,016
	71,750	179,200	23,900

The estimated average output of completed ammunition for September is considerably in excess of these figures (for 6-inch 8,250 rounds) and would allow for the initial equipment of Russian batteries as well as for the equipment of batteries to be sent to the British forces overseas in September and October.

The normal increase in ammunition after September would all be available for the increasing heavy artillery of the British army, as at present, and the amount of the ammunition for the additional guns would be unaffected by the allocation.

Summary.

I, therefore, submit the proposal that guns and howitzers should be allocated to Russia as stated above, and should be supplied with ammunition up to a ration of 12 rounds per gun per day for the 9·2-inch howitzers, 15 for the 6-inch howitzers, and 20 for the 4·5-inch howitzers. The scheme can be carried out at the same time as the present establishment of medium and heavy artillery of the British Army is increased by at least 50 per cent. while the provision of ammunition on the scale proposed will still probably permit of an increase of the present ration of the guns with the British forces to the full ration asked for by General Headquarters for the guns that are likely to be in the field at the end of September.

General Considerations.

The case for assistance to Russia in some such way as that suggested above, even if given at the expense of some sacrifice to ourselves, is supported by some general political and military considerations, which may also be suggested for consideration of the War Committee.

In the first place, there is evidence of a feeling in Russia that this country has not borne its full share of the burden of the war. This idea, which is, of course, entirely at variance with the facts, and has no doubt been weakened by our offensive on the Western Front, can, nevertheless, be most strongly refuted by timely assistance in the manner suggested. The value to the Alliance as a whole would probably be altogether disproportionate to any sacrifice that we might be called upon to make.

In the second place, the strategy of the Allies is presumably to undertake a combined offensive in all theatres at the earliest possible moment, and to maintain it until the enemy is defeated. Such strategy fails if one of the principal Allies is defeated past the possibility of recovery before the scheme can be realised, or if its fulfilment is delayed by lack of equipment until the military strength of one or more of the Allies has begun to wane. Moreover, in order to carry out the conception, there should be as far as possible an even pressure on all fronts.

If these views are sound, two conclusions should be drawn with regard to the equipment of Russia, viz.:—

- (1.) That it is in the interests of the Allies as a whole that the position in Russia this autumn should be made secure.
- (2.) That it is equally in their interests that the Russian Army should be well equipped for an offensive campaign in the spring of 1917.

If we equip ourselves this autumn and leave the Russian Army unequipped, we may be compelled to make heavy sacrifices by a possibly ill-timed attack in the West to retrieve disaster in the East. Again, if we realise our full programme of equipment by the spring of 1917 and leave our Allies only partially equipped, the bulk of the fighting will fall upon us; our losses will be proportionately greater, and the results achieved proportionately less.

The Russian delegate was repeatedly urged at the Conference to develop the full productive capacity of the country at home, and it has been suggested that assistance from this country would discourage her from doing this. Such an argument may have some weight against the proposal to assist Russia next spring. It is entirely irrelevant as regards the meeting of Russia's immediate needs, since no steps that she can possibly take would affect her supplies of heavy artillery in the autumn of this year.

E. S. M.

July 17, 1916.

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 ○ required for official use.]

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A

ROUMANIA

POLITICAL

Decyph r. Sir G. Barclay (Bucharest) July 26th. 1916.

D. 2 p.m. July 26th 1916.

R. midnight July 27th. 1916.

No. 607. (D).

Very urgent.

My telegram No. 594.

Prime Minister last night submitted to Russian Minister counter draft embodying the observations he had made to Russian Minister on July 21st on the Russian draft, except that the frontier line is now drawn ^{as far as} (~~group undecypherable~~) I can see in accordance with Russian wishes.

Following is text:-

"Article 1. Governments of Great Britain, France and Italy and Russia guarantee territorial integrity of Kingdom of Roumania in the whole extent of it, present frontiers.

Article 2. Roumania engages herself to declare war and to attack Austria-Hungary with all her forces and in conditions stipulated and defined in military convention annexed .

Article 3. The four Governments recognise Roumania's right to annex Austro-Hungarian territories stipulated and defined in Article 4"

Article 4.

Article 4. (I need not trouble you with this article which should I think satisfy Russia).

Article 5. Four Governments engage themselves not to conclude separate peace or the general peace without the Austro-Hungarian territories defined in Article 4 being annexed to Roumanian Crown.

On her side Roumania engages herself not to conclude separate peace with Austro-Hungary except simultaneously with and conjointly with the Four Powers.

Article 6. Roumania engages herself not to erect fortifications opposite Belgrade in a zone to be determined later and not to maintain within that zone any but forces necessary for police service.

Article 7. Roumania engages herself to compensate the Serbians of the Banat; who abandoning their properties, should desire to emigrate within two years from the conclusion of peace.

Article 8. Roumania "au même titre que" ~~by~~ Great Britain, France, Italy and Russia, shall enjoy same rights for all that relates to pour parlars, armistice, preliminaries of peace negotiations, conference, protocols and war indemnities.

