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FONDERS ON SHELF VARIOUS REPORTS

1933-1934 Annual Report

Quinan Stove 1 Cordite 2 Cordite W Output 3 TNT Output 3 TNT Results in Practice 3 Mixing Paste Output 11 Cordite W 11 Cordite Changed to Cordite W 25 Staff – Schedule A

MINU.	TES SHOULD BE NUMBERED CONS	ECUTIVELY.
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Separate Sub-numbered sections are provided where there are two or more distinguishable sections or interests in the correspondence. "Action Here" Slips will be inserted by the Registry as a guide in minuting.

Use only Departmental Minute Sheets (Form 98) for internal correspondence.

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WAS

D.O.F.,

Herewith Annual Report on the Royal Gunpowder Factory for the year 1933-34.

25.6.34.

for Superintendent, R.G.P.Factory.

for the

<u>XEAR 1933 - 34.</u>

STAFF. Mr. Scott, the Managing Chemist, retired in November and his place was filled by the promotion of Mr.H.A. Phillips. The consequential vacancy of Grade I Chemist was filled by the appointment of Mr.A.H.Roberts from R.N.C.F., Holton Heath, as a result of a recommendation by a Selection Board presided over by a Civil Service Commissioner.

Mr.S.F.Hines, Grade II Chemist, was transferred to War Office in January 1934, and Mr.E.O.H.Lawrence was appointed Junior Assistant Chemist in March 1934. The Grade II vacancy has not jet been filled.

The fact that a Grade I Chemist had to be obtained from outside the R.G.P.F. staff, and also that the appointee did not have the specialized experience which is desirable for a man holding such a post, indicated such a serious state of affairs that the matter has been specially reported to you with a recommendation for an immediate increase of two Grade II Chemists to ensure adequate succession.

MAINTENANCE. As foreshadowed in last year's report the condition of the plant and buildings, more especially those installed during the war, has been the subject of special review. This has resulted in the drawing up of a programme of work covering the years 1933-34, 1934-35, and 1935-36 submitted to you already in a special report, for the completion of which it is calculated that someofi45,000 extra to what has been hitherto taken as a normal expenditure on maintenance work, will be required. A certain proportion of this programme was carried out during the year under review as will be observed from the figures under the maintenance headings in Schedule (C).

As a result of the consideration given to this matter two large and important building schemes have been formulated for carrying out during the next five years; the first being a £40,000 scheme to cover the cost of replacing the existing Guncotton Stoves with a modern installation of Quinan Driers, and the second is the replacement of cast iron stills for the recovery of waste soid by a modern tower process at a cost of some £10,000. The first scheme is primarily

designed to ensure dafety, while the second is expected to produce economical results of an appreciable nature, especially under emergency conditions.

The scheme for the better provision of steam and electricity required for emergency purposes in the Gundotton Section, referred to in last year's report, is being implemented during the current year by the installation of rotary converters with a connection to the outside power supply.

Where practicable reserve facilities are being used for current manufacturing purposes with the object of keeping the plant prepared for emergency requirements.

The drought of last year, which appears to be continuing this year, is having a serious effect on the internal transport of the factory which is largely water borne, and the use of a greater proportion of labour in the handling of materials has become necessary. The most serious aspect of this matter, however, centres round the transport of paste from the Nitroglycerine glycerine factory to the Cordite section as the Nitroglycerine buildings are isolated from one another and the rest of the factory by water, the only land connection being by small footbridges; plans for alternative methods of transport are being made.

FRODUCTION. The output programme for the year amounted to some 300 tons, an increase of some 50% on the previous annual outputs. The retarding of production in the later months of the year (referred to later on) caused total output to be some 40 tons less than the programme.

The improved Cordite suggested by R.G.P.F. and referred to in last year's report, (Cordite "W"), has given most satisfactory

results in practice, and under the latest instructions it will entirely replace M.D. for all Cannon Cordite. During the year some 1000 tons of "W" were instructions it will

The manufacture of Picrite and R.D.N. Cordite was maintained at a development level only. It may be mentioned that a special milling machine of American origin for carrying out an essential process in Picrite manufacture has given so much trouble this year that home sources of supply of something more reliable are being sought.

A further development in Picrite manufacture is the substitution of a fusion process in an open vessel for the original autoclave process carried out at a pressure of some 150 lbs. per square inch. This is working satisfactorily. All the pressure processes have now been climinated.

In general the position is clear for bulk expansion of Picrite output if and when required, subject always to the erection of a permanent installation.

The T.M.T. Pilot Flant erected during 1932-33 was put into operation. Experience showed that satisfactory results could only be obtained by continuous working. The best result was obtained in March when 18500 lbs. were produced at 1/6 per lb. This compares with a total production of some 75000 lbs. at a gross cost of some £9000.

The local problem of disposal of spent acid has received considerable attention but is not yet adequately solved.

Tetryl purification has been carried out throughout the year for the Army and Air Ministry.

A special plant has been installed in connection with the manufacture of Fuze Powder Mill Cake for issue to R.F.F. where it is finished.

The R.D. 202 Fuze Powder Plant has been used for a small amount of reblending and new manufacture.

For some time there has been a suggestion that the stability of M.D. Cordite produced at R.G.P.F. has not been up to the usual high standard, the reason for this is obscure but to possibly

facture of Guncotton during the period 1928 1932. The criticism culminated in M.G.O. deciding in March last that no more Cannon cordite should be made at R.G.P.F. until certain steps to ensure absolute cleanliness in certain of the manufacturing processes were taken. The cessation of Guncotton manufacture for some two months naturally upset the manufacturing programme somewhat badly, but the position is now clearing.

The question of using wood pulp or straw in place of cotton waste is at present being examined.

During the year a Calder-Fox Scrubber was installed in the Guncotton Section in place of a coke condenser for purifying the exhaust gases from sulphuric acid concentration. This ecrubber is a more modern machine for this purpose and is expected to be more economical both in capital cost and maintenace than the older type of condenser. It has been installed in the first place more or less experimentally.

An experimental small scale denitration tower for recovering waste acid was erected and tried out with the object of obtaining information for the proposed large scale scheme already mentioned.

Glycerine Nitrator No.2 has been entirely rebuilt during the year.

PARTICULARS OF MANUFACTURE.

Guncotton Section.

Nitric Acid. Soda Nitrate charges	esp	69 at 36 at 10 at	1.1/2	tons
Total Nitrate of Soda charged	450	226.24 225.10	S/tons	crude pure
Equivalent HNO3		166.84	9 9	
Nitric Acid produced		182.20 164.05	3 9 9 9	at 90.0% HNO3
Loss		2.79	9 9	
Rfficiency		98.3%		
Strong Sulphuric Acid used		217.14		at 94.5%

```
Acid charged = 1372.25 S/tons containing 855.54 S/tons H2SO4
                                          249.05
                                                        HNO3
                                          267.66
                                                        H<sub>2</sub>O
                                                    3 2
         Strong Nitric Acid recovered
                                          271.40
                                                        at 89.69%
                                                    9 2
                                          243.40
                                                        HNO3
                          Loss
                                            5.65
                          Efficiency
                                           97.70%
         Weak Sulphuric Acid recovered 1070.29 S/tons @ 78.95%
                                          845.49
                                                        H2SO4
                                           10.05
                          Loss
                         Efficiency
                                           98.85%
Concentration of Weak Sulphuric Acid.
     Acid charged to concentrator
                                      981.30 S/tons at 78.52%
                                      770.53
                                                    H2S04
     Strong sulphuric Acid produced 805.94
                                                   at 93.95%
                                               2 3
                                      757.22
                                                   H2S04
                                               9 9
                          Loss
                                       13.31
                          Efficiency 98.26%
Nitration.
     No. of Sets of Guncotton
                                           2059
     No. of Sets of Nitrocotton
                                             11
                                               3/4
     No. of Sets of Strip Paper
     Mixed Acid used
                                   3586.61 S/tons
     Cotton Waste used
                                     128.26
                                                   gross
                                              2 2
                                     115.23
                                                   nett (see Raw
                                              9 2
                                                    Materials)
     Guncotton produced
                                    192.61
          Saveall
                                       3.62
          Yield
                                     167.1% Available for Cordite
                                                164
     Ratio Mixed Acid/Cotton Waste
                                     31.14%
           Mixed Acid/Guncotton
                                      18.63%
Guncotton issued to services other than for Cordite Manufacture.
   3869 1 lb. Guncotton Slabs wet, to C.O.O., Bramley
   50 lbs. Guncotton Pulp to R.F.F., Woolwich
```

3 lbs. of Guncotton Dust to Armstrong Vickers

500 Men. Guncotton Slabs wet, to C.O.O., Bramley 2 lbs. Guncotton Dust to Armstrong Vickers 200 lbs. Guncotton Pulp to C.S.R.D., Woolwich 80 lbs. Nitro Straw to C.S.R.D., Woolwich.

Total = 4704 lbs.

Fuse Powder R.D. 202.

208 lbs. for C.A.S. M.O. 5033 Reblended

934 lbs. Manufactured

Ammonium Perchlorate (crude 224 lbs.) refined.

Raw Materials.

T. Ø. lbs.
Oleum drawn from store 270 10 44 = 302.98 S/tons

Difference in stocks

23.97

Oleum consumed

279.01

= 1.45 per lb. of Guncotton.

Nitrate of Soda drawn from store

T. Ø. 1bs. 202

0 = 226.24 S/tons

Difference in stocks

7.23

Nitrate of Soda consumed

233.47 9 9

= 1.213 per 1b. of Guncotton.

Cotton Waste drawn from store

g. T.

lbs. 49 = 128.26 S/tons

Deduct oil and

moisture 6.81%)

8.73 S/tons

13.03

Deduct pickings and fly 4.30

115.23

Nett Cotton Waste used for Nitration

\$

Foreign matter removed in picking etc .: -

lbs.

.3065

Wood, string and metal

780 92

.0260

Fly

Grit

7742

3.0880

Cotton used per 1b. of Guncotton 0.6659 Gross

0.5983 Nett

Summary of Consumption and Losses - S/Tons.

Operation	H ₂ S	F102	H	MHO 3		
Appelation of the state of the	Actual	per ton of G/C.	Actual	per ton of G/C.		
Manufacture of Witric Acid	204.95	1.065	2.79	.0145		
Redistillation	10.05	.0522	10.65	.0553		
Concentration	13.31	.0691	SIR	453		
Nitration	50.76	.2635	159.35	.8275		
	279.07	1.4498	172.79	.8973		
	the state with the state with the state with the state and					

Nitroglycerine Section.

A. Manufacture of Nitric Acid.

78 runs at 30 cwt. of Nitrate of Soda.

Average time of distillation $11^{1}/_{2}$ hours.

Materials and Results .-

Nitrate of Soda used 131.04 S/tons at 99.20% NaNO3 C.O.V. used 112.24 ,, at 91.74% H₂SO₄ Oleum used 21.75 ,, at 20% SO₃ Coke 22.45 ,,

Strong Nitric Acid made 90.55 S/tons at 91.24%HNO3
Weak Nitric Acid made 14.46 ,, at 62.46% HNO3
Nitre Cake produced 157.25 ,, at 32.7% H2SO4

Efficiency Strong Acid 86.5%

Total Efficiency - Process 96.0%

Overall 95.31%

B. Denitration of Waste Acid.

Output .- Old No. 1 Tower.

25 charges were denitrated in No.1 Tower in 288 hours. Temperature 157° C.)

25 charges withers about 10 tons of weak Nitric Acid were denitrated in the new tower in 695 hours, average bottom temperature being 140°

Waste Acid denitrated 76.35 S/tens

Denitrated Sulphuric Acid made 79.112 ,, at 69.5% H₂SO₄

Nitric Acid recovered 12.990 ,, at 56.65% HNO₃

Output - New Tower -

Waste Acad denitrated 76.75 S/tons

Weak Nitric Acid added 10.713 ,, at 66.5% HNO3

Denitrated Sulphuric Acid made 84.843 ,, at 64.7% H2SO4

Nitric Acid recovered 5.292 ,, at 91.10/ HNO3

and 12.299 ,, at 71.66% HNO3

Efficiencies - Old Tower -

Sulphuric Acid - Process 100% Overall 98.16%

Nitric Acid Process and Overall 85.82%

Efficiencies - New Tower -

Sulphuric Acid - Process and Overall 100%

Mitric Acid Process and Overall 86.16%

C. Concentration of Weak Sulphuric Acid.

Concentration for 1516 hours at average dome temperature 113° C. Output.

