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REGULATIONS

FOR

ARMY ORDNANCE SERVICES

PART II

PAMPHLET No. 15

Notified in Army Orders for September, 1929

INSTRUCTIONS FOR THE EXAMINATION OF ORDNANCE FOR STEEL AND COPPER CHOKE

By Command of the Army Council,

THE WAR OFFICE,
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REGULATIONS FOR ARMY ORDNANCE SERVICES, PART II.

PAMPHLET No. 15

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INSTRUCTIONS FOR THE EXAMINATION OF ORDNANCE FOR STEEL AND COPPER CHOKE

1. A contraction in the bore may be due to one or more of the following causes :—

(*a*) *Steel Choke*, caused by the inner tube stretching and over-riding the steps on the outer tube. The defect becomes dangerous when the bore is contracted to the diameter of the projectile.

Guns manufactured or repaired to the latest designs are not liable to develop a steel choke, but those of earlier designs may do so.

Guns shown in Appendix I (*a*) are liable to steel choke, and those shown in Appendix I (*b*) are not liable ; these appendices give the limits for contraction.

(*b*) *Coppering*.—This, alone, should not be considered a dangerous defect ; it should be dealt with when necessary as mentioned in Appendices II and III.

(*c*) *Indentations on Exterior*.—These may be caused by enemy fire, or other external damage. A contraction of the bore from these causes may be expected if the external damage to the gun is severe. The bore of any gun so damaged should be carefully measured under the position where the external damage has occurred, and, if it is contracted, the

gun should be provisionally condemned and the sentence referred to Chief Inspector of Armaments, Royal Arsenal, Woolwich, with full particulars of the damage and measurements and impressions, both internal and external.

(*d*) *Burrs and torn rifling.*—These defects will be detected from an examination of the impression, or from a careful visual examination of the bore. The defects, unless very serious, can usually be remedied locally by lapping (*see* Appendix IV). Impressions before and after removal of burrs should always be forwarded with the report of examination to the Chief Inspector of Armaments, Royal Arsenal, Woolwich.

2. In order to avoid the necessity of measuring the bores of guns at each examination, "Gauges, plug, bore, low limit for provisional condemnation," have been provided.

These gauges are a ready means for detecting the presence of choke in a gun before it reaches a dangerous limit. If a gauge fails to pass, it is an indication that the bore for some reason is below the limit allowed.

The gauges differ in diameter for each nature of gun according to the design of the inner tube in the gun, *i.e.*, whether it is liable to steel choke or not, and also according to the design of the projectile with which the gun is equipped.

The diameters of the gauges for use with guns when equipped with reduced windage projectiles are given in Appendices I (*a*) and I (*b*).

Until guns in Fixed Armaments are equipped with reduced windage projectiles, the Mark I Gauges originally supplied are to be used. As soon as reduced windage projectiles form part of the equipment of a battery, the new limits given in Appendices I (*a*) and I (*b*) are to be worked to.

3. (*Appendix I* (*a*).)—If the "Gauge, plug, bore, low limit for provisional condemnation," fails to pass, or the measurements are down to or below the limits given, the gun should, in the first instance, be de-coppered by the chemical method, as described in Appendix II, and re-measured. If the bore, after de-coppering, is still down to the limits, and it is clear that there is no obstruction in the bore, such as burrs, torn lands, etc., it may be assumed that a steel choke exists, and the gun must be provisionally condemned and sentenced to be lapped and, if necessary, milled. (*See* Appendix IV.)

With the exception of the B.L. 60-Pr. Mark I guns, which should be lapped locally with the lapping tool described in

paragraph 19585 List of Changes, machine-lapping should be carried out. If this operation cannot be done locally, the gun should be exchanged.

Hand-lapping in the case of B.L. 60-Pr. Mark I guns is only to be carried out to remove a local choke in extreme emergency when machines are not available. This lapping should only be sufficient to permit the " Gauge, plug, bore, low limit for provisional condemnation," to pass. Hand-lapping must not be resorted to for lapping a gun throughout, neither must it be used for any purpose other than removal of steel choke, burrs or torn rifling.

(*Appendix I* (*b*).)—Guns enumerated in this table, which refuse to accept the " Gauge, plug, bore, low limit for provisional condemnation," or where bore measurements are down to or below the limits in the table, should, provided it is clear that there is no obstruction in the bore, such as burrs, torn lands, etc., be sentenced serviceable, and to be decoppered by firing double the amount of tinfoil at the next series. (*See* Appendix III.)

4. The gauges referred to above, when available, should be applied at each examination of a gun, and the result recorded in the report of examination.

In addition it will be necessary before each practice season commences for the appropriate gauge plug bore, referred to in Appendix I (*a*), to be passed through the bore of all guns liable to steel choke where such guns are equipped with high diameter shell.

5. In the absence of a suitable " Gauge, plug, bore " (as described in paragraph 2), or when for some reason it is necessary to measure guns, horizontal and vertical measurements should be taken throughout the bore. For guns that are not liable to steel choke, the points of measurement should be at 1 inch from the commencement of the rifling and at every 12 inches of the bore from that point. For guns that are liable to steel choke additional measurements should be taken at the steps on the inner " A " tube and at each inch for a distance of 12 inches on either side of the steps. In the case of Q.F. 18-Pr. guns additional measurements should be taken at 10 inches from the commencement of the rifling, and in the case of B.L. 6-inch guns at 5 inches from the muzzle.

In the case of ordnance having a Range Table M.V. of 2,300 f.s. and over, measurements will be taken at one inch and at each succeeding inch up to three calibres from the commencement of the rifling.

All measurements should be recorded in inches from the

muzzle on Army Form G. 901 and submitted with the report of examination on Army Form G. 875.