Article 9. Contracting parties engage to keep the present Convention secret until the conclusion of the general Peace (~~group undecypherable~~)

End of D.

End of D.

My Russian colleague urged the Prime Minister not to restrict the declaration of war to Austria-Hungary but found him quite firm. His Excellency gave however the most categorical assurances that all frontiers except the Russian would be closed and that all Commercial operations with our enemies would cease on Declaration of War against Austria-Hungary. His Excellency said that the German Minister's language had left him in little doubt that Germany would declare war on Roumania as soon as the latter declared war on Austria-Hungary.

Prime Minister insisted most strongly on the four Powers engaging themselves not to make a separate peace, and pointed out it would be unfair that Roumania who under the Military Convention was placing her whole military forces at disposal of the Allies, should not have time to occupy all the territory stipulated.

I trust Russia will not insist on Declaration of War against any of our other enemies. Prime Minister would in that event I believe find it very difficult to carry the whole of his party with him. Insistence on this point would strengthen the hands of those members of his party who are for neutrality. It would be deplorable were we at the last moment to lose Roumania's co-operation, which whatever Russia may think
of

of its military value, will have immense value to us
of closing so rich a source of supplies to our enemies.
If Roumania remains neutral it is very doubtful whether
we should be able to buy more than a small portion of
her exportable cereals. ^{to say} (~~groups under~~) nothing of her
petroleum products.

Sent to Petrograd.

Return to Mr. Montagu

C/2

521(57)

STATISTICS RELATING TO OUTPUT OF MUNITIONS

~~MAY, JUNE, JULY 1915 & 1916.~~

Mid July 1916

GUN AND TRENCH HOWITZER
AMMUNITION

A. Ammunition issued to war Office.

	WEEKLY AVERAGE FOR			WEEK ENDING			
	May. 1915	May. 1916.	June. 1916.	July 8th.	July 15th.	July 22nd.	July 29th.
<u>Gun Ammunition.</u>							
18 & 18-pdr.	96,257	542,730	734,690	618,375	800,134	815,949	
4.5" How: 5" How:	12,047	110,004	138,512	207,426	152,030	186,048	
Heavy.	9,533	53,687	102,935	133,004	149,104	195,345	
<u>Trench Mortar</u> <u>AMMUNITION</u>							
Light.	3,571	100,718	104,970	47,237	3,066	79,779	
Medium.	75	19,542	9,029	15,516	208	5,060	
Heavy.		113	1,703	3,600	3,600	3,607	
<u>Total Gun Ammunition.</u>	117,897	705,321	976,137	978,805	1141,260	1,197,342 + 151,905	

Light.	3,571	100,713	104,970	47,204	3,066	79,779
Medium.	75	19,842	9,029	15,816	208	5,060
Heavy.	"	115	1,703	3,600	3,300	* 3,607
<u>Total Gun Ammunition.</u>	117,897	705,821	976,137	978,805	1141,568	1,197,342 + 151,905
<u>Total Trench Mortar</u>	3,646	120,375	115,732	60,418	6,882	88,446
<u>Grand Total.</u>	121,543	826,196	1091,869	1039,223 939,221	1148,450	1,285,788

* Issued Overseas.

B. Ammunition Filled, or Filled and Assembled.

Gun Ammunition.

18-pdr & 13-pdr

4.5" How: 5" How:

Heavy. ~~and~~
~~Intermed shell~~

Trench Mortar
ammunition

Light

Medium

Heavy.

Total Gun Ammunition.

Total Trench Mortar

Grand Total.*

	575,039	711,256	657,556	811,687 ⁵	460,960
	124,703	145,044	186,047	175,604	194,374
	66,636	101,699	137,482	157,051	198,571
	157,711	136,525	117,334	130,792	122,930
	29,456	19,895	15,161	16,337	13,763
	28	1,793	3,305	4,149	4,330
	766,463	955,909	981,007	1,141,482	1,153,905
	187,195	158,213	146,689	151,319	141,023
	953,658	1,114,122	1,127,696	1,292,801 ⁹	1,294,928

* In addition the following chemical & incendiary shell ² have been filled

510

1,451

4,302

3,705

TOTAL STOCK AND AMOUNT OF AMPLIFICATION ON
LINDS OF COMMUNICATION IN FRANCE
AT VARIOUS DATES.

	18-Pir. & under.	4.5" & 5" Rows.	Heavier Natures.	TOTAL
<u>1915.</u>				
June 1st. <u>Stock.</u>	Figures	not available		(probably about 707,000)
<u>L. of C.</u>	58,534	1,735	14,972	75,241
June 23. <u>Stock.</u>	664,157	57,930	54,932	777,019
<u>L. of C.</u>	104,886	1,646	13,495	120,027
Sep. 19. <u>Stock.</u>	1,419,380	155,700	105,605	1,680,685
<u>L. of C.</u>	543,577	49,402	55,463	648,442
<u>1916.</u>				
June 4. <u>Stock.</u>	5,498,619	725,230	524,359	6,748,208
<u>L. of C.</u>	4,038,454	481,367	404,315	4,924,136
June 25. <u>Stock.</u>	6,720,207	846,149	662,695	8,229,051
<u>L. of C.</u>	3,776,943	295,572	183,577	4,256,092
July 23. <u>Stock.</u> (estimate)	4,772,000	535,000	357,000	5,664,000
<u>L. of C.</u>	1,436,713	179,212	146,602	1,762,527

WEEKLY EXPENDITURES OF AMMUNITION IN FRANCE.