Weak Acid concentrated 268.57 S/tons at 64.09% H2SO4

Strong Acid made 162.10 ,, at 91.67% ,,

Weak Acid made 42.61 , at 43.00% .,

Coke used 38.23 ...

Efficiency.

Strong Acid 86.33

Process 97.00% Overall 95.68%

D. Redistillation of Weak Nitric Acid. During the latter part of the year redistillation in stills was abandoned temporarily, and the weak Nitric Acid was passed with waste acid through the new Denitration Tower,

13 runs were carried out in Stills.

Output.

Weak Nitric Acid redist	illed 30.125	S/tons	at	60.18%	HN03
Strong Sulphuric Acid u	43.50	9 9	at	93.06	HgS04
Strong Nitric Acid made	16.88	9 9	at	89.55	HN03
Weak Witric Acid made	3.80	9 9	at	60.58%	HNO3
Sulphuric Acid recovere	56. 63	9 2	at	71.30%	H2S04
Coke used	5.60	9 9			

Efficiencies.

Nitric Acid (Strong) 83.32% Nitric Acid (Process and Overall) 96.00% Sulphuric Acid - Process 99.70% Overall 97.40%

E. Acid Mixing. No.2 Mixer used 630 hours.

Output.

Nitric Acid (new) Mixed 90.25 S/tons at 91.24% HNO3
Nitric Acid (redistilled) mixed 22.80 ,, at 89.84% ,,
Oleum (20%) mixed 48.75 ,, at 20% SO3
Oleum (65%) mixed 58.50 ,, at 65% SO3
Total Mixed Acid made 220.30 ,,

F. Manufacture of Nitroglycerine. 51 charges of 1470 lbs. of Glycerine each were nitrated. Average time of nitration was 71 minutes. and of separation 180 minutes. Average temperature of brine was -11° C. All charges were nitrated at 10° C. Nos. 1 and 2 Washing Houses were used.

Materials and Output.

Glycerine nitrated	37.485	S/tons
Mixed Acid used	210.375	9 3
Waste Acid made	153.10	9 9
Soda Ash used	2.856	9 9
Nitroglycerine made	87.732	9 9
Yield	234.04	

Summary of Tests.

On white care well well and province place to be the	William word man some	244 - 4	A
Moisture	Maximum 0.33%	Minimum 0.09%	Average 0.25
Heat Test	13 mins.	10 mins.	11 mins.
Alkalinity	A 7 7	under .0005	-

Nitroglycerine was used as follows -

For	Cordite	M.D.	50.307	S/tons
For	Cordite	₩ •	33.172	9 3
For	Cordite	Mark I	1.990	9 9
For	Cordite	R.D.N.A.	1.783	9 9
For	Dynamite		0.325	9 3
For	various	Experiments e	etc. 0.155	3 9

Summary of Consumption and Losses of Acids.

		H2S	04	HNC	3
Manufacture of 1	Nitric Acid	Actual S/tons 122.100	Per ton N/G 1.392	Actual S/tons	Per ton
Denitration		2.123	0.024	3.394	0.038
Concentration		7.512	0.085	tion	600
Redistillation		1.045	0.011	0.738	0.008
Aoid Mixing		4.088	0.045	9.672	0.110
Nitration		4.098	0.046	75.469	0.860
		140.966	1.606	89.275	1.016

Raw Materials Used.

Nitrate of Soda	1.451 per	ton	Nitroglyderine
Oleum (20%)	0.803	9 9	9 9
Oleum (65%)	0.667	9 9	9 9
Glycerine	0.4273	9	2 2
Soda Ash	0.0326	9	9 9

G. Drying and Weighing Guncotton and Nitro-Cotton. 72 stovings of Guncotton and 2 stovings of Nitrocellulose were dried. Average time of drying was 65 hours. Moistures at the end of drying were Maximum 0.68, Minimum 0.32, Average 0.47. Total amount dried was Guncotton 173.32 S/tons, Nitro-cotton 2.03 S/tons.

Guncotton was used for -

M.D.]	.05.22	S/tons
Cordite W.			71.69	9 9
Mark I			1.25	9 >
Experiments			0.23	9 9
Nitro-cotton was used	for	***		
R.D.N.A.			1.40	S/tons
Experiments			0:01	9 2

H. Mixing Peste.

Paste mixed -

M.D.	155.53	S/tons
Cordite W.	104.86	9 9
Mark I	3.24	9 9
R.D.N.A.	7.80	9 9
Experiments	0.40	9 9
Dynamite made	0.50	9 9

I. Tetryl. During the year 123 purifications were carried out; 113 on Grade IA material for the Army and 10 for the Air Ministry. Output.

For the Army -

Purified	23,172	lbs.
Grade I recovered	22,051	9 9
Lost	1,121	9 9
Acetone used - (Old Stock) 14,668) (Trade) 10,862)	25,550	9 9
Tetryl issued	16,400	9 9
unfit	1,100	2 2
under examination	4,551	9 9
For the Air Ministry -		
Purified	2,012	lbs.
Recovered	1,993	9 9
Lost	79	9 9
Acetone used (Old stock)	2,265	9 9
Tetryl issued fit	1,493	3 2
unfit	440	9 9

J. Picrite Manufacture. Following is a brief summary of the work

Extractions	126
Fusions	129
Nitrations	40
Purifications	448

Raw Materials used -

Calcium Cyanamide	14.112	S/tons
Ammonium Nitrate	6.244	9 9
Sulphuric Acid	15.000	9 9
Product completed	5.035	. 99

Recovered Sulphuric Acid issued.

Raw Material used per ton of Picrite made -

		Calcium Cyanamide	2.80 S/tons
		Ammonium Nitrate	1.24 ,,
		Sulphuric Acid	2.97 ,,
Picrite	Was	used as follows:-	
		For R.D.N.A.	4.610 S/tons
		Experimental	0.310 ,,

Cordite Section.

The output of Cordite from the presses during the year has been approximately 285 tons, an increase of 82 tons over last year's production. 49% of the output has been on the small screw presses.

The following experimental batches have been manufactured during the year:-

```
For Service of Ordnance Committee: -
   R.D.N./A. 54 lbs. .052/14"
             400 lbs.
                         .090/24"
H.P.& H.P.T. 960 lbs.
                         ( .055 - .030 (die)
  F.535/2
               54 lbs.
                         ( .022
                         ( .027
                         ( .046 - .022
                         Cut to 0.10" (issued 138/16 lb.)
  H.S.C.T.
               15 lbs.
  M.D. Reworked with Carbamite ( 0.5%
                              2.0%
                              (3.0%
```

```
396 lbs. 0 .160
                                  .072
                                0205 (issued 390<sup>12</sup>/16 lbs.
           R.D.B. Reworked with Carbamite 2%
                       37 lbs. .080 (die). (Issued 1934-35)
     For Research Department -
           R.D.N./A. 500 lbs.
                                  .042/33"
                      200 lbs. .042/30"
                      400 lbs. .042/101"
           H.P.T.
                     100 lbs.
                                 .074 - .026
           M.D.
                     105 lbs.
                                 Size 16/33"
                                 .047 - .016 cut to 0.075"
           M.D.T.
                      10 lbs.
           W.T.
                      20 lbs.
                                .06 - .02
                                  .04 - .02
           W.T.
                     28 lbs.
                                  Size 5 - 2
           M.C.T.
                      18 lbs. Size 5 - 2
Various Compositions (A) G.C. N.G. M.J. Carbamite
          (I)
                                65%
                                        30%
                                               4%
                                                            1%
          (2)
                                65
                                         30
                                                 3
                                                            2
          (3)
                                80
                                        16
                                                 0
          (4)
                                90
                                         8
                                                 0
                    36 lbs. ( .055 - .020 cut to .05"
                               .065 - .020 cut to .05"
                               .075 - .020 cut to .07"
                      (B)
                               G.C. N.G. C.M.J.
                                                         Pot.Acetate
                                70% 25.5%
                                                4.0%
                                                           0.5
                             ( .048 \( .022\)
( .0535 - .022
( .0585 - .022
( .0415 - .015
                    12 1bs.
                               .0465 - .015
                               .0515 - .015
.036 - .010
.041 - .010
.046 - .010
                               .025
                               .031
                               .036
    For Air Ministry -
```

H.P.T. 1050 lbs. .074 - .026

For Small Arms Committee -

M.D.T. 120 lbs. Size 7 - 2

.0695 - .022 (die)

Also Proof Samples for Firing Trials -

M.C. size 8

25 lbs.

size 8/ll"

19 lbs.

H.P. sample

6 lbs.

W. sizes $2\frac{1}{4}$, $4\frac{1}{4}$, 8, 12 & 15 326 lbs. (Issued 324 lbs.)

size 11 .092 (die) 37 lbs. (Issued $17^8/_{16}$ lbs.)

The following Tables give a summary of the various materials used and the different quantities of sizes manufactured and issued 1933-34.

Table I - Raw Materials and Paste.

	W	Ma Da	MK . I	RIM	EXD\$1.	Total
Acetone (Cons.3420-3)	77,286	121,445	1,395	3,005	1,053	204,184
Mineral Jelly (Cons. 187)	dip	16,585	366	449	4g/s	16,951
Cracked M.J. (H.H.)	459	COD	400	80%	5	5
Carbamite (Cons. 5-9)	13,352	10 also	460	1,284	85	14,721
Paste	209,128	313,535	6,459	15,576	2,488	547,186
N.G. Charges 630-682						
N.G. Batches 1301-1478						
N.C. Batches 24 and 25		ntionships in the lattice constraints of the first trips and one company occupies by the first	enschaftlich wiederschwisse Kaster von Bestell zu der die weitig zwei weitig.		erannekelijken ovelik knjemelljanjen palazijenje objekt og skjelentara pagazije	rename complexes ple-squares to distribute transactions of rename conducts in
P. Batches 310-348	299,766	451,565	8,220	19,865	3,631	783,047

Table II - Material Incorporated.

M.D. Dough			330,120	lbs.
Rework			490	
Mark I Dough			6,825	9 9
Rewor	k		195	2 2
R.D.N.A. Dou	gh		16,860	9 9
Rew	ork		ffica.	
W. Dough			222,480	9.9
Rework			4017	
Experimental	Dough		2,578	9 9
	Rewerk	(various)	500	. 99
			579,558	9.9

Table III - Cordite Pressed - (a) Small Screw Presses.

AND THE RESIDENCE AND SECURITIONS AND ADDRESS OF THE PROPERTY	CONTRACTOR OF THE CONTRACTOR O	S 402 €2 ⊕	
M.D.T. 5 - 2	204,075 lbs	š a	
7 - 2	27,089 ,,	,	
M.D. 21	15,070 ,,		
41 (Cut)	8,550 ,,		
Experimental M.B. and M.C. (including 396 lbs. Rework	() 693 p. 1	255,797	lbs
Mark I, 1/.05	2,960 ,,	a *	
3	145 ,,		
20/s.c.	3,449 ,,		
Experimental	4978b 4974-bi-1788a-4854in da quiqqaeraquisoebsodi	6,554	99
R.D.N.A., .052	1,405 ,,		
•042	6,871 ,,		
Experimental R.D.N.A052, HPT, HP, F.535/2 etc.	3,518 , , ,	19,443	9 9
Experimental R.D.B. Rework	37 ,,		
Experimental W.	265 ,,		
Experimental (various)	Ag 3	350	2 2
		282,144	9 9
(b) Hydraulic Presses.		elektiğası kingin verilik bir insiştiri insiştirin kişi verilik sasılı sasılı s	
M.D. 11/15" Experimental	70,150 ,,	70,150	9 2
W. 8	176,515 ,,		
W. 11/14.4"	20,560 ,,		
W. 15/17.25"	20,080 ,,		
Experimental W.	146	217,301	9 9
	Total	287,451	9 9
	Grand Total	569,595	3 2
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Class

Table IV - Cordite Issued.