6. Four lapping and milling machines for rectifying the bores of 9·2-inch guns are provided for Service use. One for use at the Mediterranean Stations, one for Ceylon, Straits Settlements, and Hong Kong, and two for Home Stations. The machines for use at Stations abroad and one at Home are also suitable for 6-inch guns.

Before the despatch of a machine to meet the demands of another Station, it should be ascertained whether any guns at the Station holding the machine need to be lapped and milled ; if so, it should be arranged, if possible, for them to be rectified forthwith.

7. New "Gauges, plug, bore, acceptance after lapping," are supplied with the above machines. These gauges are manufactured to a diameter that will enable them to pass in the bore of a gun lapped to plan dimensions and are for use as a sure means for determining whether the lapping has been sufficient.

The diameters of these gauges, and the limits to which guns should be lapped are shown in the following table. Care should be taken not to exceed, if possible, the low limit, and lapping should be just sufficient to allow the gauges to pass :—

Nature of Gun.	Diameter of Gauge.	Limits for lapping.	
		Low limit (plan diameter of bore of gun).	High limit.
	inches.	inches.	inches.
B.L. 9·2-inch ..	9·198	9·200	9·205
B.L. 6-inch ..	5·998	6·000	6·004

The limits for lapping B.L. 60-Pr. Mark I guns are as follows :—

Low limit .. .. 5·0 inches.
High limit .. .. 5·004 inches.

8. "Gauges, plug, rifling," and "Gauges, measuring bore" modified to measure the depth of the rifling grooves are also supplied for use with the above machines.

The "gauge, plug, rifling" is for trying in a gun after lapping has been completed ; if the gauge is not accepted the

grooves must be milled. There will be no need to mill the grooves if the gauge passes.

The "gauge, measuring bore" modified to measure the depth of the rifling grooves is for use after milling, to record the depth of the grooves. The depth of each groove at any particular point added to the diameter of the bore at the same point after milling must be within the limits shown in columns (2) and (3) of the following table :—

Nature.	Grooves of rifling.		Gauge, plug, rifling.	
	Minimum depth plus plan diameter of bore.	Maximum depth plus plan diameter of bore.	Diameter over body.	Diameter over studs.
(1)	(2)	(3)	(4)	(5)
	inches.	inches.	inches.	inches.
B.L. 9·2-inch (Mark I rifling).	9·249	9·26	9·178	9·276
B.L. 9·2-inch (Mark I* rifling).	9·269	9·28	9·178	9·316
B.L. 6-inch (Marks I, II*, III and IV rifling).	6·042	6·05	5·983	6·067

After milling has been completed, measurements showing the depth of the grooves should be submitted to the Chief Inspector of Armaments. Eight readings should be taken in the vicinity of each step on the inner "A" tube (*see* Appendix I (*a*)), two each at "Up," "Right," "Down" and "Left." The position along the bore of these two sets of readings near each step will be determined from the before lapping measurements and will be those two points adjacent to each step where steel choke was a maximum.

APPENDIX I (*a*).

(*See* Paras. 1 and 2.)

TABLE OF GUNS LIABLE TO STEEL CHOKE AND FOR WHICH REDUCED WINDAGE PROJECTILES HAVE BEEN APPROVED, WITH LIMITS FOR CHOKE.

Nature of Gun.	Design of Inner "A" Tube that is liable to choke. (*See* Note 1.)	Steps on Inner "A" Tube that are liable to choke.						Diameter of gauge, plug, bore, low limit for provisional condemnation. (*See* Note 2.)	Limit for choke when guns are measured. (*See* Note 3.)
		1st.		2nd.		3rd.			
		Inches from muzzle.	Inches from breech.	Inches from muzzle.	Inches from breech.	Inches from muzzle.	Inches from breech.		
								(inches)	(inches)
B.L. 9·2-inch, IX, C IX	R.G.F./10378. B	4·5	440·75	109·5	335·75	231·5	213·75	9·190	9·193
B.L. 9·2-inch X ..	R.G.F./10768/B.67	4·6	437·75	187·6	254·75	267·6	174·75	9·190	9·193
B.L. 9·2-inch X^{V} ..	V.S.M./3352. G	7·0	435·35	176·0	266·35	—	—	9·190	9·193
B.L., 6-inch VII ..	V.S.M./763. G	5·05	274·178	147·77	131·458	—	—	5·989	5·992
B.L., 6-inch VII^{V} ..	V.S.M./3353. G	5·05	274·178	147·77	131·458	—	—	5·989	5·992
B.L., 60-pr. I	E.O.C./62274. D	2·6	165·45	69·15	98·9	—	—	4·993	4·995
B.L., 60-pr., I	R.G.F./11050/89	69·25	98·8	—	—	—	—	4·993	4·995
B.L., 60-pr., I	E.O.C./20591	69·25	98·8	—	—	—	—	4·993	4·995
B.L., 60-pr., I	R.G.F./11050/130	69·25	98·8	—	—	—	—	4·993	4·995

Notes.—1. The design of Inner "A" Tube fitted to a gun on repair is now shown on the Memo. of Examination. When the Inspecting Officer is in doubt as to the design, he should refer to the Chief Inspector, Royal Arsenal, Woolwich, for particulars.

2. These gauges will be provided when reduced windage projectiles have been issued to equipments.

3. Sentence by actual measurement along the bore will only be resorted to when the appropriate gauge is not available.

APPENDIX I (*b*).

TABLE OF GUNS THAT ARE NOT LIABLE TO STEEL CHOKE, AND FOR WHICH REDUCED WINDAGE PROJECTILES HAVE BEEN APPROVED WITH LIMITS FOR CHOKE BY COPPERING.

