CURTIS'S & HARVEY, LIMITEDI

Papers & Sketches

relating to the

Manufacture of Gunpowder

atthe





Royal Gunpowder Factory

Faversham

last Century.

in

AGH CGodfrey 23/10/78

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Pequelahons 3 of the Proportion to consist of Powerers made al the Kings Milly. At Freessiam. & Mallham Ally 3 of Ponders made by ellerchants dusted gresolver Sthe Remaining 3 of Vowders made by Mer: chantz, such as was used auring the last Mar 17831 Such of Hu Maycaly Ships as ordered upon foreion Mations, are to be supplied with 3 of theirs Proportion of the Condensmade at the Kings Mille, Gillie others Therei of Merchant Vorreier d'unalect anci Résoluect ----Mig Recommenciea la the Capt. of His Maij! Navy. to use in general the Conden made by the Merchants fuel, yeano: mise the Powders made as the Kings Mills, as much as they can ~" The Three sorts of Kings Powders -L. S in Rea a enotes a very strong Ornaers L.S. in Police on that is uniform a very durable L.S in While on Malin general is stronger than The Bolie, bui more fiable la grow dusty

Regulations

1/3 of the Proportion to consist of Powder made at the Kings Mills At Faversham. & Waltham Abby
1/3 of Powder made by Merchants dusted & Resolved & the remaining 1/3 of Powder made by Mer:
:chants, such as was used during the last War
1783 / Such of His Majestys Ships as ordered upon foreign Stations, are to be supplied with 2/3 of their Proportion of the Powder made at the Kings Mills, & the other third of Merchant Powder dusted and Resolved.

It is recommended to the Capt's of His Maj's Navy to use in general the Powder made by the Merchants first, eccono: mise the Powder made at the Kings Mills as much as they can

The three sorts of Kings Powder

L.G. in Red denotes a very strong PowderL.G. in Blue on the is uniform a very durableL.G. in White on that in general is stronger thanThe Blue, but more Liable to grow dusty

Process for channes Wood in Iron bylanders for making Sun ponder al Savershame 17985 The wood u Mellow, and Willow, The latters preferable of to be obtained. The The best boal is made from Dogwood Which is scarce and grown to a small size The bylinders and cast from about 2 feel in diameter and 8 feel long & land horizontally, the under end is closed except jour holes at right alogles to each other, two of which are used at a time. The reason for known four, a that when The face paping over the log linders shall have enjured that have they may be turned, mo freah hales lakten, and a new surface exposed to the heat. The fire u in a Brick flue underneath, and madele hafs under and over, three bylinders placed logether in the manners of a river beralong Jurnace, when the Smoke is caused out of The Buildings by a flow over on Side An arched plate of Iron called the anow, made domelunes of Nerreastle Brief larthe which uplaced on the upper

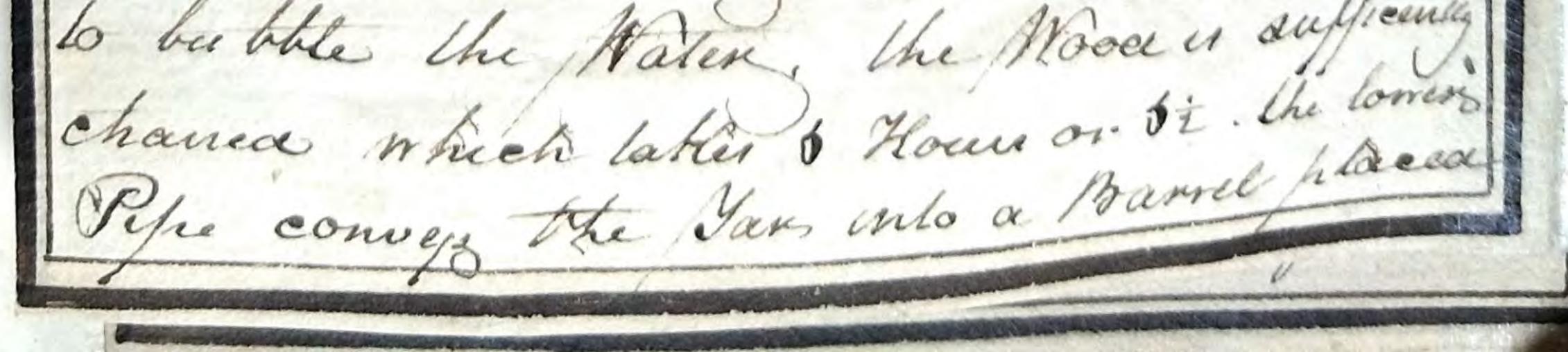
Process for charring Wood in Iron Cylinder for making Gunpowder at Faversham 1798

The wood is Alder and Willow the latter preferable if to be obtained the best Coal is made from Dogwood which is scarce and grown to a small size.

The Cylinders are of cast Iron about 2 feet in diameter and 8 feet long & laid horizontally, the under end is closed except four holes at right Angles to each other, Two of which are used at a time the reason for having four, is that when the fire passing over the Cylinders shall have injured that part they may be turned, two fresh holes taken, and a new surface exposed to the heat. The fire is in a Brick flue underneath, and made to pass under and over, three cylinders placed together in the manner of a reverberatory furnace, when the Smoke is carried out of the Building by a flue over on side.