The second of the second control of the seco		
M.D. 11/15"	70,150 lbs.	
M.D.T. 5 - 2	202,330 ,,	
7 - 2	22,598 ,,	
M.D. 21	15,078 ,,	
47	8,550 ,,	
Experimental	68 75 oreauraeraeraeraeraeraeraeraeraeraeraeraeraer	319,393 ³ lbs.
Mark I, 1/.05	2,960 ,,	
3	145 ,,	
20/ S.C.	2,395 ************************************	5,500 ,,
R.D.N.A., .042	17,925 ,,	
Experimental RDNA, HPT, HP, and F.535/2	3,724 marananananahanmanananan 12	21,649 ,,
W. 8	141,275 ,,	
W. 11	20,560 ,,	
W. 15	20,080 ,,	
Experimental	3891,,	182,3042,,
Experimental R.D.B.	400	
Experimental (various)	617 ,	617,,
	Total	528,9083,,
- Percentage Loss, etc.	ортский стор в в в в в в в в в в в в в в в в в в в	man mangan di mandan mangan mangan paga Malilia Afrika di

Table V

Paste used	313,535 M.D.	209,128	6,459
M.J. or Carb. used	16,585	13,352	366 .
Stock Rework 31/3/33	3,310 333,430	222,480	42 6,867
Cordite produced	3 25 ,551	217,566	6,554
Stock rework 31/3/34	6,100 331,651	2,050	120 6,674
Loss Loss Acetone used	1,779 6.55% 36.8%	21852% 34.8%	193 2:9% 20.4/
M.J. or Carbamite	5.02/	6.00%	nijas

Main Laboratory Section.

Cotton Waste

Inspection of Raw Materials, intermediate and finished products, etc. The following raw materials supplied by outside contractors have been inspected -

128 tons

G1;	ycerine		40 ,	,
Ac	etone		100 ,	,
Mi	neral Jelly		4 ,	,
N1	trate of Sode	ı	370 ,	,
So	da Ash		8 ,	3
Ch	emical Lead		36 ,	9
Ca	lcium Cyanami	de	4 ,	,
Ca	rbamite		11 ,	
0.0	O.V.		158 ,	
N.	O.V.		432 ,	
N 1	tric Acid		43 ,	
M.	N.T.		40 ,	
Col	ke		213 ,	
Pe	trol		390 Gal	
Soci	dium Sylphite	•	4 Tor	
	products ins			
	troglycerine			
	51 nitration	153 W	ashings	78 tons
Gu	ncotton - 180	Batches)	
	74	Stovings).	195 ,,
		Service batche	s)	
Pro	oduct "C" - 4	4 Batches		41,
Finished pro	ducts inspect	ed includ	ed -	bs. 3
410 samp	les) Cordite	M.D. 102	Lots)
represent	ting)	M.D. 5	Batches) 166 tons
		Mk.1 26	Lots)
		W. 19	Lots	$108\frac{1}{9}$,,
	R.D.N./	A. 7	Lots) ~
		7	Batches	94,,
	C.E.	112	Batches Batches	11 ,,
	T.N.T.	alla alla 🥡	7200 6.472.00	00 99

610 Cordite Batch Samples 290 W. Batch Samples 200 Blend and Stove Samples 80 R.D.N./A. Samples.

Routine inspections for the purpose of process control included the following -

C.O.V. from Nitroglycerine manufacture	60	samples
,, Guncotton ,,	100	9 9
Denitrated Acid for N/G ,,	140	2)
,, .,, G/C ,,	90	9 2
Nitric Acid for N/G	130	> 2
,, ,, G/C	120	<i>y y</i>
Mixed Acid for N/G	17	9 9
9,9 G/C	32	9 9
Waste Acid from N/G	47	9 9
3 9 G/C 3 9	55	9 2
Condensate Acid	120	9 9
Nitre Cake from N/G manufacture	20	9 9
,, G/C ,,	12	9 9
Soda Nitrate for N/G , ,	20	9 9
,, g/C ,,	12	9 9
Cotton Waste	390	2 2
Acetone	300	9 9
Mineral Jelly	52	9 9
Glycerine	36	9 9
Filter-bed Water	210	9 9
Vat boiling Water	1260	9 3
G/C from Stoves and Weighing Houses	260	9 9
Product "A"	140	9 9
Froduct "B"	80	9 9
Product "C"	40	9 9
Sludge	24	9 9
Milled Picrite	30	9 9
R.D.N./A.	30	, ,
Recovered Fetrolite Acids	14	9 9

T.N.T. Acids

42 samples

Fuze Powder. 700 lbs. of experimental Fuze Powder Mill Cake were manufactured for finishing by R.F.F.

BUILDING WORKS DEPARTMENT.

PROPERTY.

The gross returns from property attached to the Factory for the last five years are as follows:-

 1929
 1930
 1931
 1932
 1933

 £996
 £1,529
 £1,537
 £1,524
 £1,434

The loss on total possible rental from cottage property amounted to £14, and the reduction in this year's total is otherwise caused by the W.D.Constabulary ceasing to pay the O.F. their 1/7th basic contribution for the premises occupied by them.

Apart from the special maintenance on the Superintendent's quarter arising out of a fire in May 1933, expenditure on domestic property has amounted to £553, against an assessed annual value of £1,080.

M.W.B. SUPPLEES.

Consumption of water for the last five years has been as follows:-

1929/30	1930/31	1931/32	1932/33	1933/34
£173	£151	2168	£182	1199

LEE CONSERVANCY CATCHMENT BOARD.

The agreement with this body referred to in last year's report has not yet been concluded. The Board have been very helpful in the matter of dredging. They undertook the necessary work in Powder Mill Cut on repayment, in Cobbin's Brook at 50% of the cost for the navigable portion and free of charge for the remainder, and a section of the Old River Lee serving the Lower Stores Yard, without expense to us.

The Tail Stream, from Hooksmarsh Ditch, forming part of the Western boundary of the Upper Works, was also taken in hand at the Board's expense; the bed was thoroughly cleaned out, the banks remade and all growth of shrubs etc. on our boundary fence cleared

and burnt in the marshes.

The flow of water in the valley has fluctuated between a maximum of 8245 cubic feet per minute in April, and a minimum of 1166 cubic feet in December, and the daily averages over the whole of the last five years have been:-

1929/30	1930/31	1931/32	1932/33	1933/34
9.974	9.987	9.973	8.675	2.766

We are now having continuous difficulty in maintaining our head for water transport. A drop in level is occurring at week-ends, and the Water Warders report that in Ramney Marsh pound this drop coincides with pumping operations in the M.W.B. Lee Road Station. As this is a navigation section of the river the matter has been verbally reported to the Catchment Board who are investigating now.

Dredging. Much heavy dredging was carried out by hiring under favourable terms a small dredger from the Lee Conservancy. With its aid all the outs serving tray Stoves in the Lower Works, which had not been used since the war, were thoroughly cleaned out. In addition, dredging operations were carried out opposite the Hospital, No.5 Boiler House, and in the Mill Head Stream in the Upper Works.

The final 4" section of the Ring Fire Main has been installed.

Two petrol-driven machines were purchased as an aid to our grass cutting operations. These will undoubtedly assist us considerably, except in close proximity to danger buildings.

A section of old timber wharfing was replaced in concrete in the Hoppit Fool.

In connection with the special maintenance already referred to, it was found necessary to increase considerably the Departmental staff, and the following major services were carried out: - Complete renovation of the Mitration House in the Guncotton Section, including new roof glazing; cutting traverses away from timber porches to Guncotton Stoves, and generally restoring the level of these traverses; renewing main paths and surrounds to explosive buildings in all sections.

The Department also rebuilt one Kessler in the Guncotton Section.

FIRE BRIGADE.

The fire at the Superintendent's quarter in May was extinguished by the Waltham Abbey and Ponders End Fire Brigades. Our own firemen were also in attendance.

As a sequel to this fire instructions have been issued to occupiers of Government property in regard to the use of rooms for the purpose of workshops, while negotiations are still in train with a view to obtaining, in similar eventualities, the first call on the services of the professional fire brigade at Ponders End.

There has been no call in the factory throughout the year.

Continual testing of hose and appliances has been carried out; the pumps are all in good condition and the fire squads have carried out their drills satisfactorily.

MACHINERY SECTION.

ORGANISATION.

In order to provide adequate supervision for the increased staff engaged on the general overhaul of plant at the Guncotton Factory, it was found necessary to promote Leading Hand Knight to Temporary Asst. Foreman. Mr.Wilkinson succeeded Mr.Allfrey as Technical Assistant, and in order to cope with drawing Office work a journeyman was transferred from the Royal Small Arms Factory.

SERVICES.

Production Machinery. A programme of the general overhaul of spare production plant was embarked upon and this has constituted the greater part of the year's work. Fair progress has been made with the Guncotton machinery, but it has been somewhat hampered by the lack of suitable tackle for lifting, gransport facilities and machinery for repairing the heavier parts, some of which had not been removed since their original erection. Opportunity has been taken to renew certain parts with more durable materials, and to improve the main driving mechanism. A trial has been made of a fan made entirely of staybrite steel for exhausting acid fumes. This has been in operation over a period of four months and, after a slight initial failure had been overcome, has been quite successful and more efficient than the

extend their use. Work at the Cordite Factory has included the over-haul of ten hydraulic presses and the hydraulic services. This service has been completed with the exception of the provision of rope mantlets. As we have not the requisite labour for this class of work it is proposed to place this out to contract. The overhaul of several incorporating machines has also been undertaken in this section, and improvements made in the water cooling services.

Steam Raising Plant and Mains. Following the plans laid down in the previous year, the overhaul of nine of the seventeen boilers in No.7 (Emergency) Boiler House has been nearly completed. The worn-out mechanical stokers have been replaced by new grates for hand-firing, feed pumps transferred from the R.S.A.F. have been installed, and all the boiler mountings either renewed or repaired. These boilers will shortly be ready for trial under steam. An induced draught fan, which will considerably raise the capacity of these boilers, is to be purchased and installed this year. Nos.5 and 6 Boiler Houses have supplied the whole of the steam required by the factory during the year. The cost as compared with the two previous years is as follows:-

```
1931/32 - 83.728 million lbs. at 39.5d. per 1000 lbs. 1932/33 - 96.156 ,, 28.19d. ,, 30.09d.
```

The increase in cost over last year is due to the increase in general charges. The efficiency of the plant has been maintained, but it is anticipated that renewals during the next year or two may be somewhat heavier than in the past, as new Superheater tubes will be required in two of the boilers and the feed pumps require overhauling. Steam mains which had been disused for several years owing to the closure of buildings which are now being brought into service have been renewed or repaired and relagged, but there are still a number of mains to be completed this year.

ELECTRICITY.

The cost per unit as compared with the two previous years is as follows:-

```
1931/32 - 317.532 units at 3.596d. per unit 1932/33 - 345.502 ,, ,, 2.88 d. ,, 1933/34 - 462.470 ,, , 2.92 d. ,,
```

The slight increase in cost over last year has been due to the increase in cost of steam mentioned above. The scheme for emergency supply of electricity at the Lower Works from the North Metropolitan Electric Power Supply Co. is about to be put in hand. A contract has been placed for the removal of three worn-out Robey Sets at a credit to the Factory of 2396. This will make room for the installation of the Rotary Converter from the Royal Small Arms Factory. It is hoped that the whole installation will be completed by October this year. The two remaining sets will subsequently be overhauled. At the Upper Works the engines and auxiliary plant are in very fair order and minor repairs only should be necessary for some time to come. Motors have been installed to replace steam engines in some of the more remote buildings and I propose to pursue this policy when additional link cables have been provided. The cables are generally in good condition with the exception of a short length at the Guncotton Factory previously reported, which it is not proposed to replace.

HNDRAULICS. A new motor driven hydraulic pump has been installed at the Lower Works to replace a worn-out belt driven pump. Two spare hydraulic pumps with accumulator at the Upper Works have been over-hauled during the year. These pumps did not give particularly good service during the late War and I propose to give them an extended trial this year. Several main valves and pipe lines have been put into \$ good state of repair.