Nature of Gun.	Diameter of gauge, plug, bore, low limit for provisional condemnation.	Limit for choke when guns are measured.
	inches.	inches.
B.L. 18-inch Howitzer, I	17·98	17·984
B.L. 12-inch Howitzer, III to V ..	11·98	11·984
B.L. 9·2-inch Gun, IX fitted with inner "A" Tube to R.G.F. designs 11014/23, 11014/67	9·185	9·188
B.L. 9·2-inch Gun X*	9·185	9·188
B.L. 9·2-inch X Gun, fitted with inner "A" Tube to R.G.F. designs 10768 B/169, 10768 B/263, 10768 B/263A..	9·185	9·188
B.L. 9·2-inch Gun X^{v} fitted with inner "A" Tube to V.S.M. design 16309.G.	9·185	9·188
B.L. 9·2-inch Gun, XIII	9·185	9·188
B.L. 9·2-inch Howitzer, I, II	9·185	9·188
B.L. 8-inch Howitzer, VIII	7·985	7·988
B.L. 6-inch Gun, VII, fitted with inner "A" Tube to design R.G.F./10810/387, V.S.M./16314. G, R.G.F./10810/396, R.G.F./10810/287	5·985	5·988
B.L. 6-inch Gun, VII^{v}, fitted with inner "A" Tube to designs V.S.M./16812. G., R.G.F./10810/388	5·985	5·988
B.L. 6-inch Gun, XIX..	5·985	5·988
B.L. 6-inch Gun, XXI..	5·985	5·988
Q.F. 6-inch Gun, II	5·985	5·988
B L. 6-inch 26-cwt. Howitzer, I ..	5·985	5·988
B.L. 60-pr., I, fitted with inner "A" tube to design R.G.F./11050/115 ..	4·99	4·992
B.L. 60-pr. I*, I**, II, II*	4·99	4·992
Q.F. 4·7-inch Gun, III to V	4·714	4·716
†Q.F. 4·5-inch Howitzer, I, II ..	4·49	4·492
†Q.F. 4-inch Gun, III	3·99	3·992
†Q.F. 18-pr., I to II*, IV, IVA and IVB	3·29	3·292
†Q.F. 13-pr., 6-cwt., I to III	2·99	2·992
†Q.F 3-inch 20-cwt., I to I***, IA, IB, III, III* and IIIA	2·99	2·992
†Q.F. 12-pr. 12-cwt., I, II*	2·99	2·992
†Q.F. 3·7-inch Howitzer, I	3·691	3·693
†Q.F. 6-pr. Hotchkiss & Nordenfelt ..	2·24	2·242
Gun sub-calibre Q.F. 3-pr.	1·846	1·848
Q.F. 2-pr., Mks. IX and X	1·568	1·570

Notes.—1. Gauges for Guns other than those marked † will be provided when reduced windage projectiles have been issued to equipments.

† Gauges, plug, bore, low limit for provisional condemnation, now in the Service are still to be used for these natures; sentence by actual measurement will only be resorted to when these gauges are not available.

APPENDIX II.

(Referred to in Paragraph 3.)

Instructions for De-coppering Bores of Guns by the Chemical Method.

The bore of the gun must be cleaned out thoroughly with clean water, then sealed by plugging the ends of the bore with an apparatus to be made locally.

The apparatus consists of two wooden blocks, one fitted to the breech opening, and provided with an elongated hole in the upper part to admit of free movement of an agitator ; the other block is fitted in the muzzle, and should be made in halves, each half being covered with sheet rubber, and having a tapered hole through the axial centre to receive a wooden tap. This tap serves to draw off the solution when required, and also acts as a wedge to expand the block into the bore (*see* sketch). Any other means of sealing the muzzle and preventing the solution leaking through may be improvised. The agitator may consist of light flexible rod or cane, having two or more perforated discs at intervals along the length acting in the bore of the gun. When the muzzle disc has been fitted, the gun should be depressed 5 degrees, and a small quantity of solution run in to test it.

When found to be water-tight the gun can be filled as required ; the agitator should then be inserted and the breech disc fixed. The operation can then be proceeded with, the solution being agitated by moving the rod to and fro on the principle of a churn for, say, 5 minutes every hour ; this agitation may, however, be dispensed with during non-working hours if suitable arrangements for carrying it out cannot be made. It will probably be necessary to continue the treatment from 24 to 48 hours, according to the amount of deposit present, after which the gun should be washed out and scrubbed with a hard piasaba brush.

The solution to be used is made by mixing together ingredients in the following proportions :—

Ammonia liquor ·880	1 lb.
Ammonia persulphate	10½ oz.

Clean water added to make 1 gallon.

The approximate quantity of solution required for any particular nature will be as follows :—

O.B.L. 9·2-inch IX, " C " IX, X, X^{v}	103 gallons.
O.B.L. 6-inch, VII & VII^{v}	27 ,,
O.B.L. 60-pr., I	11 ,,

The persulphate should be obtained only from hermetically sealed containers.

It is also essential that the persulphate and the ammonium hydrate should be thoroughly mixed before they are introduced into the bore of the gun, in order to avoid pitting of the bore.

In mixing the ammonia with the persulphate, it is essential that the former should be added until the whole mixture smells strongly of ammonia. A test of its alkalinity should be made with litmus paper.

The solution should be tested for alkalinity from time to time during the operation, and, if it should be found to act sluggishly, a small amount of ammonia persulphate may be added from time to time, always with the proviso that the solution must be kept strongly alkaline by the addition of ammonia liquor ·880 when necessary.