	10-7/2r. 7 caliber.	4.5" & 6" Hrs.	Howitzer natured.	TOTAL
At Neuve Chapelle	180,000	16,000	20,000	216,000
Weekly Av Page From beginning of war to Sept. 1915, (estimated)	40,000	7,000	7,000	54,000
Week. Sept. 19th to 26th, 1915. (Less) esti- mated.	400,000	72,000	80,000	552,000
Weekly Average Sep. 26th to May 17th 1916.	97,500	18,250	17,250	133,000
Average for 4 weeks ending June 25th.	200,700	84,440	86,987	372,127
Week ending July 2nd.	1,000,000	314,367	400,014	1,714,381
Weekly Average 3 weeks. July 2/23. (estimated)	990,000	176,000	157,000	1,323,000

GUNS & HOWITZERSSUMMARY.

	Delivered by Manufacturers (Guns only) 4 weeks to July 15.1916.	Total Approved (Complete Equipments)	
		To July 15.1916	To End May = 1915.
18-pdr.	132	3,517	544
4.5-inch How:	119	1,265	113
Heavy Guns & Howitzers (60-pdr 6" 8" 9.2-inch and 12-inch)	195	898	51

≡ Pro War Guns:- 897 18-pdr 169 4.5-inch Howitzer
and 104 Heavy Guns and Howitzers

GUNS & EQUIPMENTS

TOTAL APPROVED TO 15.7.1916.

	<u>Guns</u>	<u>Carriages</u>	<u>C. Limbers.</u>	<u>Am. Wagons.</u>	<u>M. Limbers</u>
Q.F. 13-pdr	54				
Q.F. 18-pdr	3,690	3,517	3,758	10,600	10,666
4.5" Howitzer	1,286	1,265	1,300	3,659	3,886
60-pdr Gun	463	444	500	1,633	1,631
6" 26-cwt How:	244	208	289	-	-
6" 30-cwt How:					
6" Howitzer	92	88 <u>Mountings</u>	103	-	2
9.2" Howitzer	129	123			
12" Howitzer	38	35			
15" Howitzer	11				
<u>B.</u>	<u>Equipments</u>				
2.75 Equipments	6				
1-pdr	6				
Q.F. 3.7 How:	-				
	<u>Guns</u>	<u>Mountings</u>	<u>Platforms</u>		
13-pdr 9-cwt	138	105			
12-pdr 12-cwt	-	45	45		
5" 20-cwt	27	19	53		
6-pdr	-	37			
4-inch	10	8			
2.95-inch	-	-			
3-inch 5-cwt	14	12			
75-mm.	-	-			

OUTPUT OF RIFLES, MACHINE GUNS & S.A.A.

	Manufacturing output. (4 wks to July 15th)	Acceptances (4 weeks) to July 15)	Total Acceptances (May 30th 1915 to July 15th 1916)	Total Acceptances (Aug:1914 to May 29th 1915)
<u>RIFLES</u>				
British Manufacture	76,614	74,517	905,557	308,439
American "	not available	24,373	52,493	nil
Ross Rifles	3,140 (4 wks to July 1st.)	2,350 [*]	18,567 [*]	nil
		<i>* Delivered to C.O.O. Baden</i>		
<u>TOTAL</u>	-	101,240	976,617	308,439
Repaired and Resighted.	26,073	9,440	232,524	178,390
Pre War Stock (including India Exchange) = 845,000				
<u>MACHINE GUNS</u>				
Vickers	801	587	5,038 5,813	775
Lewis	2,182	2,367	13,811 14,075	264
Hotchkiss	263	223	1,124	nil
Pre War Stock = 1,955 Vickers and Maxim.				
<u>SMALL ARMS AMMUNITION MK VII (in million rounds)</u>				
				Manufacturing output (May 1915)
British Manufacture	209	199		71
American "	47	45		8½
<u>Total</u>	256	244		79½

<u>FRENCH MORTARS.</u>		
	Manufacturing Output 4 wks. to July 15th.	Total approved and issued to July 15th.
<u>LIGHT.</u> 3" Stokes Mortars	195.	2,880.
3.7" French Mortars	211.	741.
4" French Mortars.	211.	504.
1.57" French Mortars.	8.	250.
<u>MEDIUM.</u> 4 3/4" French Mortars.	1.	913.
<u>HEAVY.</u> 9.45" French Mortars.	53.	99.
<u>SMALL.</u> 4" Stokes Mortars.	211.	240.
<u>GRANADES.</u>		
	Delivered during 4 wks. to July 15th.	Total Deliveries to July 15th 1916.
Granades.		
Foucausion.	223,727.	-
Time.	1, 100,000.	-
Rifle.	397,093.	-
Ball & Oval (For Russia).	1,447,226.	-
8" Bombs (Chemical Granades)...	25,600.	-
<u>FRENCH WARFARE SUPPLIES.</u> (other than French howitzers, E.H. Ammunition, & Granades).		
Helmets.	139,692.	1,040,715.
Sprayers.	1,500.	13,150.
Smoke Cases.	140,226.	243,725.
Dark Ignition Signal Cartridges.	2,138,201.	-
Parachute Rockets.	14,502.	-

Confidential.