COMPRESSED AIR PLANT. This plant consists partly of motor driven and partly steam driven sets, air receivers and pipe lines. The whole plant is in a fairly good state of repair, but one air receiver is stated by the Insurance Company to be below their requirements in the calculated factor of safety. This receiver will therefore have to be replaced in the near future.

REFRICERATION PLANT. One of the condensers used in conjunction with this plant at the Nitroglycerine Factory developed serious leakages in the tubes and had eventually to be closed down, leaving us with one refrigerator set only. Steps have been taken to have this

condenser retubed by the makers, and acting on the advice of the Chief Metallurgist we are trying a new type of steel for the tubes. The cuases of the rapid deterioration of the tubes has, unfortunately, not been satisfactorily determined, but I am taking steps which it is confidently expected will prevent deterioration of tubes in the remainder of the plant.

AIR HEATING GUNCOTTON STOVES. The plant, consisting of steam engine, fan and air heater, for supplying hot air to eight additional stoves, has been thoroughly overhauled and put into running order. One of the steam engines has been replaced by an electric motor. A new method of insulating the air pipe lines is being tried out. The material, consisting of sheets of glass silk, has the advantage of being less chatly than the usual insulating materials and is more readily applied.

OTHER SERVICES. Telephones. The cost of maintaining the automatic telephone service at the Royal Small Arms Factory as compared with the magneto system at the Royal Gunpowder Factory is unfavourable to the latter. The average cost per annum over the last three years being £64 for 99 lines at R.S.A.F. and £115 for 40 lines at R.G.F.F. The proximity of trees and the length of some of the lines at the R.G.F.F. accounts for some of this expenditure, but as this expenditure is accompanied by all the usual disadvantages of the magneto system, I am looking into the possibility of the extension of the R.S.A.F. system to include the whole of the R.G.I.F. telephones.

MACHINERY SHOF. I have referred above to some of the difficulties arising when repairs to heavy plant are required. These difficulties are accentuated by lack of space in the Machinery Repair Shops, and I propose to put forward for consideration plans for the extension and rearrangement of the shop at the Upper Works.

OFFICE and STORES.

The increase of activities on both the manufacturing and maintenance sides has had its effect on the office functions; an extra female clerk was entered for the Wages Branch, another worktaker has been temporarily appointed, while the Storehouse staff had to be increased.

One effect of the cessation of Gun Cordite manufacture during March was the necessity of absorbing into manufacturing costs some £1,000 in excess of the service section charges which the normal tariff and F.E. rates produced.

The change-over from M.D. gun cordite to "W" in the middle of the year adversely affected our estimates of costs by about 5d. per lb.; it is expected that this difference between M.D. and W. will be appreciably decreased as time goes on.

Apart from this, our costs of finished products have closely approximated the estimated rates on which the programme was originally built up.

The following schedules are attached:-

Schedule "B" - Annual turnover and production statistics

- ,, "C" F.E. comparison
- ,, "D" Some comparative material statistics.

Personnel.

31.3.34.

	Total this year.	Total last year.
Supervisory &c.	45	41
Skilled.	78	43
Semi Skilled.	81	81.
Unskilled.	202	117
Women & Girls.	1000	- Char
Boys.	9	6
	41.5	288
en Glavin, convento, como no colorado entrestan estrador en petido en especial en estador en destador estrador	givertimens) - required and described the reference to a sold requirements and great	entral de seu en celon de 1986 - ser sueries roles (miles na menos symmetris seus entre se estre timbres de l' L'activité de la company de l'activité de l'activité de l'activité de l'activité de l'activité de l'activité d
Highest.	415	290
Lowest.	291	274
Average.	354	282
Entries during the year	131	20
Discharges " " "	5	21
Transfers " " "	17	29
	(Transfers "In" = 9 "Out" = 8)	

Nos. and Average of R.G.P.F. Employees on 1.4.33 and 31.3.34.

Age.	Nos.on 1.4.33.	Nos.on 31.3.34
65	•	SAP BID-ARTHROPH AND AN OPEN SERVICE STREET OF A CONTINUE OF THE ARTHROPH AND A CONTINUE O
64	3	12
63	12	9
62	10	8
61	8	12
60	13	15
59	15	14
58	14	13
57	13	12
56	13	21
55	21	17
54	15	9
53	9	16
52	15	13
51	11	16
50	11	7
49	5	9
48	Ty.	4
47	4	4
46	3	6
45	3	10
44	7	8
43	5	5
42	4	4.
41	2	7
40	1	3
39	1	6
38	5	10
37	6	5

Age	Nos.on 1.4.33.	Nos. on 31.3.34.
36	4	8
35	4	2
34	1	4
33	1	4
32	1	9
31	6	10
30	7	77
29	4	13
28	2	7
27	1	10
26	5	10
25	3	11
24	2	12
23	2	5
22	1	8
21	1	9
20	1	3
19	1	3
18	2	2
17	1	1.
16	1	800
15	1	1
14	600	1
	288	A T C
	200	41.5
		*

Average age = 48.9 Average age = 44.05

Total strength on 31/3/34.

						Nos.		%
60 ar	ıd c	ver	•			56	!	13.50
Over	50	and	under	60.		138		33.25
15	40	98	2.5	50.		60		14.46
18	30	89	78	40.		65		15.66
28	21	58	88	30 .		85		20.48
Under	21					11		2.65
						ANNOTES PROTECTIONS		elija likili kan mala si si saka kana kana ana anga saka
						415		100.
						THE RESERVE THE PARTY.		

R. G. P. F., WALTHAM ABBEY.

ANNUAL TURNOVER.

						rliamentar Estimate.	460	Latest Forecast
	A. Establishmen B. Wages C. Materials . D. Machinery Co E. Works Contro F. Miscellaneo G. Non-effectiv	ontract .			82-40	4,563 50,150 59,756 2,387 714 6,000 6,400		£ 4,379 56,767 45,025 2,833 2,857 5,828 7,244
	Add net effe	at of Mat	erials on	n I.D.D.'s	£	129,970		124,933
					1	130,470	9 10004	126,613
	H. Productions Army, Nav. Miscellaneous Sale of Sore	y, etc as receip ap, Old S	ts tores, ar		g.,.co	128,880 1,930 600	900	130,000 1,685 455
***					£.	131,410	48AND	132,140
	Less net effe	ect of I.	D. Servic	308		5,160	*********	5,760
					£	126,250	new widow	126,380
		Balance	as shown	below	2	4,220		233
	Inc	comings.				Outgoings	*	
		Parl'y Est.	Latest F'cast				Parl'	
	Estimated amounts	£	2	Estimate	d e:	xpenditure	£	£
	respect of - Depreciation of			on New C	api		514A	629
	Buildings & Mains Depreciation of	2,795	2,481		par	tmontal	250 8 0 0	
	Machinery Buildings, Mach'y and Mains written off	20	1,456	Machine (a) Co (b) Do First E	ntr	act tmental	1,587 873 1,000	1,663 810 740
	First Equipment of Shop written off	1,000	740		0	Stores	_	
	From S.S. Account	4,220	233	111 500	O.L.		5,000	1,197
The second secon		£ 9,510	4 ,930			£	9,510	4,930
-	Approximate Val	ue of all	Product	ions -		This Year	La	st Year
						2111,000	£	78,000
A TOTAL CONTRACTOR CAN CAN CONTRACTOR CONTRA	M.D.Cordit Rifl Gun W. Cordite	e and Mac	chine Gun	e e		1bs. 225,000 94,000		1ba. 52,000 59,000
	Cost per 1	b Rifl	le (M.D.)			204,000 s.d. 3/4 2/9 3/3		s.d. 3/3 2/11
- 1								

R. G. P. F., WALTHAM ABBEY.

FACTORY EXPENSE.

Description.		1933/34	1932/33
	edigenter religion - editento establicina, matthewisili, religio enqui	Amount	Amount
Process Expenses.		£	2
Foremen, Asst.Foremen, etc.		2,172	1,978
Miscellaneous labour		779	703
Consumable Stores		654	
Gas			340
Water		12	35
		20	20
Steam (Process)		4,318	3,250
Power		3,881	2,635
Refrigeration		2,328	2,361
Compressed Air		2,418	1,963
Maintenance of Plant		9,884	8,064
Maintenance of Buildings		2,825	1,454
Depreciation		827	826
lates		182	154
Internal Transport		895	
Balance of Process Expenses			779
parames or viocass wrbanses		1,595	2,738
Sectional Expenses.			
Management		2,696	2,361
Electric Light		371	249
Gas		68	77
Steam for heating	(1)	3,007	1,817
Maintenance Services	(-7-)		
Miscellaneous labour		1,665	1,168
		349	325
Laboratory Testing		3,033	3,092
Care and Custody of Departmental Stores		190	190
Allowances	(2)	1,761	1,367
O.T. and N.S. Bonus		177	87
Balance of Sectional Expenses		1,413	866
Credit for Materials returned to store		324	323
General Expenses.			
uperintendence		580	584
Registry, Pay and Order Branches		284	263
Worktakers, Wages and Accounts		739	
Central Stores	(a)		698
	(3)	2,015	4,658
Police, Fire Brigade and Warders		4,173	4,487
Maintenance of Grounds, Mains, Canal,			
Permanent Way, etc.		5,511	2,432
Non-effective charges		4,988	4,877
Balance of General Expenses	(4)	20,261	7,575
Total		£ 85,547	64,150
Less Subsidy		14,150	14,151
•		Apprentisted of the second	resistante di primero por estipo entre, de es este esta de contrata de contrata de especia proporto.
Total Factory Expense Percentage to Direct Labour		£ 71,397	49,999
reressa to nireat negati.		661.39	563.43
Direct Labour		£ 10,795	8,874

- (1) The increase of 25% in consumption due mainly to severe winter and increased number of buildings in use arising out of increased production.
- (2) T.N.T. nightshift and special overtime of maintenance sections at end of the financial year on urgent work arising out of Report on Instability of R.G.P.F. Cordite.
- (3) Last year there was a larger write-off on disposal of surplus Gunpowder materials.
- (4) Increased expenditure on Idle facilities.

R. G. P. F., WALTHAM ABBEY.

RAW MATERIAL STATISTICS 1933 - 34.

Magazasa para 1950 Milian di Magaza de Mangada Magaza (Agaza (Agaza Agaza Agaza (Agaza (Agaza (Agaza (Agaza (Ag	Value o	f Stock	Value of Stock checked by Stocktakers.		ked by Discrepancies +		Surplus Stock Sold Book Value Nett Loss			
,	This year	Last year	This year	Last year	This year	Last year	This year	Last year	This year	Last year
	£	£	£	3	£	E.	£	C. C.	2	A A
Glycerine	40,143	41,207		41,207	to work of the control of the contro	To address of the second secon	The second secon	Control of the Contro		The register spin to the spin
Other Explosive Materials	15,910	14,592	846	13,979	l (Def'y)	151 (Def'y)		3,596	-	2,241
General	14,742	13,13 2	12,730	9,281	66 (Surp.)	13 (Def'y)	24	144	19	82
GRAND TOTAL £	7 0,795	68,931	13,576	64,467	65 (Surp.)	164 (Def'y)	24	3,740	19	2,323

The stocktaking during the year of store materials to the value of £13,576 revealed a nett surplus of £65, equivalent to .48% of the value of stock taken.

R. G. P. F. WALTHAM ABBEY.

MATERIALS - Frice per ton of Main Items (Average Prices given if more than one contract.

Material.	1932/33		33	1933/		34
	£	B	đ	20	8	đ.
Acetone	61	6	8	56	8	0
Cotton Waste	53	5	0	51	7	6
Glycerine	45	0	0	46	0	0
Mineral Jelly	13	0	0	11	10	0
Sødium Fitrate	8	10	0	7	15	0
Ammonium Nitrate	19	10	0 +	18	0	O **
Carbamite	300	0	0	265	8	0
Acid, Sulphuric						
20%	6	1	O	6	1	0
65%	8	11	0	8	11	0
98/-	6	2	0	6	1	0
96%	6	1	0	6	1	0
Lead Chemical - Sheet	17	16	8	18	10	0
Fipe	18	6	8	19	0	0
Coal, Mechanical Stoker		17	103		18	10남
Acid, Nitric, 98%	20	15	0	20	2	6

⁺Supply by Imperial Chemical Industries

^{*}Supply from Army Stocks.