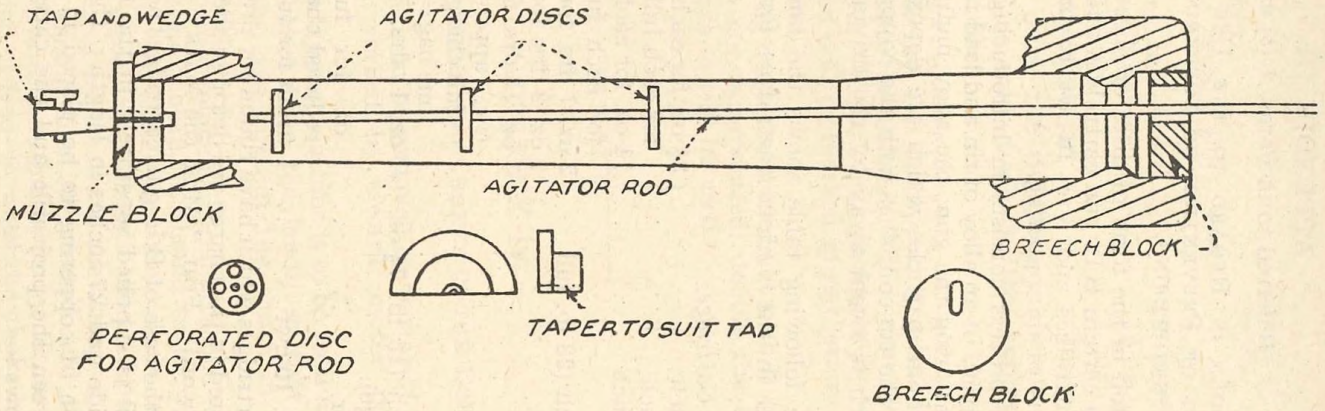
As ammonia persulphate does not keep well in solution, and is only effective in the presence of an excess of ammonia liquor, care should be taken, on the ground of economy, to make up sufficient only at a time for actual requirements.

Fresh solution should be made for each gun as required.

After the operation, the solution should be removed from the gun as rapidly as possible, preferably, if convenient, by removing the muzzle tampeon and running it to waste. The gun should then be cleaned out and all traces of the solution removed.

TYPICAL APPARATUS FOR DE-COPPERING GUNS.

General Arrangement.



APPENDIX III.

(Referred to in Paras. 1 (*b*) and 3).

INSTRUCTIONS IN REGARD TO THE USE OF TINFOIL AS A MEANS OF PREVENTION OF COPPERING OR AS A MEANS FOR DE-COPPERING.

1. Tinfoil in the form of discs or sheet or strips is incorporated in certain B.L. gun cartridges and in the Q.F. 3-inch 20-cwt. cartridges and 6-pr. 10-cwt. to prevent coppering or as a means of de-coppering.

2. The process consists in introducing into the charge a small quantity of an alloy of tin and lead in a form facilitating fusion ; on firing the gun, the alloy melts and is reduced to extremely fine particles which are deposited in the bore of the gun ; the tin combines with the copper to form a brittle alloy which is swept away by the driving band of the next projectile.

3. The following table shows the amount of tinfoil incorporated in the various cartridges for the prevention of coppering :—

Cartridge.	*Tinfoil.*
B.L. 15-inch B.L. 14-inch	3¾ oz. for each ¼ charge, *i.e.*, 15 oz. for each full charge.
B.L. 9·2-inch	1½ oz. for each ¼ charge, *i.e.*, 6 oz. for each full charge.
B.L. 6-inch (23 lb. full charge).	2 oz. 7 drs. for each ⅔ charge. 1 oz. 2 drs. for each ⅓ charge. 1 oz. 11 drs. for each ½ charge. (*i.e.*, approx. 3½ oz. for each full charge), when made up in one bag = 3½ oz.
B.L. 6-inch (15 lb. 7½-oz. charge).	1 oz. 11 drs.
B.L. 60-pr.	1 oz. for full charge, ¾ oz. for reduced charge.
Q.F. 6-pr. 10-cwt.	1 dram for full or reduced charge.

All cartridges which have tinfoil for prevention of coppering incorporated in the charge are distinguished by being stencilled with the word " FOIL " after the Mark.

4. In the case of B.L. gun cartridges not stencilled " FOIL " the tinfoil is supplied separately in the form of strips about 1 inch wide and 27 inches in length ; the proper amount for prevention of coppering to be placed in the chamber of the gun between the projectile and the cartridge during loading is as follows :—

Gun.	*Weight of tinfoil.*	*No. of strips of tinfoil.*
B.L. 9·2-inch gun, full and ¾-charges	4 oz.	16
B.L. 6-inch guns, full charge ..	3 oz.	12
B.L. 6-inch guns, ½ charge ..	1¾ oz.	7
B.L. 60-pr., full charge	1 oz.	4
B.L. 60-pr., reduced charge ..	¾ oz.	3

The method of using the tinfoil is to be in accordance with the instructions laid down in the appropriate Gun Drills and Handbooks.

5. Cartridges Q.F. 3-inch 20-cwt. of cordite other than S.C. specially made up for de-coppering with ⅓-oz. tinfoil incorporated will have the letters "DEC" stencilled on them instead of the word "FOIL," and packages in which these cartridges are issued will be marked in red letters "FOR DE-COPPERING PURPOSES."

6. If de-coppering has to be carried out with B.L. cartridges in which tinfoil is not incorporated, double the amounts of tinfoil shown in para. 4 will be used.

APPENDIX IV.

INSTRUCTIONS FOR REMOVING CHOKES IN THE BORE OF GUNS.

Choke in a bore is to be removed by means of lapping and milling machines worked by electric motor power, when available.