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EXTRACTS

FROM

REPORTS ON VISITS TO FRANCE
BY REPRESENTATIVES
OF THE MINISTRY OF MUNITIONS.

JUNE—JULY 1916.

MINISTRY OF MUNITIONS.
DEPARTMENT OF MUNITIONS DESIGN.

EXTRACTS FROM SECRET REPORTS RECENTLY RECEIVED IN
THE DEPARTMENT OF THE D.G.M.D.

I.—Extracts from Report on Artillery Material in France, June 2nd-18th, 1916.

(A report on the operations at Ypres from the 2nd to 18th June 1916, in which the Canadian Corps was engaged.)

On June 2nd the Germans attacked about midday after several hours of heavy bombardment. By the evening they had been successful in driving in our front line over a considerable front. Although immediate efforts were taken to check the further advance of the Germans very little could be done towards regaining the lost ground during the next five or six days owing to adverse weather conditions, which made observation of fire almost impossible, especially from aeroplanes.

However, improvement in the weather on the 8th and 9th allowed of a date being fixed for the artillery bombardment, and finally on the 13th the infantry attacked and recaptured all the ground lost on the 2nd.

On the 13th and 14th the German artillery fire was very heavy on the captured trenches, but on the 15th and 16th this slackened off, although there was a violent recrudescence of activity on the part of their artillery during the night of the 16th and 17th. This appears to have been the enemy's final effort.

Effect of Artillery Fire.

The result of the completeness of the artillery preparations is seen in the fact that the infantry attack met with practically no resistance. Special attention was devoted to the destruction of their machine guns, and one German machine-gun officer captured stated that 15 out of 16 had been knocked out during the bombardment. The trenches were for the most part completely destroyed, no dug outs were left. The whole place is a mass of craters, 15' deep, in which it is impossible to recognise the former features of the ground. The prisoners' statements afford evidence as to the large number of casualties caused by the artillery fire. In this the 6" howitzers seem to have been particularly effective, the prisoners stating that they could not get away from them, as they sometimes could from the heavier natures. This, no doubt, is due to the considerable number of guns employed and their rapidity of fire, especially those of the new pattern.

Behaviour of the Equipment.

On the whole the equipment stood the test well, except for the often occurring buffer trouble in the 18-pr. and 60-pr. equipments. A serious matter in connection with the 60-prs. was that when a spare gun was sent up from the base it was found that no breach block would fit it. This indicates the necessity for insistence on the interchangeability of parts.

Both the 9.2" howitzers employed were out of action at the end through the beams breaking, but the conditions were exceptional. Owing to the continual rain the ground, always bad, became almost a bog, and to make matters worse it was necessary to fire considerably off the centre line. In consequence the platforms tilted, and although everything possible was done in the way of putting baulks underneath, no firm foundation could be obtained, and eventually two of the beams snapped right across.

A point of some importance in connection with the 18-pr. is the inflammability of the straps on the cartridge clips. On several occasions when gun pits have been hit and some cartridges set on fire, these straps have caught the flame and caused the fire to spread very rapidly, thus greatly increasing the difficulty of extinguishing it. No doubt they can be made fire-proof, or a less inflammable material substituted.

As regards ammunition there is nothing but praise of the No. 102 fuze. It has been found quite impossible to ascertain the actual number fired, but it was certainly nearer 10,000 than 5,000, all in 6" and 8" howitzers. The effect was excellent, and no blinds or prematures are reported.

As regards the damage from hostile shell fire, although eight of our guns were hit, the general impression was that the German counter-battery work was not up to standard, especially considering the advantages of position which they enjoy. It must of course be remembered that the batteries in the Ypres salient have a very high standard in this matter, as they are accustomed to very heavy shelling; 250 in a quarter of an hour is not exceptional, and one battery received over 3,000 between the 1st and 10th April.

II.—Extract from Report on the behaviour of the Ammunition and Equipments employed in the Bombardment in the neighbourhood of Albert from the 24th June to the 3rd July 1916.

Generally speaking satisfaction has been expressed, and there are no definite complaints of any kind as to the quality of the ammunition. The guns are behaving well. The damage from the enemy's fire has been insignificant. According to the reports received at present only four guns have been damaged by hostile shell fire: two 18-prs. and two 4.5" howitzers. The enemy's artillery have not been very active in their counter-battery work, and during the time that I watched the bombardment this morning, they were not playing a prominent part in the action, so far as I was able to see.

Ammunition.