BUILDING WORKS DEPARTMENT.

PROPERTW. The gross returns from property attached to this Factory for the last five years are as follows:-

 1929
 1930
 1931
 1932
 1933

 £996
 £1529
 £1537
 £1524
 £1434

The loss on total possible rental from Cottage Amount
property amounted to £14 and the reduction in this year's total
is otherwise caused by the W.D.Constabulary ceasing to pay the
O.F. their 1/7 basic contribution for

Apart from the special maintenance on the Superintendent's quarter arising out of a fire in May 1933, expenditure on domestic property has amounted to £553 against an assessed annual value of £1080.

M.W.B. SUPPLIES. Consumption of water for the last five years has been as follows:-

 1929/30
 1930/31
 1931/32
 1932/33
 1933/34

 £173
 £131
 £168
 £182
 £199

LEE CONSERVANCY CATCHMENT BOARD. The agreement with this body referred to in last year's report has not yet been concluded. The Board have been very helpful in the matter of dredging. They undertook the necessary work in Powder Mill Cut on repayment, in Cobbin's Brook at 50% of the cost for the navigable portion and free of charge for the remainder, and a section of the Old River Lee serving the Lower Stores Yard without expense to us.

Further, they loaned us a dredger on favourable terms and dredged the whole of the Tray Stove Cuts, which had been untouche for many years, in a thorough manner.

The Tail Stream, from Hooksmarsh Ditch, forming part of the western boundary of the Upper Works, was also taken in hand at the Board's expense; the bed was thoroughly cleaned out, the banks remade and all growth of shrubs etc. on boundary fence cleared and burnt in the marshes.

The flow of water in the valley has fluctuated between a maximum of 8245 cubic feet per min. in April and a minimum of 1166 cubic feet in December, and the daily averages over the whole of the last five years have been:-

<u>1929/30</u> <u>1930/31</u> <u>1931/32</u> <u>1932/33</u> <u>1933/34</u> 9.974 9.987 9.973 8.675 2.766

We are now having continuous difficulty in maintaining our head for water transport. A drop in level is occurring at weekends, and the Water Warders report that in Ramney Marsh pound this drop coincides with pumping operations in the M.W.B. Lee Road Station. As this is a navigation section of the river the matter has been verbally reported to the Catchment Board who are investigating now.

DEFARTMENTAL WORK. In addition to the dredging already referred to, the Department carried out operations opposite the Hospital, No. 5 Boiler House and in the Mill Head Stream in the Upper Works, and put the finishing touches to the Board's work in the Tray Stove Cuts where their dredger was unable to turn.

Late in the summer a contract was arranged for the remodelling of the Superintendent's quarter, arising out of the fire there. M.

May May . The execution of this work proved unexpectedly difficult, considerable extra expense had to be incurred and the contract was not completed at the end of the financial year.

The final 4" section of the Ring Fire Main has been installed.

Two petrol-driven machines were purchased as an aid to our grass cutting operations. These will undoubtedly assist us considerably, except in close proximity to danger buildings.

A section of old timber wharfing was replaced in concrete in the Hoppit Pool.

In connection with the special maintenance arrives institualized referred to it was found recessary to merces and then loo tone ted to bring the production up to first 50 tons and then loo tone capacity, the Departmental staff was increased to over 100 in strength, and the following major services were carried out.

Complete renovation of the Nitrating House in the Guncotton Section, including new roof glazing.

Cutting traverses away from timber porches to Guncotton stoves and generally restoring the level of these traverses.

Renewing main paths and surrounds to explosive buildings in all sections, and converting vat house and nitrating house in the Guncotton Section into "clean" buildings.

The Department also rebuilt one Kessler in the Guncotton Section.

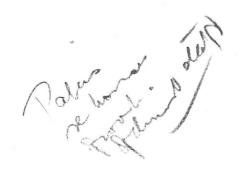
FIRE BRIGADE. The fire at the Superintendent's quarter in May was extinguished by the Waltham Abbey and Ponders End Fire Brigades. Our own firemen were also in attendance.

There has been no call in the Factory throughout the year.

Continual testing of hose and appliances has been carried out; the pumps are all in good condition and the fire squads have carried out their drills satisfactorily.

A forester to the fore of the confict of the forest of the forest.

The position with regard to maintenance at the Royal Gunpowder Factory is causing a certain amount of anxiety and requires careful consideration in the near future. Many of the buildings were constructed during the war period, and are of such a nature that maintenance costs will accrue rather heavily in the future. The lagging of steam pipes in connection with steam services, a large portion of which were erected and lagged during the war, are now rapidly deteriorating and will call for fairly heavy expenditure in the not distant future. Generally, there will be a decided tendency for maintenance expenditure to increase over the next few years.



R. G. P. F. ANNUAL REPORT

for the

TEAR 1933 - 34.

believe pot.

and his place was filled by the promotion of Mr. H.A. Phillips.
The consequential vacancy of Grade I Chemist was filled by the appointment of Mr. A.H.Roberts from R.N.C.F., Holton Heath, as a result of a recommendation by a Selection Board presided over by a Civil Service Commissioner.

Mr. S.F.Hines, Grade II Chemist, was transferred to War Office in January 1934, and Mr. M. S.H. Lawrence was appointed Junior Assistant Chemist in March 1934. The Grade II vacancy has not yet been filled.

The fact that a Grade I Chemist had to be obtained from outside the R.G.F.F. staff, and also that the appointed did not have the specialized experience which is desirable for a man holding such a post, indicated such a serious state of affairs that the matter has been specially reported to you with a recommendation for an immediate increase of two Grade II Chemists to ensure adequate succession.

MAINTENANCE. The increased production programme necessitated the use of certain reserve plant which had not been operative since the war, and the fact that some appreciable attention to both buildings and plant was necessary before it could be used, indicated that generally the reserve facilities as a whole, while perhaps outwardly sound, were suspect when the acid test of actual usage had to be applied.

made, and it became evident that the war built buildings, together with their associated service connections, had begun to
deteriorate somewhat rapidly.

of work has been done during the year to remedy the position the statistics regarding personnel indicate to what extent extra
staff was engaged, while the meaning factor separation the manufactor of the manuf

and 1935-6, some £45,000 will be required in excess of the normal expenditure in connection with the general maintenance of the factory facilities.

Arising also out of this survey that two large and important building schemes have been formulated for carrying out during the next five years; the first being a 240,000 scheme to cover the cost of replacing the existing Guncotten stoves with a modern installation of quinan driers, and the second is the replacement of cast iron stills for the recovery of waste soid by a modern tower process at a cost of some 210,000. The first scheme is primarily designed to ensure safety, while the second is expected to produce economical results of an appreciable nature, especially under emergency conditions.

The Gincotton fewer scheme referred to in last year's report is being implemented during the current year by the installation of retary converters, with a connection to the outside power supply, these freeing a good proportion of beiler capacity which

purposes they are brought into use periodically with the object of keeping the plant prepared for emergency requirements.

The drought of last year, which appears to be continuing this year, is having a serious effect on the internal transport of the factory which is largely water borne, The most serious aspect of this matter centres round the transport of paste from the hitroglycerine Factory to the Cordite Section as there is no alternative in existence, the Nitroglycerine buildings being isolated from one another and the rest of the factory by water, the only land connection being by small footbridges. Here alternative in the output programme for the most around the paste of the factory by water,

some 200 tone, an increase of 200 tone on the previous annual outputs the scland of daught the latter house of the grand of the previous annual for the scland of the dust the latter house of the spend of the school of the spend of the second of the spend of the second of the second

The improved cordite suggested by R.G.F.F. and referred to in last year's report (Cordite W.), has given most satisfactory

Walt

entirely replace M.D. for all Cannon Cordite. During the year

The manufacture of Ficrite and H.D.N. Cordite was maintained at a development level only. It may be montioned that a special milling machine of American origin for carrying out an essential process in Ficrite manufacture has given so much trouble this year that home sources of supply of something more reliable are being sought.

A further development in Ficrito manufacture is the substitution of a fusion process in an open vessel for the original autoclave process carried out at a pressure of some 150 lbs. per square inch. This is working satisfactorily. All the pressure processes have now been climinated.

In general the position is clear for bulk expansion of Fierite output if and when required, subject always to the erection of a permanent installation.

The T.E.T. Filot Flant erected during 1932-33 was put into operation. Experience showed that satisfactory results could only be obtained by continuous working. The best result was obtained in March when 18500 lbs. were produced at 1/6 per lb. This compares with a total production of some 75000 lbs. at a gross cost of some £9000.

The local problem of disposal of spent acid has received considerable attention but is not yet adequately solved.

Totryl purification has been carried out throughout the year for the Army and Air Ministry.

A special plant has been installed in connection with the manufacture of Fuze Powder Mill Cake for issue to R.F.F. where it is finished.

The R.D. 202 Fuze Fowder Plant has been used for a small amount of reblending and new manufacture.

For some time there has been a suggestion that the stability of M.D. Cordite produced at A.G.F.F. has not been up to the usual high standard, the reason for this is obscure but is possibly

traceable to the use of linters instead of cotton waste for the manufacture of Guncotton during the years 1928 and 1932. The criticism culminated in M.G.O. deciding in March last that no more Cannon Cordite should be made at M.G.F.F. until certain steps to ensure absolute cleanliness in certain of the manufacturing processes were taken. The cessation of Guncotton manufacture for some two months naturally upset the manufacturing programme somewhat badly, but the position is now clearing.

The question of using wood pulp or straw in place of cotton waste is at present being examined and the work and the control of the control of

During the year a Calder-Fox Scrubber was installed in the Guncotten Section in place of a coke condenser for purifying the exhaust gases from sulphuric acid concentration.

An experimental small scale denitration tower for recovering waste acid was erected and tried out with the object of obtaining information for the proposed large scale scheme already mentioned.

Glycerine Nitrator No.º has been entirely rebuilt during the year.

PARTICULARS OF MANUFACTURE.

Guncotton Section.

Nitric Acid. Seda Nitrate charges - 69 at 2 tons

36 at 1.1/2 tons

10 at 1 ton

Total Nitrate of Soda charged - 226.24 S/tons crude

		and deline
	225.10 ,,	PULL
Equivalent HNO3	166.84 ,,	
Nitrio Acid produced	182.20 ,,	at 90.0%
	164.05 ,,	HNO3
Loss	2.79 ,,	
Efficiency	98.3 %	
Strong Sulphuric Acid used	217.14 S/ton	s at 94.5
	204.95 ,,	H2504

```
Acid charged = 1372.25 S/tons containing 855.54 S/tons HoSOA
                                         249.05
                                                      HNO3
                                                  9 3
                                         267.66
                                                      HoO
                                                  9.2
                                                  7, at 89.69
         Strong Nitric Acid recovered
                                         271.40
                                         243.40
                                                     HNOS
                                                  2 2
                         Loss
                                          5.65
                         Efficiency
                                          97.70%
        Weak Sulphuric Acid recovered 1070.29 S/tone @ 78.95%
                                         845.49
                                                      HoSO4
                                                  2 9
                         Loss
                                          10.05
                         Efficiency
                                          98.85%
Concentration of Weak Sulphuric Acid.
                                    981.30 S/tons at 78.52%
     Acid charged to concentrator
                                     770.53
                                                  Ho504
     Strong sulphuric Acid produced 805.94
                                                   at 93.95
                                     757.22
                                                 HoSOA
                          Loss
                                      13.31
                          Efficiency 98.26%
Nitration.
     No. of Sets of Gumootton
                                         2059
     No. of Sets of Nitrocotton
                                            11
                                              3/4
     No. of Sets of Strip Paper
     Mixed Acid used
                                  3586.61 S/tons
     Cotton Waste used
                                    128.26
                                                  gross
                                   115.23
                                                 nett (see Ram
                                             9 3
                                                  Materials)
     Guncotton produced
                                    192.61
          Saveall
                                      3.68
                                    167.1% Available for Cordis
          Yield
                                               164
     Ratio Mixed Acid/Cotton Waste
                                     31.14
           Mixed Acid/Guncotton
                                     18.63
Guncotton issued to services other than for Cordite Manufacty
   3869 1 lb. Guncetton Slabs wet, to C.O.O., Bramley
   50 lbs. Guncotton Fulp to R.F.F., Woolwich
```

3 lbs. of Guncotton Dust to Armstrong Vickers

1-13. 500 Lae. Guncotton Slabs wet, to C.O.O., Bramley 2 lbs. Guncotton Dust to Armstrong Vickers 200 lbs. Guncotton Pulp to C.S.R.D., Woolwich 80 lbs. Nitro Straw to C.S.R.D., Woolwich.