Lapping.—The lapping machine is to be used first, in order to remove the chokes from the lands, so that the milling machine can follow and cut out the choke in the grooves without obstruction.

When the lapping machine has been attached to the muzzle of the gun, the lapping head, A, should be moved up to the centre of the choke, fed with emery and oil, set out by means of the expanding wheel, B, until both the lead pads, D, touch the bore, and secured by means of the clamping wheel, C.

The machine should then be started and the head fed continuously backwards and forwards by means of the lever controlling direction of feed, E, until the choke is removed.

When removing chokes at a greater distance than 8 feet from the muzzle of the gun, the steady bearing, F, should be used to prevent the sagging of the bar.

When the chokes have been removed, the remainder of the bore should be lapped out to a uniform diameter to within the limits given in para. 7. No. 24 grain emery is suitable for this operation.

Hand-lapping—The following instructions are to be observed when hand-lapping the bores of B.L. 60-pr., Mark I guns :—

(*a*) Great care is necessary in the operation of lapping.

(*b*) The lapping head should not be drawn backwards and forwards too long over one spot, but frequent measurements should be taken.

(*c*) With hand-lapping, ovality of bore is more likely to occur than with the revolving head used with a lapping machine.

(*d*) The most suitable design of head for hand-lapping is one controlled by springs, as the pressure is more equally distributed round the circumference of the bore.

(*e*) A heavily weighted head is not recommended ; such a lapping head in the hands of a careless operator is likely to do serious damage to the bore of a gun.

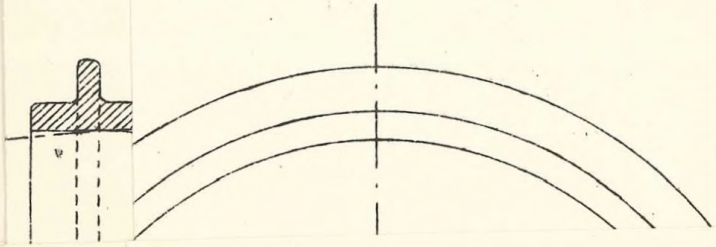
Milling.—Before the operation of milling the grooves by the machine is begun the rifling grooves must be thoroughly cleansed from emery.

The burnishers, B, of the milling head, A, should then be expanded to within ·005-inch of the diameter of the bore, and, before the milling machine is fixed to the muzzle attachment, the milling head should be inserted in the bore to ascertain that it is not too tight, and the guide studs, C, will pass along the grooves.

When the milling machine has been assembled on the muzzle attachment with the cutters, D, out of the muzzle of the gun, the machine may be started and a set of two grooves then milled.

If the grooves require milling for distances greater than 4 feet, the friction grip, E, must be loosened when the head has been fed into the gun as far as the length of the feed screw, F, will permit ; the feed screw must then be fed back by means of the quick-return device, G, and the friction grip tightened, when the head can be fed further up in the bore.

NG G



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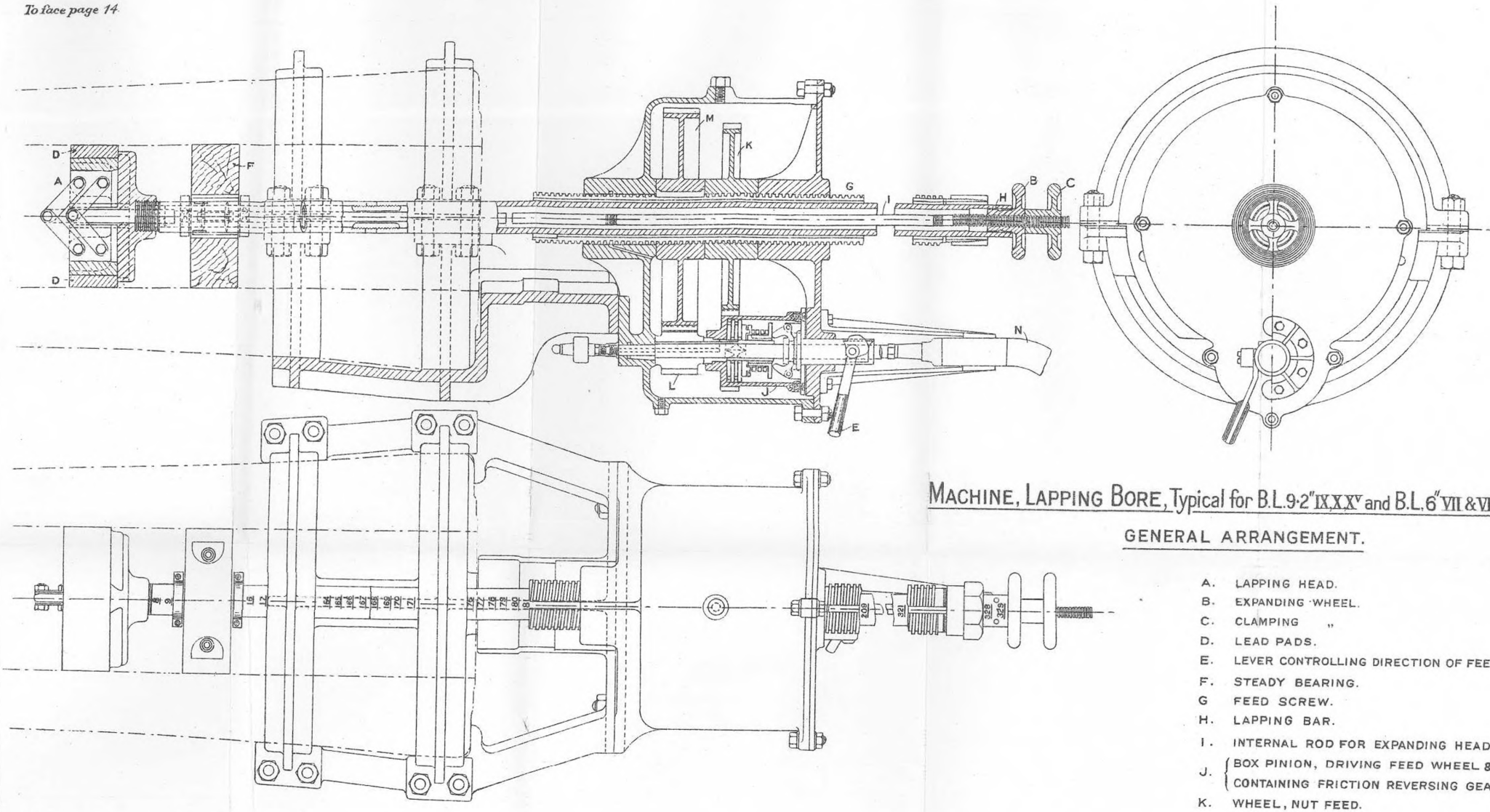