As already stated there has been no general complaint of failure of H.E. ammunition, and there is every indication that it has now reached a fairly satisfactory standard. Several minor difficulties, however, have arisen. I saw a considerable number of 8" shells to-day from which the plugs could not be removed. They are being returned in considerable quantities to the railhead in this condition. There are also a considerable number of 6" shell which cannot be fuzeed with No. 100 fuze. Either the shells or the fuzes have not been properly gauged. It is not possible to say which without gauges, which are not available here, but greater care in this respect is evidently necessary, as much unnecessary labour is involved in taking shells out to the battery and sending them back again.

Trench Mortars.

The 210 mm. trench mortars have been used for the bombardment of villages and are reported to have done well. Although no detailed reports have been received, it is clear that these weapons have started well in popular estimation.

The 2" trench mortar caused some alarm by throwing a considerable number of very short rounds just over the parapet during the rainy weather. These rounds with the Newton fuze detonated in close proximity to the emplacements and caused some casualties. It is possible that this was due to the charges getting wet.

The 3" Stokes trench mortar was very freely used this morning during the last eight minutes of the bombardment. It is said to have done well, but I do not think that any reliable reports have yet been received. Some accidents have occurred with this mortar, due to the wrong assembly of the projectile, the plate intended for the head being placed in the base. If this is done a premature in the bore is certain.

III.—Extracts from a Report on the fighting North of the Somme near Albert from June 24th to July 3rd, 1916.

I visited practically the whole of the German first line system, including support and front trenches and strong points; the most important of the communication trenches leading to this system from the rear; the second line in several places; and the village of Fricourt; the ruins of which I examined very carefully. In a scene of such complete destruction it is very difficult to distinguish the effect of the various projectiles, but I came to certain conclusions on the subject which are given in the following paragraph.

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Accuracy of Fire.

In the first place the accuracy of the fire left nothing to be desired. It was very noticeable how the craters followed the lines of the trenches instead of being scattered promiscuously over the area. This was particularly apparent along the communication trenches even when these were on reverse slopes where direct observation was impossible. In some cases it is not too much to say that the line of what had once been the trench was chiefly indicated by the craters which had almost obliterated it.

General Effect of Fire.

The effect was generally fully equal to expectations. The trenches themselves were knocked out of all shape and their value as cover much reduced, while in many places they were entirely blocked. In nearly all cases above-ground shelters were completely destroyed, but on the "dug-outs" themselves no effect at all had been produced. These were on an average at least 20' to 30' below the bottom of the trenches, and of course quite beyond the reach of artillery fire. All that can be hoped for is that the entrances may be blown in, and this had occurred in many cases.

Wire Cutting.

Wherever it had been possible to obtain direct observation it had been destroyed as an obstacle by the artillery fire, and many infantry officers and men told me that they had never been in any way retarded by the wire or ever had to use the cutters on their rifles. The difference in the effect of the different natures of shell was, however, very marked. There is no doubt whatever in my mind that 18-pr. shrapnel is far the most generally effective projectile for this purpose. It sweeps the wire away completely without damaging the surface of the ground and so substituting another obstacle. This was very marked in front of the second line where 18-pr. fire had been used exclusively.

Next to the 18-pr. comes the 2" trench mortar with the Newton fuze. This is also very effective, but not so much so as the 18-pr., for the wire is heaped up. In some cases 18-pr. had been employed to sweep away the wire which had been so heaped up by the 2", and this combination is extremely effective.

But the 18-pr. is not effective against wire on a forward slope,* and there will also always be places where it cannot be touched by a flat trajectory gun, and which are beyond the range of a trench mortar. Against such howitzers must be employed, and I was able to examine the effect of this in several places. The 6" howitzer is quite effective in removing the wire, but the craters left are a considerable obstacle to movement. The 4.5" does not appear to have a sufficiently violent explosion for the purpose, the wire being only blown away for a very small radius round the crater, so that there is considerable danger of the result being to increase the obstacle rather than the opposite. But this appears to be due to the effect of the explosion being confined by the crater.

Dug Outs.

The dug outs which were plentiful all along the trenches were so deep as to be quite beyond the power of any artillery. I do not think I saw any less than 20' to 30' deep below the bottom of the trenches, and I heard of lower level still. Where these are vulnerable is by the blowing in of the entrance. The 4.5" howitzer is not of much value for this, and the most generally useful is no doubt the 6", which is generally sufficiently powerful for the purpose, while the large number of shells fired increase the probability of one bursting sufficiently close to the entrance to a dug out. But the value of the larger natures in such work is very marked, and where dug outs are known to exist in any numbers the use of the biggest shell available is indicated. In two places where the 240 mm. trench mortar and the 12" howitzer had been used the effect was particularly noticeable, the shock being apparently transmitted for a considerable distance through the ground. In one case of this a German had been caught on the ladder and crushed by the framework driven in. The "pattern" made by the 12" appears to be much more regular than that of the 240 mm., and there were complaints that not more than 900 yards could be got out of the latter.

* There was a very marked case of this near Fricourt where the fire had been very accurate, but little or no damage had been done to the wire.

Cellars.