Total - 4704 lbs.

Fuse Powder R.D. 202.

Reblended

208 lbs. for C.A.S. M.O. 5033

Manufactured

934 lbe.

Ammonium Perchlorate (crude 224 lbs.) refined.

haw Materials.

Cleum drawn from store

T. 4. lbs. 270 lo 44 = 302.98 S/tons

Difference in stocks

23.97

Oleum concumed

279.01

= 1.45 per 1b. of Guncotton.

Nitrate of Soda drawn from store

g. lbs. 202

0 = 226.24 S/tons

Difference in stocks

7.25

Nitrate of Soda consumed

253.47

= 1.213 per 1b. of Gumoetton.

Cotton Waste drawn from store

T. lbs.

49 = 128.26 S/tons

Deduct oil and

moisture 6.81

6.73 S/tons

13.03

Deduct pickings and fly 4.30

115.23

Nott Cotton Waste used for Mitration

Foreign matter removed in picking etc.:-

Wood, string and metal

780

.3065

Grit

92

.0860

Fly

7742

3.0880

Cotton used per 1b. of Guncotton 0.6659 Gress

0.5983 Nett

Summary of Consumption and Losses - S/Tons.

Operation	The constant of the constant o	504	M	TERM 3		
ଷ୍ଟ୍ରମଧ୍ୟ ପ୍ରତିନିଧି ପ୍ରତମୀ ଓ ବହର କଥା ହେ ଅଷ୍ଟେଷ୍ଟ କଥା ହେ । ଅଷ୍ଟିଷ୍ଟ କଥା ହେ । ଅଷ୍ଟିଷ୍ଟ କଥା ହେ । ଅଷ୍ଟିଷ୍ଟ କଥା ହେ :	ACTUAL.	per ten of g/C:	Actual	per ten		
Manufacture of Nitric Acid	204.95	1.065	2.79	.0145		
Redistillation	10.05	.0522	20.65	.0553		
Consentration	13.31	.0691	400	400		
Nitration	50.76	.2635	159.35	.8275		
	279.07	1.4498	172.79	.8973		
	27 22 22 22 22 22 22					

Nitroglycerine Section.

A. Manufecture of Mitrie Acid.

73 runs at 30 cwt. of Mitrate of Soda.

Average time of distillation 111/2 hours.

Materials and Results .-

Nitrate of Soda used 131.04 S/tons at 99.20% NaNOS

C.O.V. used

112.24 ,, at 91.74 HgSO4

Oleum used

21.75 ,, at 20% SO3

Coke

22 • 45 9 9

Strong Nitric Acid made 90.55 S/tons at 91.24/HNO3

Weak Nitrio Acid made 14.46 ,, at 62.46 HNO3

Nitre Cake produced 157.25 ,, at 32.7% H2SO4

Efficiency Strong Acid 86.5%

Total Milioiency - Process 96.0%

Overall 95.31

B. Denitration of Waste Acid.

25 charges were denitrated in No.1 Tower in 288 hours. Temperature)

25 charges wither about 10 tons of weak Nitric Acid were denitrated in the new tower in 695 hours, average bettom temperature being 140°) Output .- Old No. 1 Tower.

Waste Acid denitrated

76.35 S/tona

Denitrated Sulphuric Acid made 79.112 ,, at 69.5% HgSO4

Nitric Acid recovered 12.990 ,, at 56.65 HNO3

Output - New Tower -

Waste Aesd denitrated

76.75 S/tons

Weak Nitric Acid added

10.713 ,, at 66.5 HNO3

Denitrated Sulphuric Acid made 84.843 ,, at 64.7% Hos04

Nitrie Acid recovered

5.292 ,, at 91.10% HNO3

and

12.299 ,, at 71.66 HNO3

Efficiencies - Old Tower -

Sulphuric Acid - Process 100/ Overall 98.10%

Nitric Acid

Process and Overall 85.82%

Dificiencies - New Tower -

Sulphuric Acid - Process and Overall 1000

Hitric Acid

Process and Overall 86.16

C. Concentration of Weak Sulphurie Acid

Concentration for 1516 hours at average dome temperature 1130 C. Output.

Week Acid concentrated 268.57 S/tons at 64.09/ H2504

Strong Acid made

162.10 ,, at 91.67% ,,

Weak Acid made

42.61 ,, at 43.00% ,,

Coke used

38.23

Efficiency.

Strong Acid 86.35

Process 97.00% Overall 95.68%

D. Redistillation of Weak Nitric Acid. During the latter part of the year redistillation in stills was abandoned temporarily, and the weak Mitric Acid was passed with waste acid through the new Denitration Tower.

13 runs were carried out in Stills.

Output.

Weak Nitrio Acid redistilled	30.105	S/tons	at	60.18	ниоз
Strong Sulphuric Acid used	43.50	9 9	at	93.06	HgS04
Strong Nitric Acid made	16.88	9 9	at	89.55	HWO3
Weak Nitric Acid made	3.80	9 9	at	60.58	IINO3
Sulphuric Acid recovered	86. 63	9 9	at	72.30	H2S04
Coke used	5.60				

Efficiencies.

Nitric Acid (Strong)

83.32

Nitric Acid (Process and Overall) 96.00%

Sulphuric Acid - Process 99.70% Overall 97.40%

E. Acid Mixing. No.2 Mixer used 630 hours.

output.

Nitrio Acid (new) Mixed 90.25 S/tons at 91.24 HNO3 Nitrio Acid (redistilled) mixed 22.80 ,, at 89.84% ,, Oleum (20%) mixed 48.75 ,, at 20/ SO3 Oleum (65) mixed 58.50 ,, at 65% SO3 Total Mixed Acid made 220.30 ,,

F. Manufacture of Nitroglycerine. 51 charges of 1470 lbs. of Glycerine each were nitrated. Average time of nitration was 71 minutes. and of separation 180 minutes. Average temperature of brine was -11° C. All charges were nitrated at 10° C. Nos. 1 and 2 Washing Houses were used.

Materials and Output.

Olycerine nitrated	37.485 S/	ton
Mixed Acid used	210.375	9 3
Waste Acid made	153.10	p 9
Soda Ash used	2.856	9 3
Nitroglycerine made	87.732	9 2
Yield	234.04	

Summary of Tosts.

Moleturo Heat Test 13 mine. 114 mins. 10 mins. Alkalinity All under .0005

Nitroglycerine was used as follows -

For	Cordite N.D.	50.307	S/tons
For	Cordite W.	33.178	9 9
Por	Cordite Mark I	1.990	9 9
For	Cordite R.D.N.A.	1.783	9 9
For	Dynamite	0.325	9 \$
Por	various Experiments etc.	0.155	8.9

Summary of Consumption and Losses of Acids.

	Hes	04	Mac	Art and a second
Manufecture of Nitric Acid	Actual S/tona 120.100	Per ton	Actual Eltone	Per ton
Denitration	2.123	0.024	3.394	0.058
Concentration	7.512	0.085	sko	662)
Redistillation	1.045	0.011	0.738	0.008
Acid Mixing	4.038	0.045	9.672	0.110
Nitration	4.098	0.046	75 • 46 9	0.860
	140.966	1.606	89 . 273	1.016

Raw Materials Used.

Nitrate of Soda	1.451 per	ton	Mitroglycerine
Oleum (20%)	0.803	9 9	9 9
Oleum (65%)	0.667	9 9	9.9
Clycerine	0.4273	9 9	9 9
Soda Ash	0.0326	9 9	9 9

of Guncetton and 2 stovings of Mitrocellulose were dried. Average time of drying was 65 hours. Moistures at the end of drying were Maximum 0.68, Minimum 0.32, Average 0.47. Total amount dried was Guncotton 173.32 S/tons, Mitro-cotton 2.03 S/tons.

Cuncetton was used for -

	MoDe		1	05.88	S/tons
	Cordite W.			71.69	9 9
1	Merk I			1.25	9 >
	Experiments	1 "		0.23	9 8
Nitro-cot	ton was used	for	-010-		Ī
	R.D.N.A.			1.40	S/toma
	Experimenta	4		0.01	8 2

H. Mixing Poste.

Paste mixed -

M.D.	155.53	s/tons
Cordite W.	104.86	9 3
Mark I	3.24	9 9
R.D.N.A.	7.90	99
Experiments	0.40	9 9
Dynamite made	0.50	9 9

I. Tetryl. During the year 123 purifications were carried out; 113 on Grade IA material for the Army and 10 for the Air Ministry.

Output.

For the Army -

Furified	23,172	lbs.
Grade I recovered	22,051	9 9
Lost	1,121	9 9
(Old Stock) 14,668	25,550	
(Trade) 10,862)	now p was w	9 9
Tetryl lesued	16,400	B 9
uncle	1,100	9 9
under examination	4,551	0 0
For the Air Ministry -		
Purified	2,012	lbo.
Recovered	1,993	9 9
Logt	99	0 0
Acetone used (Old stock)	2,265	9 9
Tetryl issued fit	1,493	9 9
uniit	440	9 9

J. Picrite Manufacture . Following is a brief summary of the work

Extractions	126
Fusions	129
Nitrations	40
Tamifiantions	AAR

Raw Materials used -

Calcium Cyanamide	14.112	S/tons
Ammonium Nitrate	6.244	99
Sulphurio Acid	15.000	9 9
Freduct completed	5.035	2 2

Recovered Sulphuric Acid issued.

Raw Material used per ton of Picrite made -

・問題等編集が必須担当の可能である。以後でいるからは必要ない。その数は必要なのである。この数につるできた。	en del de entre de la montragion en reconstituit de destribuit de la propriétation des la propriétation de la propriétation des la propriétation de la propriétation de la propriétation de la propriétation d	Access .	
	Calcium Cyanamide	2.80	S/tons
	Ammonium Nitrate	1.24	B 9
	Sulphuric Acid	2.97	9 2
Picrite was	used as follows:-		
	For R.D.N.A.	4.610	S/tons
	Experimental	0.310	3 9

Cordito Section.

The output of Cordite from the presses during the year has been approximately 285 tons, an increase of 82 tons ever last year's production. 49% of the output has been on the small screw presses.

The following experimental batches have been manufactured during the year:-

```
For Service of Ordnance Committee: -
   H.D.N./A. 54 1bs.
                        .052/14"
             400 lbs. .090/24"
H.P.& H.P.T. 960 lbs. ( .045
                        ( .055 - .030 (die)
 F.535/2
                       ( .022
             54 lbs.
                        ( .027
                        ( .046 - .022
                        Cut to 0.10" (issued 138/16 1b.)
  H.S.C.T. 15 lbs.
  M.D. Reworked with Carbamite ( 0.5%
                              (1.0)
                             2.05
```

```
396 lbs. 0 .160
                                 .073
                                 .0205 (lagued 39012/16 lbs.
           h.D.B. Roworked with Carbanite 8
                       37 lbs. .080 (die). (Issued 1934-35)
     For Research Department -
           R.D.N./A. 500 lbs.
                                  .042/33"
                      200 lbs.
                                  .042/30"
                                  .040/10h
                     400 lbs.
                                  .074 - .006
           H.P.T.
                     100 lbs.
                                  Size 16/33"
           B.D.
                    105 lbs.
                                  .047 - .016 cut to 0.075"
           M.D.T.
                      10 lbs.
                                  .06 - .02
                      20 lbs.
           T.T.
                                  .04 - .02
           WaT.
                       28 lbs.
                                  Size 5 - 2
           M.O.T.
                      18 100.
                                  51se 5 - 8
                                               M.J. Carbemite
Various Compositions (A)
                             G.C.
                                      N.Q.
                                               4/6
           (1)
                                65
                                       30
                                                           1
           (2)
                                65
                                        30
                                80
                                        16
           (3)
                                                           4
           (4)
                                90
                                         8
                    36 lbs.
                            ( .055 - .020 cut to .05"
                               .065 - .020 out to .05"
                               .075 - .080 out to .07"
                               G.C. M.G. C.M.J. Pot.Acetate
                      (B)
                                70
                                      25.5
                                                4.0
                                                           0.5
                              ( .048 - .022
                    12 106.
                               .0535 - .022
                               .0415 - .015
.0465 - .015
                               .0515 - .015
.036 - .010
.041 - .010
                               .025
                               .031
                              ( .036
      For Air Ministry -
```

1050 lbs. .074 - .086

H. I.T.

For Small Arms Committee -

M.D.T. 120 lbs. Size 7 - 2

.0695 - .022 (die)

Also Proof Samples for Firing Triess -

M.C. Dise 8

25 lbo.

sine 8/11" 19 1bs.