MACHINE, LAPPING BORE, Typical for B.L. 9·2" IX, X, XV and B.L. 6" VII & VIIIV GUNS.

GENERAL ARRANGEMENT.

A. LAPPING HEAD.
B. EXPANDING WHEEL.
C. CLAMPING „
D. LEAD PADS.
E. LEVER CONTROLLING DIRECTION OF FEED.
F. STEADY BEARING.
G FEED SCREW.
H. LAPPING BAR.
I. INTERNAL ROD FOR EXPANDING HEAD.
J. { BOX PINION, DRIVING FEED WHEEL & CONTAINING FRICTION REVERSING GEAR.
K. WHEEL, NUT FEED.
L. DRIVING PINION.
M. „ WHEEL.
N. FLEXIBLE DRIVING SHAFT.

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Malby & Sons, Lith.

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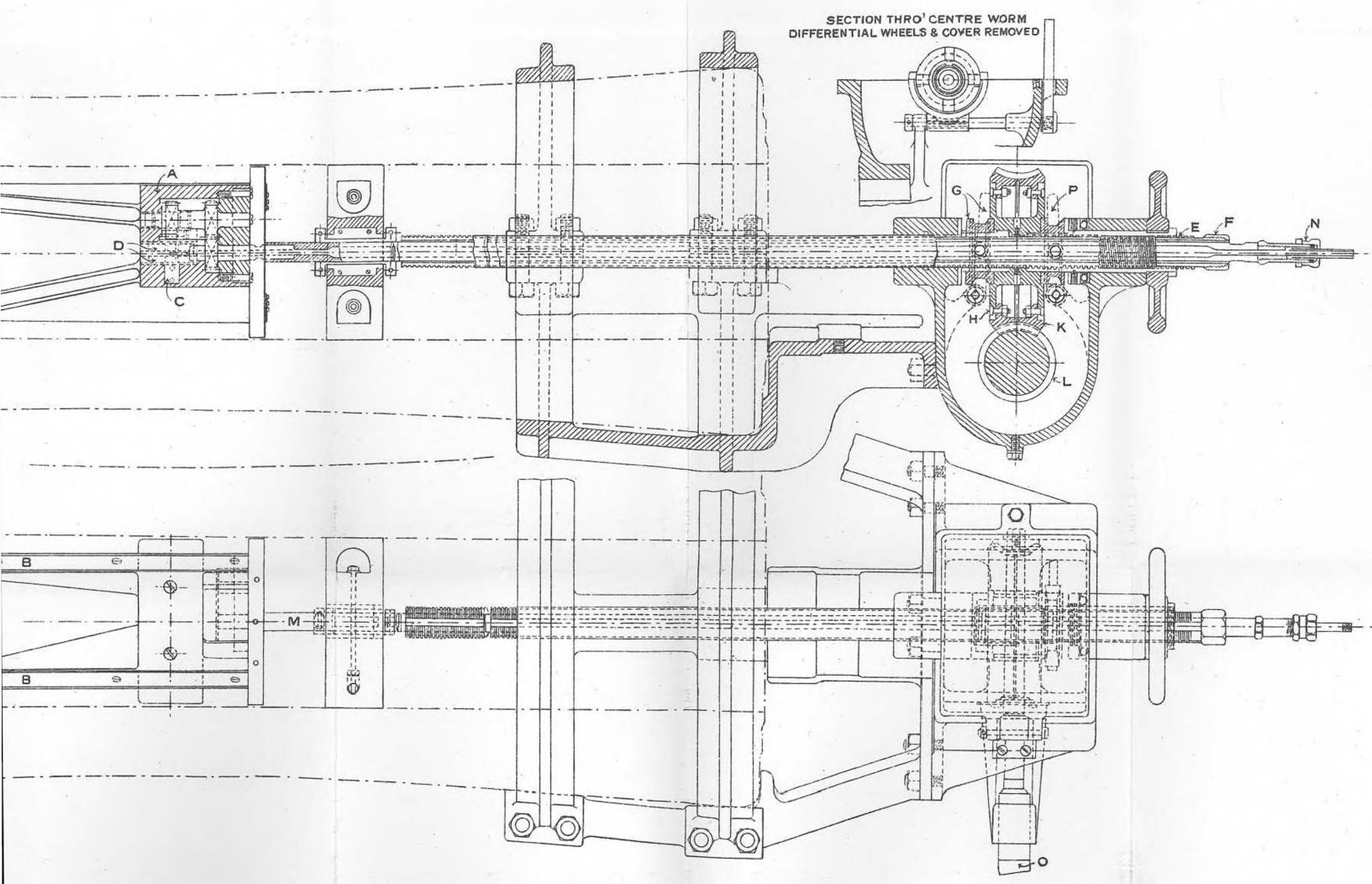
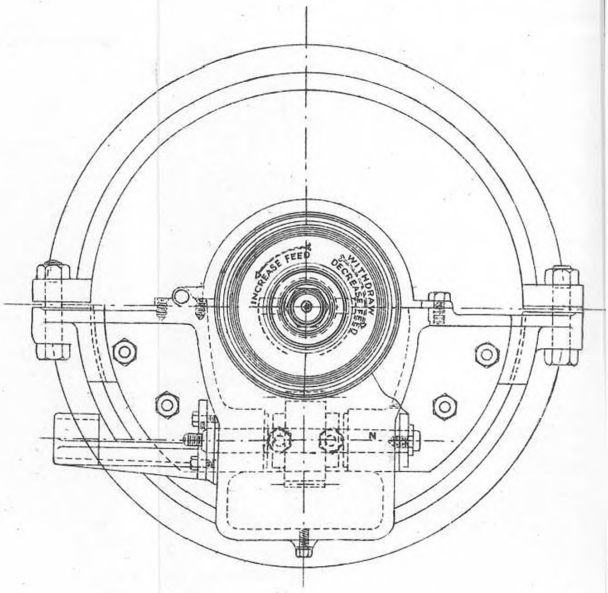
MACHINE. MILLING RIFLING GROOVES, Typical for B.L. 9·2" IX, X, X^v & 6" VII & VII^v GUNS.