What has been said above as regards dug outs applies generally to the cellars in the villages, but when these were not very deep they had in several cases been blown in by shells. In the majority of cases, however, it was impossible to know what had happened as the houses had been completely demolished and all entrances to the cellars covered up with debris—in a few cases the fall of the house had saved the cellar by covering it with many feet of brick which subsequent shells had failed to penetrate.

Blinds.

In the heavy bombardment it was impossible to get any information as to blinds, but the general opinion was that the ammunition had behaved extremely well, both in this respect and as regards the completeness of the detonation. Undoubtedly, however, the number of our blind shell found lying about in the captured German lines was a subject of comment. I saw myself about a dozen and heard of nearly as many more. This is, of course, an infinitesimal percentage of the number of rounds fired, but it does not include any that penetrated, but only those lying on the surface of the ground. It included 60-pr., 6", 8", and 9.2", and also 210 mm. trench mortar. In one case a No. 100 fuze had had the cap knocked off, in the others there was nothing to account for the failure. In this connection I may mention that I was particularly struck with the large percentage of blinds and incomplete detonations among the German shell—and as in all cases in my experience, the fragmentation was so bad, or rather so good, that the tearing sound of fragments in the air was completely absent. The difference in this respect between our shell and the Germans has always been very marked.

Trench Mortars.

I have already referred to the work both of the 210 mm. and 2" trench mortars. As regards the 3" Stokes, it was quite out of the question to expect that the effect of their small shell should be visible in the mass of destruction wrought by the heavier natures. But it was generally considered by all those whom I asked that they had done their work well in the few minutes preceding the assault, while their mobility allowed of their being carried forward in spite of the difficulties of the ground.

IV.—Extracts from Reports of an Officer on the Staff of the Ordnance Factories.

A.—REPORT ON VISIT TO FRANCE, JUNE 1916.

In accordance with my instructions I embarked on the 19th instant in order to investigate the difficulties reported in connection with the fuzeing of 8" howitzer shell with fuzes Nos. 100 and 102.

I reported to the C.O.O. at Boulogne on arrival. I found that 1,000 8" shell had been returned, and 400 more were on their way, as unserviceable. The Ordnance had tried to adjust some of these exploders and reported that it was impossible to do so. I took the first three available, and with the use of drift and a small mall adjusted the depth quite satisfactorily. A fourth shell was fitted with the longest 14 dram exploder available and compressed by the same method without undue difficulty. All the shell were fitted at Pembrey, the majority during May 1916.

I proceeded to G.H.Q. on the 19th, explained the situation and left the same morning for the IVth Army H.Q. I was also informed that the same trouble was appearing in the 6" howitzer shell.

On reaching IVth Army H.Q., I explained the situation and left copies of instructions and drifts before going on to H.A. H.Q. of the III, VIII, and X Army Corps where the same procedure occurred. At the last-named Corps H.Q. I was asked to visit the 70th Siege Battery which was in great difficulty as they were unable to fuze the majority of their shell. I adjusted two or three shell for this Battery and the Battery Commander expressed himself satisfied that he could adjust his exploder bags without any further trouble.

In addition to the instructions, I endeavoured to impress on the various officers the importance of the gaine being compressed on to the top of the bag, and for that reason the importance of not allowing the drift to be driven down above the upper mark.

General Remarks.

A considerable number of other points were brought to my notice by various officers.

6" and 8" Howitzer Shell.—Some of the 8" shell were issued with No. 4 plugs, which have no extension piece. In these the 14 dram exploder had been issued uncompressed. Some of the No. 2 Mark III. plugs also I found had their extension pieces low to length by about $\frac{1}{16}$ ths of an inch. The exploder bags had been compressed sufficiently to admit these plugs, but it was impossible to screw in the fuze and gaine with any existing fuze key.

The heads of both these plugs are unsuitable for extraction. The shallow cross cut slot does not give sufficient purchase for any key to extract a stiff plug. I would suggest that these plugs be fitted with a square hole and that a strong T-wrench for extraction be supplied.

This trouble has been greatly accentuated by two filling faults, which in my opinion are very serious:—

- (a) The plugs are not properly luted before insertion. Many of them were not luted at all, and the shell had to be returned to the Base.
- (b) G.S. adapters where fitted were in some cases fixed with Pettman Cement to the nose bushes. Some batteries in trying to unseat them removed the nose bush as well.

Fuzes.—The various opinions on the respective merits of the 100, 44 and 102 fuzes were practically in agreement.

The 102 was spoken of very highly everywhere, though only the IInd Army had much experience of it. They reported on 5th June 1916 that out of 5,000 rounds fired recently all detonations observed were excellent. They considered it satisfactory in every way. Since then a further 3,000 had been fired with equally good results.

No. 44 fuze, though addicted to blinds, was in most cases preferred to No. 100.

No. 100 gave bad detonations, poor smoke and some blinds.

One battery commander had fired a few No. 106 fuzes and considered them the best he had seen.

Reports of Blinds.

It is probable that many "blinds" that are reported have really fragmented under ground. One case was brought to my notice by a Group commander of the IIIrd Army in which one of his batteries reported the fall of three blind shell in their vicinity. As he wished to identify the calibre of the shell he ordered these to be dug out, and they were found to be well fragmented 8" shell.