H.H. semple

6 lba.

W. sizes 2, 4, 8, 12 & 15 326 lbs. (Issued 324 lbs.)

size 11 .092 (die) 37 lbs. (Issued 178/16 lbs.)

The following Tables give a summary of the various materials used and the different quantities of sizes manufactured and issued 1933-54.

Table I - New Materials and Paste.

	ST OF STREET	Proposition and the second	And the second	distribution of the second	EXPLA	Total
Acetone (Come -2420-3)	77,286	121,445	1,395	3,005	1,053	204,184
Mineral Jelly (Cons. 187)	40	16,585	366	460	400	16,951
Cracked M.J. (H.H.)	opis	str	G EO	68 9-	5	5
Carbamite (Cons. 5-9)	13,352	Mole	404	1,284	85	14,721
Paste	209,128	313,535	6,459	15,576	2,488	547,186
N.G. Charge 630-682						
N.G. Batches 1301-1478						
N.C. Batches 84 and 85	MPSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	jit isalalatuvo kasporiisalaineen kansan kansan kaltuu ayaalojii isajajaji isa	ki i i ka kila makika na na makika na na kila ka ka kila ka ki	en - anglision it filosofinda ay tilgo ay magan salavia y efigir or sola	asinora aditorna amino dia mandronjuni orani basili. Si kay manistika	in the state of the speed common the discrimination religious adjustment globals.
P. Batches 310-348	299,766	451,565	8,220	19,865	3,631	783,047

Table II - Material Incorporated.

M.D. Dough			330,120	lbs.
Rework			4604	
Mark I Dough			6,825	2 3
Hewor	k		195	9 3
R.D.N.A. Dou	gh		16,860	* *
Rew	ork		elite	
W. Dough			222,480	99
Rework			wito	
Experimental	Dough		2,578	9 9
	Rework	(various)	500 ***********************************	. 99
			579.558	6.0

Table III - Cordite Pressed - (c) Small Screw Presses.

The state of the s	Control of the Contro	G C C C	
M.D.T. 5 - 2	204,075 lb	3 •	
7 - 2	27,089 ,	P	
M.D. 2	15,070 ,	,	
42 (Cut)	8,550 ,,	,	
Experimental M.D. and M.C. (including 396 lbs. Rewor	COS COSSICIONISCO	255,797	lbs.
Mark I, 1/.05	2,960 ,,		
3	145 ,,		
20 /S.C.	3,449 ,,		
Experimental	が発展しています。 を使用されています。 を使用さる。	6,554	9 9
R.D.N.A., .052	1,405 ,,		
• 042	6,871 ,,		
Experimental R.D.N.A052, HFT, HF, F.535/2 etc.	carconalization and some 5 5	19,443	9 9
Experimental R.D.B. Rework	37 ,,		
Experimental W.	265 ,,		
Experimental (various)	stationes accessorate respectations 2 2	350	9 9
		282,144	9 9
White the control of			
M.D. 11/15" Experimental	70 g 1.50 g g	70,150	9.2
₩. 8	176,515 ,,		
7 . 11/14.4	20,560 ,,		
15/17.15	20,080 ,,		
Eperimontal W.	1.46 9 9	217,301	9 9
	Total	287,451	9 5
	Grand Total	569,595	2 2
	And the state of t	TOTAL TITLE AND TOTAL TO PERSON PROPERTY OF THE PERSON PROPERTY OF THE PERSON PROPERTY OF THE PERSON PROPERTY OF THE PERSON PERSON PROPERTY OF THE PERSON PE	

Pable IV - Cordite Issued

31/3/34

Loss
// Loss
// Acetone used
// M.J. or Carbamite
used

18.778

36.8

5.02

TABLE IV . CONDITION IN BUILDED .		
M.D. 11/15"	70,150 lbs.	
M.D.D. 5 - 2	200,330 ,,	
7 ** 2.	22,598 ,,	
M.D. 24	15,078 ,,	
4-	8,550 ,,	
Experimental	accounts were accounts with the second secon	319,393 ³ lbs.
Mark I, 1/.03	2,960 ,,	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
3	145 ,,	
20/ S.G.		5,500 ,,
H.D.H.A., .048	17,925	,,,
Experimental ADNA, HFT, HI, and F.535/2	antonone su assalana su quanti sa ano 11	21,649 ,,
₩. 3	141,275 ,,	
W. 11.	20,560 ,,	
₩ • 15	20,000 ,,	
Experimental	3894 .,	3
Experimental R.D.B.	ensections are make make the properties (to a depart mental production).	102,3042 ,,
Experimental (various)		
A day of a second	All de Services de la constant de la	61 ,,
	Total	528,9084,,
Pable V - Fercentes Loss, etc.	Phril-viskelbilau viikti 4 Meh-bisselbilau digebeere	neton introverse un decentrario se esta personale de esta personale de esta personale de esta personale de esta
Paste used 313,535	209,128	6 . 450
M.J. or Carb. used 16,585	13,352	366
Stock Rework 31/3/33 3,310 335,430	estrettor-arm artisense miss insusat missia.	4 2
Cerdite produced \$25,551	217,566	6,554

6.100 2.050 120 6,674

2,864 1.32% 34.8

6.00%

Main Laboratory Section.

Inspection of Raw Materials, intermediate and finished products, etc. The following raw materials supplied by outside contractord have been inspected -

CROSA MILL SOUNDING	ment have no	*4						
	Cotton	Waste			128	tons		
	Glyceri	ne			40	9 9		
	Acetone				100) 99		
	Mineral	Jelly			4	9.3		
	Mitrate	of Soda			370	3- 3		
	Soda As	h			3	9 3		
	Chemica	1 Lead			36	9 9		
	Calcium	Cyanami	de		4	3 3		
	Carbami	te			11	9 9		
	0.0.V.				158	9 9		
	N.O.V.				432	2 2		
	Nitric	A ci d			43	3 p		
	M.H.T.				40			
	Coke				213			
	Petrol				390	Gall	ons	
	Sodium	Sulphite			4	Tons		
Intermedi	ate prod	ucte ins	poote	l inc	luded	entp		
	Nitrogl 51 n	ycerine itration	i w l	UG We	whine	ço '	78 to:	SO
	Guncott	on - 180	Bato	168	7			
		74	Stov	ingo)	1.1	95 ,	p
		Ü	Serv.	ico tohes))			
	Product	000 m 4	4 Bato	ches			41,	
Finished	products	inspect	ed in	olude	ed			
410 s	amples)	Cordite	M.D.	108	Lots)		
ropre	senting)		M.D.	5	Batol	108	166 1	tons
			Mk.I	26	Lots)		
			VI •	19	Lots		108	D 9
		R.D.N./	Α	7	Lots)	53	
				7	Batol	10 5)	Ship	9 9
		C.K. T.N.T.			Batch Batch		11 33	9 9 9 9

610 Cordite Batch Samples
290 W. Batch Samples
200 Blend and Stove Samples
80 B.D.W./A. Samples.

Routine inspections for the purpose of process control included the following -

0.0.7. from Nitroglycerine manufacture	60	samples
,, Gungotton ,,	100	9 9
Denitrated Acid for N/G	140	9 9
00 00 00/0 00	90	9 9
Within Anid for N/G	130	9 9
», »» G/C	120	5 9
Mixed Acid for N/G	17	P 2
** G/C **	\$3	9 9
Waste Acid from N/G	47	9 9
99 G/C	58	9 9
Condensate Acid	180	9 9
Nitre Cake from N/G manufacture	20	9 9
g/C ,,	12	9 9
Soda Nitrate for N/G ,,	20	P 3
99 59 G/O 59		9 9
Cotton Waste	390	9 9
Acetone	300	9 9
Mineral Jelly	52	9 9
Glycerine	36	9 3
Filter-bed Water	210	2 9
Vat boiling Water	1260	9 9
G/C from Stoves and Weighing Houses	260	9 9
Product "A"	140	9 9
Eroduot "B"	80	9 9
Product "C"	40	9 9
Sludge	24	9 9
Milled Picrite	30	9 9
R.D.M./A.	30	9 9
Recovered Fetrolite Acids	14	9 9

T.H.T. Acids

42 samples

Puze Powder. 700 lbs. of experimental Fuze Fowder Mill Cake were manufactured for finishing by R.F.F.

BUILDING SORES DEPARTMENT.

FROMESTY. The gross returns from property attached to the Factory for the last five years are as follows:-

1929 1930 1931 1232 1233 2996 21,529 21,537 21,524 21,434

The less on total possible rental from cottage property amounted to fil4, and the reduction in this year's total is otherwise caused by the W.D. Constabulary ceasing to pay the O.F. their 1/7th basic contribution for premises occupied by them.

Apart from the special maintenance on the Superintendent's quarter arising out of a fire in May 1933, expenditure on domestic property has amounted to 2553 against an assessed annual value of Cl,080.

M.V.B. SUPPLIES. Consumption of water for the last five years has been as follows: -

1989/39 1930/31 1931/38 1932/33 1933/34 8131 8168 8188 \$199

LEE CONSERVANCY CATCHBOARD BOARD. The arrangement with this body referred to in last year's report has not yet been concluded. The Board have been very helpful in the matter of dredging. They undertook the necessary work in Powder Mill Cut on repayment, in Cobbin's Brook at 50% of the cost for the navigable portion and free of charge for the remainder, and a section of the Old River Lee serving the Lower Stores Yard without expense to us.

Further, they Looned us a dredger on favourable terms and work of dredged the whole of the Tray Stove Cuts, which had been untouched for many years, in a thorough manner.

The Tail Stream, from Hooksmarsh Ditch, forming part of the western boundary of the Upper Works, was also taken in hand at the Board's expense; the bed was thoroughly cleaned out, the banks remade and all growth of shrubs etc. on our boundary fence cleared

and burnt in the marshes.

The flow of water in the valley has fluctuated between a maximum of 8245 cubic feet per min. in April and a minimum of 1166 cubic feet in December, and the daily averages over the whole of the last five years have been:-

1989/30	1930/31	1951/39	1952/33	1933/34
9.974	9.987	9.973	8.675	2.766

for water transport. A drop in level is occurring at week-ends, and the water warders report that in Ramney Marsh pound this drop coincides with pumping operations in the M.W.B. Lee Road Station. As this is a navigation section of the river the matter has been verbally reported to the Catchment Board who are investigations now.

DEPARTMENTAL LORD. In addition to the dredging already referred to, the department carried out operations opposite the Hospital, No.5 Boiler House and in the Mill Head Stream in the Upper Works, and put the finishing touches to the Board's work in the Tray Stove Cuts where their dredger was unable to turn.

Late in the summer a contract was arranged for the remodelling of the Superintendent's quarter, arising out of the Eire there. The execution of this work proved unexpectedly difficult, considerable extra expense had to be incurred and the contract was not completed at the end of the financial year.

The final 4" section of the Ring Fire Main has been installed.

Two petrol-driven machines were purchased as an aid to our grass cutting operations. These will undoubtedly assist us considerably, except in close proximity to danger buildings.

A section of old timber wharfing was replaced in concrete in the Hoppit Pool.

In connection with the special maintenance already referred to it was found necessary to increase considerably the Departmental staff and the following major services were carried out.

Complete renovation of the Mitration House in the Guncetton Section, including new roof glazing. Gutting traverses away from

timber perches to Gumcotton stoves, and generally restoring the level of these traverses. Renewing main paths and surrounds to explosive buildings in all sections.