GENERAL ARRANGEMENT.





A. MILLING HEAD.
B. BURNISHING.
C. GUIDES.
D. CUTTERS.
E. FRICTION GRIP.
F. FEED SCREW.
G. QUICK RETURN DEVICE.
H. FEED WHEEL.
K. DRIVING WHEEL.
L. WORM.
M. DRIVING SHAFT.
N. WATER GLAND.
O. FLEXIBLE DRIVING SHAFT.
P. HAND FEED DEVICE.

Great care must be taken to cleanse the rifling grooves from metal cuttings after each operation, before the return of the milling head towards the muzzle of the gun, to avoid the possibility of the milling head becoming jammed in the bore.

Upon the assembling of either of the machines, a turn should be given by hand from the first motion shaft to ascertain all is clear before starting the motor.

(5864) Wt20504/8760 500 8/41 HWVLtd Gp 440
(7187) Wt36410/9626 2000 11/41.
(7654) Wt43574/9934 2000 1/42.

Notified in A.C.Is. 27th May, 1942.

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26 Regulations 2106

REGULATIONS FOR ARMY ORDNANCE SERVICES, PART II

PAMPHLET No. 15, 1929

AMENDMENTS (No. 2A)

Page 7. Appendix I (*a*).—*Delete* " B.L. 9·2-in. IX, C IX " and all detail. 26 Regulations 2106

Page 8. *Delete* " Appendix I (*b*) " and *substitute* :—

APPENDIX I (*b*)

Amdt. 2A May, 1942

TABLE OF GUNS THAT ARE NOT LIABLE TO STEEL CHOKE AND FOR WHICH REDUCED WINDAGE PROJECTILES HAVE BEEN APPROVED WITH LIMITS FOR CHOKE BY COPPERING. 26 Regulations 2106

Nature of gun	Diameter of gauge, plug, bore, low limit for provisional condemnation	Limit for choke when guns are measured
	inches	inches
B.L. 18-inch Howitzer, I to II	17·98	17·984
B.L. 15-inch Gun, 1	14·992	14·995
B.L. 12-inch Howitzer, III, IIIA, IV, IVA, V, VA and VI	11·98	11·984
B.L. 9·2-inch Gun, X*	9·185	9·188
B.L. 9·2-inch X Gun, fitted with inner " A " Tube to R.G.F. designs 10768 B/169, 10768 B/263, 10768 B/263A	9·185	9·188
B.L. 9·2-inch Gun Xv fitted with inner " A " Tube to V.S.M. design 16309. G	9·185	9·188
B.L. 9·2-inch Gun, XIII, XIII* and XIIIA	9·185	9·188
B.L. 9·2-inch Gun XV	9·185	9·188
B.L. 9·2-inch Howitzer, II and IIA... ...	9·185	9·188
B.L. 8-inch Howitzer, VIII	7·985	7·988
B.L. 7·2-inch Howitzer I, I*, II, III and IV	7·190	7·193

Notified in A.C.Is. 30th July, 1941

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26 Regulations 2106

REGULATIONS FOR ARMY ORDNANCE SERVICES, PART II

PAMPHLET No. 15, 1929

AMENDMENTS (No. 1A)

1. Page 4. Para. 5. *Below* line 13 *insert* :—

26 Regulations 2106 — In the case of ordnance having a Range Table M.V. of 2,300 f.s. and over, measurements will be taken at one inch and at each succeeding inch up to three calibres from the commencement of the rifling. — Amdt. 1A July, 1941

By Command of the Army Council,

THE WAR OFFICE,
30*th July*, 1941.