B.—EXTRACT FROM REPORT ON VISIT TO FRANCE, JULY 1916.

I proceeded to France on 4th July to investigate the difficulty of fuzing shell and other matters which had been reported.

Fuzing Shell.

It was found that the three chief troubles were:—

- (1) The internal diameter of the nose bushes were low to gauge, and in some cases possibly the threads on the fuze body high to gauge. This was probably due to worn taps in the first instance and worn gauges used in inspection subsequently.
The railheads and bases were not in a position to tap out the nose bushes on a large scale. We therefore advised that they should be returned home without delay.
- (2) *Eccentric Gaine Cavities.*—These were reported from various corps. We were unable to find any such shell at the two railheads, but later in the day some were examined at La Houssoye in which the cavities were eccentric. These were filled at F.F. 6 (Chilwell). This confirmed the reports of the railhead officers who mentioned this defect in connection with the above factory only.

It would be possible to use these shell by putting in an adapter, a second 14-dram exploder and a No. 44 fuze. The two first are available at railheads, but apparently spare No. 44 fuzes are unobtainable. The number of shell with this defect is not very great apparently.

If 44 fuzes cannot be sent out they will have to be returned home.

- (3) *Plugs which could not be removed from the Shell.*—These were chiefly the No. 3 Mark VI. or III. plugs. The larger proportion of the returned shell were 8". Practically all shell with this defect had been filled at Pembrey between 4/16 and 6/16. This serious defect was in my opinion entirely due to insufficient luting both on the plug threads and under the head.

Some 8" shell had been issued with the No. 3 plug used for the old pattern, No. 100, with long adapter. These were therefore projecting about $\frac{1}{2}$ " above the nose of the shell in consequence. I saw several shell returned with projecting plugs which had rusted in and could not be removed, and presume that these plugs were of the same type.

The unsuitable cross-cut slot for removing the plug has been mentioned in an earlier report, and a square slot in the head recommended. Though I think it very desirable that the plug should be altered to this design as soon as possible, probably the greater part of the trouble would disappear if thorough luting were ensured. It is admittedly difficult to supervise the filling operations at the various factories sufficiently closely to prevent some insufficiently luted plugs being sent out, and in these cases it is essential that a firm purchase should be obtainable on the head of a refractory plug to unscrew it. With the present design this is not obtainable.

A few cases of cemented G.S. adapters were reported, as on the occasion of my last visit. Also in some cases the G.S. adapters in 6-inch shell were low to gauge and the No. 44 fuze could not be screwed home. The railheads were able to replace some of these by spare adapters correct to gauge.

Estimates of the number of unserviceable 8" and 6" shell varied between 3 per cent. and 10 per cent. The general consensus of opinion inclines to the higher figure.

Defects in Exploder Bags.

(1) *Lack of Compression.*—Many bags had not been fully compressed in 8" and 6" howitzer shell, particularly the former of Pembrey filling. The batteries have been able, however, to compress these themselves on the lines of the instructions which I left on my last visit.

(2) *Dampness.*—As on my last visit I found that there was a certain amount of dampness in the gaine cavities and exploder bags of all shell I saw, the bags being discoloured. I attribute this to the damp penetrating through the fuze-hole, due to insufficient luting of the plugs.

D.D.O.S. IV. Army informed me that some batteries had dried their trotyl exploder bags in the sun before firing, and had obtained very much better detonation. They had asked for a ruling on this point, but D.D.O.S. had been unable to issue general instructions to this effect, as he was unaware whether trotyl exploders were intended to contain a certain percentage of moisture or not. I advised him to inform the corps that, where opportunity allowed, this could be done with advantage.

Primers and Tubes.

No. 1 Mk. II. Primers.—There have been a number of missfires. I am unable to say what percentage as it is impossible at the present time for the staff to make accurate estimates. I saw about 200 of these primers and they included nine or ten makers.

From a visual examination I should judge that a large proportion had been properly struck, and that either the cap had failed or the fire hole channels in the plugs had not been drilled through. In a few cases it was obvious that the anvils had been driven down by the strikers together with the cap.

T. Friction Tubes.—All estimates agreed that the failures to fire were about 25 per cent. of the total. At one railhead I was informed that 80 per cent. of the

failures were due to failure to ignite the priming, 10 per cent. due to loops of the drawbar breaking, and the remainder to various causes, the chief one being probably incorrect methods of pulling the draw-bar.

It was the opinion of D.D.O.S. and M.G.R.A. IV. Army that the supply of T. tubes should exceed the number of corresponding rounds issued by 25 per cent., until some improvement in the behaviour of the tubes can be guaranteed. A considerable number of the tubes had to have the heads filed to fit into the vents. This was complained of everywhere.

Packages.

Packages B.L. Cartridges.—The various metal-lined cases and the tinned steel cartridge cylinders used with the heavier howitzers appear to preserve the cartridges from damp satisfactorily.