The Department also rebuilt one Kessler in the Guncotton Section.

was extinguished by the Waltham Abbey and Ponders End Fire Brigades.

Our own firemen were also in attendance. Contact the feer of the former was been no call in the factory throughout the year.

continual testing of hose and appliances has been carried out; the pumps are all in good condition and the fire squads have carried out their drills satisfactorily.

Departmental Memo. No.

Minutes to be numbered consecutively.

Sheet No.

A

The increase in steam heating is about 4,000,000 lbs in comparing 1933-34 with 1932-33. This is due to the following contributory causes.

- (1) Six more week-ends of continuous Winlis Healing.
- (2) Winder Heating at 5/l factory due to frost
- (3) Earlie lighting of brilers on Sundays at Nº 5 B. H. to encure that no under shock occurs on 6" main to Edmonday.
- (4) Opening of 3" Stam main to C.E. sieving house
- (5) additional buildings in use in the Cordite Factory.

15/6/34.

To be left blank

ANNUAL TURBOVER.

ROYAL GUNPOWDER FACTORY, WALTHAM ABBEST.

			Parliamentary	Latest	1
			Estimate.	Forecast.	
			2.	2.	
A. Establishments.	ū .		4,436	4,260	
B. Wagos.			68,300	70,215	
C. Materials.		- 20	52,376	57,000	
D. Machinery, Contract.			8,450	5,290	
E. Works, Contract.			5,038	2,855 6,300	
F. Misoellaneous.			6,200 8,740	8,500	
G. Non-effective.				And the state of t	
			151,540	154,420	
Add Net effect of Materia	ls on I.D.	D's.	1,490	1,730	
			153,030	156,150	
H. Productions for					
Army, Navy, etc.			144,820	157,500	
Miscellaneous Receipts.	e and the	(Parlice of the	2,400	2,000	
Sale of scrap, old stored issued on repayment.	s, seem escoi	, 4 49	1,600	1,400	
			148,820	160,900	
Less - Net effect of I.D. Sen	rvices.		5,790	6,720	
			143,050	154,180	À
Balance as shewn be	Low		10,000	1,970	
			per alignetismes proprieties and constitution of the constitution		
Incomings.			Outgoings		Lete:
stimated amounts recoverable in respect of:-	Parly: Estimate.	Latest Forecast	Estimated Expenditu on New Capital:-	Patinate.	C
	2.	2.	1	£	£
Depreciation of			Buildings:-	1610	69
Buildings.	2520	3230	Contract.		1676
Machinery.	1575	3245	Departmenta	L. Oadu	Tose
Mains.	205	260	Machinery:-	6950	2810
Write Offs: - Machinery.	250	175	Contract.		
Decrease of Stores in Stock.	2985	-	Departmenta	1. 2225	1000
Transfer from Supplies	20000	3.000	Mains:- Contract.	476	-
Suspense Ac.		1970			125
	10000		Donastmantal	- W/2:	. 27
	10000		Departmental		-
	10000		Lend.	-	-
	10000		_	-	5200
			Land. Increase of Stor	100	
	17535	8980	Land. Increase of Stor	-	
			Land. Increase of Stor	100	5200 8880
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			Land. Increase of Stor	100	
			Land. Increase of Stor	100	
			Land. Increase of Stor	100	
			Land. Increase of Stor	100	

1954 - 35.

ARRUAL TURNOVER.

BOYAL GUNPOWDER FACTORY, WALTHAM ABBEY.

			Parliamentary	-	stest	
			Retimate.	For	ecast.	
			2.	4	,260	
A. Establishments.			4,43 6 68 ,30 0		,215	
B. Wages.			52,376		,000	
C. Materials.			8,450		,290	
D. Machinery, Contract.			3,038		2,855	
E. Works, Contract.			6,200	6	3,300	
F. Miscellaneous.			8,740	8	3,500	
G. Non-effective.			151,540	15	4,420	
	7 7	70.0	1,490		1,730	
Add Net effect of Mater	ials on 1.D	. W B .	153,030	es complete for products by the starts	6,150	
		a				ma.
H. Productions for				3.6	7 500	
Army, Navy, etc.			144,820		2,000	
Miscellaneous Receipts.			2,400		<i>6</i> ,000	
Sale of serup, old store issued on repayment.	s, and sto	198	1,600	er sunyaneres faut matematike	1,400	wnogsarin-
resument of relations.			148,820	10	60,900	
Less - Net effect of I.D.Se	ervices.		5,790	Open Proposition of the Assessment of the Assess	6.720	MEDICAL TOWN
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			143,030	1	54,180	www.chines.engs
Balance as shewn b	elow.		10,000		1,970	
	to en en transferior de la compania	NO. 15 to a second of the continues of t	AND	ALUMBA CARROLLANDA MARIA		
Incomings.	y.		Outeoine	200	Parly:	Lates
a number of the state of the st	Parly:	Latest	Estimated Expendi	ture	Estimate	100
timated amounts recoverable n respect of:-	<u>Estimata</u> . £.	Porecast.	on New Capital	ess-	Le s	£.
Depreciation of Buildings.	2520	3230	Buildings:- Contract.		1610	69
•	1575	3245	Dopartmental	b	6250	1676
Machinery.	205	260	Machinery:-			
Mains.			Contract.		6950	2810
Write Offs:- Machinery.	250	175			2225	1000
Decrease of Stores in Stock.	2985	425-	Departmental	•	(CACASON IN	object to the
			Mains:			
Transfer from Supplies Suspense A/c.	10000	1970	Contract.		476	
Danie de la company de la comp			Departmental	.0	24	12
	1					-
		1	Force T		1	
			Land.			1-11
			Increase of Sto	res		320
		and the same of th	Increase of Sto	bres	17535	
	17535	8880	Increase of Sto	ores	17535	522
	17535		Increase of Sto	res		and the second
	17535		Increase of Sto	res		and the second

1934 - 35.

ATEURS TURNOTER.

ROYAL GUMPOVDER PASTORY, WALTHAM ASDRY.

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1			Parllementery	•	Latest	
		, 20	The American	2 2	crecart.	
1			2.	400	£.	
A. Establishments.			4,436		4,260	
B. Wagne.		7 1	68,300		70,215	
C. Materials.			52,376		57,000	
D. Machinery, Comtract.	, ,		8,450		5,290 2,855	
E. Works, Contract.			3,038		6,300	
F. Missellaneous. G. Non-affective.			8,740		8,500	
(h. * 10011 at y and or had					englasen geste video stille te video v	and measurable the
Add Not effect of Materials on I.D.D's.			151,540	354,420		
			2, 420	3,740 		
			153,030		156,150	attenue (MA)
H. Productions for Army, Navy, etc.			144,820	157,500		
Miscellaneous Receipts.			2,400	2,000		
Sale of sorap, old store: issued on repayment.	s, and sto	700	1,600	1,400		
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					0 990	
Less - Not effect of I.D. Ser	rvices.			enciazation de cinque estructura de calificación de consequencia consequencia de cinque de consequencia de con		eroppe deaths to the
			145,050	and the state of t	254,280	
		,			5 C#4	
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Incomings.			Outcoir			Lecost
Estimated amounts recoverable	Perly:	Latest	Estimated Expand		Parly:	Fore-
in respect of:-	Detionto.		on New Capital	340	2.00	
managara at at tamangara	E. a	La	Buildings:-		450	-go-Ø
Depreciation of Buildings.	2520	3230	Contract		1610	69
Bochinery.	1575	3245	Departmen	rtel.	6250	1676
Mains.	205	260	Machinery:-			
Write Offs: - Machinery.	250	175	Contract	•	6950	2010
Decrease of Stores in Stock.	2985	600	Departme	stal.	2225	2000
Transfer from Supplies	1		Meine t-		4200	
Suspense A/c.	10000	1970	Contract.	A - 9	476 24	1.35
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			Land.	A. marketinin		-
			Increase of S in Stock.	NOT US	dde	\$200
	el a regionidade o governo de proprieto de la	-aggategatecities relations tales relations			ACTOC ACTOC TO ACTOC ACT	management a social color state of the
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ROYAL GUNDOWDER PASTORY, WALTHAM ARREST.

			DEMONSTRATE.	The state of the s	
			Link Aracka.	Foremet.	
			Sec.	Q.a	
A. Metablichmente.			4,436	4,260	
B. Wages.			68,500	70,225	
c. Haterials.			52,376	57,000	
D. Machinery, Contract.			8,450	5,200	
E. Works, Contract.			3,036	2,855	
r. Missellanorus.			6,200	6,300	
G. Non-offertive.			8,740	Section Commonweal Section Commonweal Common	monopolis surgio n Militiri da
			151,540	154,420	
Add Het effect of Materials on I.D.D's.			2,400		
			153,080	156,150	
H. Productions for			144,620		
Arry, Hery, etc.				157,600	
Miccellaneous Receipts.	ř.		2,400	2,000	
Sale of serap, old stores, and stores issued on repayment.			2,,600	2,400	
mentioners and marketile mountains			240 y 620	250,930	encere constitution
	2			*	
Leas - Not offeet of I.D.Son	rvloce.		5.780 	and the second s	MINISTER DESCRIPTION
		145,080	154,180		
			nus and a men a later of the ment of the parts of the parts of the magnetic of the set of the parts of the pa		acto-problemacion
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leanthar.			Delegation.		Lectors
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An respect of:-	Pridate.		on Now Coylital:		O. Lie
			on Now Copital:	turo Parly: - Estimate L.	
Depreciation of	2.		on Now Capital: Buildings:-	La	Andrew L.
Depreciation of Buildings.	2520	Eas	On New Copital: Buildings:- Comment.	2310	2. 2.
Depreciation of Buildings. Machinery.	2.	323	On Now Capital: Buildings:- Contract. Department	2310	Andrew L.
Depreciation of Buildings. Machinery. Mains.	2520 2575 265	26	On Now Capital: Buildings:- Contract, Department Hachinery:-	1530 6250	60 1075
Depreciation of Buildings. Hachinery. Hains. Write Offe:- Hachinery.	2520 1575 205 250	2. 323 324	On Now Capital: Buildings:- Contract, Department Hackinssy:- Captract.	1510 6250	20 1076
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock.	2520 2575 265	26	On Now Copital: Buildings:- Combract. Dopartment Hackinery:- Combract. Dopartment	1610 6250	60 1075
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	2520 1575 205 250 2985	2. 323 324 26 17	On Now Capital: Buildings:- Contract, Department Hackinssy:- Captract.	1510 6250	20 1076
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock.	2520 1575 205 250	26	On Now Capital: Buildings:- Contract. Dopartment Hackinery:- Captract. Dopartment	234 24 25 25 25 25 25 25 25 25 25 25 25 25 25	2010 1076 2310 1000
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	2520 1575 205 250 2985	2. 323 324 26 17	On Now Capital: Buildings:- Contract. Dopartment Hackinsey:- Castract. Dopartment Heins:- Contract.	234 24 25 25 25 25 25 25 25 25 25 25 25 25 25	20 1076
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	2520 1575 205 250 2985	2. 323 324 26 17	Buildings:- Contract. Dopartment Hackinery:- Contract. Dopartment Hains:- Contract. Dopartment	1610 6250 21. 6250 22. 476 21. 24	2010 1076 2310 1000
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	2520 1575 205 250 2985	2. 323 324 26 17	Con New Capital: Buildings:- Contract. Department Hackins:- Contract. Department Land.	1610 6250 21. 6250 22. 476 21. 24	2010 1076 2310 1000
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	2520 1575 205 250 2985	2. 323 324 26 17	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	1610 6250 21. 6250 22. 476 21. 24	2000
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	2520 1575 205 250 2985	2. 323 324 26 17	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	1610 6250 21. 6250 22. 476 21. 24	2000
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200
Depreciation of Buildings. Hachinery. Hains. Write Offs:- Hachinery. Decrease of Stores in Stock. Transfer from Supplies	250 1575 205 250 2985 1,0000	26 17 197	Delidings:- Contract. Department Hackinsey:- Contract. Department Hains:- Contract. Department Land. Land.	2. 250 2. 6250 2. 6250 2. 2255 2. 24	200