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Nature of gun	Diameter of gauge, plug, bore, low limit for provisional condemnation	Limit for choke when guns are measured
	inches	inches
B.L. 6-inch Gun, VII, fitted with inner "A" Tube to designs R.G.F./10810/387, V.S.M./16314. G, R.G.F./10810/396, R.G.F./10810/287	5·985	5·988
B.L. 6-inch Gun, VII*	5·985	5·988
B.L. 6-inch Gun, VII^{v}, fitted with inner "A" Tube to designs V.S.M./16812. G., R.G.F./10810/388	5·985	5·988
B.L. 6-inch Gun, XIX	5·985	5·988
B.L. 6-inch Gun, XXI	5·985	5·988
B.L. 6-inch Gun, XXIV	5·989	5·992
Q.F. 6-inch Gun, II	5·985	5·988
B.L. 6-inch 26-cwt., Howitzer, I	5·985	5·988
B.L. 5·5-inch Gun, III	5·490	5·492
Q.F. 5·25-inch Gun, II	5·244	5·246
B.L. 60-pr. Gun I, fitted with inner "A" Tube to design R.G.F./11050/115... ...	4.990	4·992
B.L. 60-pr. Gun, I* and I**	4·990	4·992
Q.F. 4·7-inch Gun, III to IV*	4·714	4·716
B.L. 4·5-inch Gun, I, I* and II	4·490	4·492
Q.F. 4·5-inch Gun, II	4·443	4·445
†Q.F. 4·5-inch Howitzer, I and II	4·490	4·492
Q.F. 3·7-inch Gun, I, II and III	3·690	3·692
†Q.F. 3·7-inch Howitzer, I and III ...	3·691	3·693
Q.F. 3·7-inch Mortar, I	3·691	3·693
Q.F. 25-pr. Gun, I and II	3·440	3·442
†Q.F. 18-pr. Gun, I to II*	3·290	3·292
Q.F. 17-pr. Gun, I and II	2·990	2·992
†Q.F. 13-pr., 6-cwt., I to III	2·990	2·992
†Q.F. 3-inch 20-cwt., I to I***, I^{A}, II^{B}, III, III* and III^{A}	2·990	2·992
†Q.F. 12-pr., 12-cwt., I to II* and IV ...	2·990	2·992
Q.F. 3-inch Howitzer, I and I^{A}	2·990	2·992
Q.F. 75-mm. Gun, I, IV, S Mk. II, III (Converted) I, I*	2·943	2·945
Q.F. 6-pr., 10-cwt., L. and R.I } Guns Q.F. 6-pr., 7-cwt., II and III } ...	2·240	2·242
†Q.F. 6-pr., Hotchkiss and Nordenfelt ...	2·240	2·242
Q.F. 3-pr., 2-cwt. Guns, I and II	1·846	1·848
Q.F. 2-pr., VIII, IX to XA, and Sub-cal., Guns	1·568	1·570
Q.F. 40-mm. Gun, I, I* and III	1·568	1·570
Q.F. 37-mm. Gun, S II and III	1·450	1·452
Gun sub-calibre Q.F. 3-pr.	1·846	1·848

Notes. 1. Gauges for guns other than those marked † will be provided when reduced windage projectiles have been issued to equipments.

† Gauges, plug, bore, low limit for provisional condemnation, now in the Service are still to be used for these natures; sentence by actual measurement will only be resorted to when these gauges are not available.

Page 12. Appendix III.—*Delete* para. 3 and *substitute* :—

Amdt. 2A May, 1942

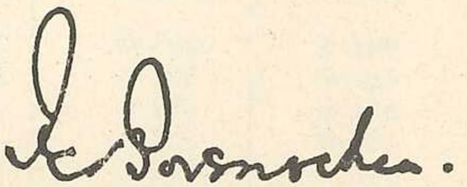
3. The following table shows the amount of tinfoil incorporated in the various cartridges for the prevention of coppering :— 26 Regulations 2106

Cartridge	*Tinfoil*
B.L. 15-inch B.L. 14-inch ...	$3\frac{3}{4}$-oz. for each $\frac{1}{4}$ charge, i.e. 15-oz. for each full charge.
B.L. 9·2-inch... ...	$1\frac{1}{2}$-oz. for each $\frac{1}{4}$ charge, i.e., 6-oz. for each full charge.
B.L. 6-inch (23 lb., full charge).	2-oz. 7 dr. for each $\frac{2}{3}$ charge. 1-oz. 2-dr. for each $\frac{1}{3}$ charge. 1 oz. 11-dr. for each $\frac{1}{2}$ charge. (i.e. approx. $3\frac{1}{2}$-oz., for each full charge) when made up in one bag=$3\frac{1}{2}$-oz.
B.L. 6-inch (15 lb. $7\frac{1}{2}$-oz. charge)	1-oz. 11-dr.
B.L. 60-pr.	1-oz. for full charge, $\frac{3}{4}$-oz., for reduced charge.
O.Q.F. 4·5-inch and 3·7-inch	24 dr., to be loosely crumpled to a dia., approx., equal to that of the cartridge case.
O.Q.F. 25-pr. ...	$\frac{2}{3}$-oz., in cartridge case, immediately below the cup. $\frac{1}{6}$-oz., in all 3rd charge increments.
Q.F. 3-inch 20-cwt. ...	$\frac{1}{6}$-oz., for burst short practice charge and full charge other than S.C. cordite. $\frac{1}{3}$-oz., for full charge S.C. cordite.
O.Q.F. 75-mm. ...	$\frac{2}{3}$-oz., to be loosely crumpled to a dia. approx., equal to that of the cartridge case.
Q.F. 6-pr., 10-cwt. ...	1-dr., for full or reduced charge.
O.Q.F. 40-mm. ...	$\frac{3}{4}$-dr. :—No. 12 Primer $\frac{1}{2}$-dr. :—No. 18 Primer Wrapped round the charge

All cartridges which have tinfoil for prevention of coppering incorporated in the charge are distinguished by being stencilled with the word " FOIL " after the Mark.

By Command of the Army Council,

THE WAR OFFICE,
27*th May*, 1942.



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