One case had occurred where a dug-out containing 8" howitzer cartridge cylinders was flooded out. A certain number of cartridges had the priming at the lower end soaked, leakage having occurred near the bottom of the tin; this was due to insufficient soldering. The method of securing and luting the lids appears to be quite efficient.

The Fricourt Bombardment.

On the evening of the 5th whilst at the XV. Corps H.A. H.Q. we heard that a large number of blind 8" shell were to be found at Fricourt, which had been captured two or three days before. The ground above Fricourt is being held by the enemy, but no objection was raised to our visiting the village to investigate the blind shell and obtain some idea of the effects of the bombardment.

We reached Fricourt late in the evening and could only spend about three-quarters of an hour going over the scene of the bombardment. I was unable to obtain any information of the comparative numbers of the various types of howitzers used, and it was of course equally impossible to obtain any idea as to the percentage of blinds. The blind shell investigated were only those which were immediately visible in the course of a casual stroll through the village and the ground above, and formed probably only a small proportion of those actually there.

General Remarks on Blind Shell.—The majority seen were 8" with 100 fuze. In my opinion there was little doubt as to the cause of the blinds, where the shell fell nose first.

The ground was fairly hard, chiefly chalk and flint, and the impact of the heavy shell crushed in the cap of the fuze before the graze pellet could move forward and thus kept the cocked firing pellet locked.

In many cases, although the shell had apparently fallen well on the nose, the cap was missing, the shoulders of the fuze below it being flattened down. In one or two cases it was possible to distinguish the head of the graze pellet held between the walls of the fuze which had jammed it. In most of them, however, the nose of the fuze whether capped or not was simply a knob of crushed in brass and nothing was distinguishable.

In one case the whole top of the fuze had come away leaving about $\frac{1}{2}$ " of the body projecting above the nose of the shell. Presumably the graze pellet was still there, locking the cocked firing pellet, though flattened, but nothing was distinguishable. I saw 12 8" shell and one 9.2" shell which had been damaged in this way.

These shells were all lying in the open having apparently bounced clear of the point of impact. All had driving bands intact as far as I can remember, though possibly the first one or two found had not, as I was not paying particular attention to this detail at the time.

A further 8" shell was found with the fuze cap dented on one side, the dent being about $\frac{3}{8}$ " deep. It appeared to be otherwise intact. I am unable to explain this blind, and having no implements to remove the fuze, I was unable to examine it further.

The second cause of blinds discovered was that some shell had fallen base first or sideways. I found two 8" and two 9.2" which had apparently done this. In each case the driving band was missing and fuze was intact, there being no signs of either the fuze or shoulder having come in contact with the earth. In the case of the two 9.2" the base was practically buried up to a point well above the driving band on the lower side.

In the case of the 8" one was buried up to a point above the driving band, the absence of which was only detected by removing the earth. The other was lying in the open, the fuze being clean and undamaged and the driving band missing. A third 8" shell was found close to the wood north of Fricourt, buried horizontally for about half its diameter, the driving band being also missing.

The probability of blinds being due to howitzer shell falling sideways or base first was brought to my notice in the III Army on my recent visit and mentioned in my report at the time.

As regards the loss of the driving band it is known that the Germans strip these from blind shell and some were found collected in their dug-outs. This may have accounted for the missing band of the 8" shell which was lying in the open as mentioned above. Probably this had not occurred with the remaining shell, as it is scarcely conceivable that the shell should be partially buried in these positions after the removal of their bands.

Most of the larger shell found were probably fired during the artillery preparation previous to the attack, and, to judge from the appearance of the ground, it is unlikely that the enemy spent much of their time collecting copper outside their trenches.

General Effects of the Bombardment.

The village of Fricourt lies under the lee of the Fricourt-Mametz ridge on a fairly steep slope facing south-east. North-east of the village is Fricourt Wood which runs northward towards the crest of the Fricourt ridge, the slope to the crest behind the village being much more gentle.

The original advanced German trenches ran round the foot of the village which forms a salient in the line which runs south-east from Boisselles, bending round the village in a E.S.E. direction to cross the low ridge lying south-east of Fricourt. The system of trenches behind this line up the hills and through the village of Fricourt was very complete and the dug-outs were apparently very deep.

The artillery preparation was, I understand, considered very thorough, but more so on the south-west face of the slope than on the south-east where the attacking infantry suffered heavily.

The village was completely destroyed and the ground in which the German trenches lay was practically a honeycomb of craters, particularly on the south-west face. The craters were not as deep as I had expected. I do not think the deepest could have been more than 7', most of the larger craters I judged to average 4½'-6'.

The ground was of course hard. The trenches, though blown in at certain points, were considerably less damaged than might have been anticipated. Many of the dug-outs were below and in advance of the parapets, the entrances being made in the front parapets.

It was generally believed that many of the enemy had been buried in these by the blowing in of the entrances. The deeper dug-outs probably escaped all harm. It was reported that some of them were 30' deep, and large quantities of ammunition and supplies had been discovered in them.

We moved along the rearmost line of trenches which was sited at the top of the steeper part of the slope above the village, without any difficulty as the trench was practically intact.