An arched plate of Iron called the Shoe, made sometimes of Newcastle Brick earth which is placed on the upper part of each

sach logunder to gaud il from the immediate effect of the flame, which might otherwise mett it. The whole is inclosed in Brick north in depth the Length of The toylenders. The point or open and is then filled with Mood out into length of 6 or 8 Inches to the Eng, which is about ma thirds. the by linder at the ling, the space before the Ring a filled with earth. the Cover filled on and filled also with fand and Ashes and lutea with Clay after Which the fine is made on ~ ~ An the backpart which i a deatinet Room appear the closed inde The Eglinders in which are the fours holes on short Juper, the two horyantal ong are fitted up to the other two are tuteal Copper piper of about & feel in tength thro the upper one paper, and in the port of Vapers which is made to pass the alland Into a Wooden receiver by a syph office immensed in Water When the vaper coar



each Cylinder to guard it from the immediate effect of the flame, which might otherwise melt it. The whole is enclosed in Brickwork in depth the length of the Cylinders. The front or open end is then filled with Wood cut into length of 6 or 8 inches to the Ring, which is about two thirds the Cylinder at the Ring, the space before the Ring is filled with earth. the Cover fitted on and filled also with sand and Ashes and luted with Clay, after which the fire is made on -

In the back part which is a distinct Room appear the closed ends of the Cylinders in which are the four holes or short pipes, the two horizontal ones are fitted up to the others two are luteal Copper pipes of about 8 feet in length thro the upper one passes, and in the front of vaper which is made to pass thro a Bank into a Wooden receiver by a syph or pipe immersed in Water. When the vapers esay to bubble the Water, the Wood is sufficently charred which takes 6 hours or 5 1/2 . the lower pipe conveys the Tar into a barrel placed

paced on the ground. 150 to of boals is made in each leylinder al one charge. The quantity of and and war is not regularly ascertained sometimes more being produced than at others. The smell and apperauce This Law resembles that made from dea Goal and the and u used for some purposels by Dyers ~ " When the boal is taken from the Cylinderz, il is put into Copper pans covered up, sel la cool lile manteco. Il u ground by a Mile similian to that for dupper then passea thro a Server like the Orrace diever this reauces it to a very fine Powder in which state it becomes part of the Composition of Junpowder ____



placed on the ground. 150 lb of Coal is made in each cylinder at one charge. The quantity of aud and Tar is not regularly ascertained sometimes more being produced than at others. The smell and apperance of this Tar resembles that made from Sea Coal and the aud is used for some purposes by Dyers.

When the Coal is taken from the Cylinders, it is put into Copper pans covered up, set to cool till wanted. It is ground by a Mill similar to that for Sulphur then passed thro a Seiver like the Powder siever this reduces it to a very fine Powder in which state it becomes part of the Composition of Gunpowder.

Process of Making Sunponder al Favershamo the Apportion of 100 to of Dorden is. ~~~ 75. Salthetie Sulphien 15 ~ 105 Charcoal to allow for the Mater in mying, 76 the of Petre a put in ~" Ethe whole is placed in a lub, haveing a Kince of Rack which is turned round to met the Ingreacent, it is then Val into a Voop on happen nearly like Chial used for Lattpelie, and in which u a Machine for stiring it about, from the Voof il is taken to the slelle Room and there palsed thro another mexing Jub, 20th are then put under each pairs of Some with a title Waler, which is also added from une to time at il morth duy. I Hourg are requerea al Savershame, ana al Malkano elby to north faste aring to the greater Body and height of Walen at the latters place, and as the goodness of Borders" increased by the questines of Morting hand



Process of Making Gunpowder at Faversham The Proportion of 100 lb of Powder is. Saltpetre - 75 '' Sulphur - 15 Charcoal - 10 To allow for the Water in mixing, 76 lb of Petre is put in –

The whole is placed in a Tub haveing a kind of Rack which is turned round to mix the Ingredient, it is then put into a Box or hopper nearly like that used for Saltpetre, and in which is a Machine for stiring it about, from that Box it is taken to the Mill Room and there passed thro another mixing Tub, 30lb are then put under each pair of Stones with a little Water, which is also added from time to time as it works dry. 5 Hours are requiered at Faversham, and at Waltham Abby to work paste owing to the greater Body and height of Water at the latter place, and as the goodness of Powder is increased by the quickness of Working. Walt ham

Waltham albly Porder exceeded that of Faveraham as 190 to 169. The Miller north constantly Day and Sight. The men are relieved every 6 hours and Samples If each Mans produce of Porder an granulated and proved in the state by an eprovnith raising a nught of 25 to Verpendicularly in Height it ought to rise with ~ The Mals is then that under a deren prefs and Reduced to a dolid dump -Mence il is broke with Mooden Malley into amale Pieces and put into peurced mill Round holes of the size of the largeal Grains, mo pieces of Signumvilie of about 6 Inchez diameter, are put into each Serviers to break the Jumps and force them thro the holes 30 or 40 of these serves are placed on a frame, which is moved by a brank on a perpendicular Efle pulsing thro the alledale of it, on the upper end of the Gele is a trunale which is worked by a large Googlew Wheel. communicaling withe the Mul



Waltham Abby Powder exceeded that of Faversham as 190 to 169. The Mills work constantly Day and Night. The men are relieved every 6 hours and Samples of each Mans produce of Powder are granulated and proved in the state by an eprov with raising a weight of 25 lbs Perpendicularly.

Height it ought to rise with The Mass is then put under a Screw press and Reduced to a solid Lump. thence it is broke with Wooden Mallets into small Pieces and put into [possible missing word] peirced with Round holes of the size of the largest grains, two pieces of Legnumvitie of about 6 Inches diameter, are put into each Seiver to break the Lumps and force them thro the holes 30 or 40 of these seives are placed on a frame, which is moved by a Crank on a perpendicular Exle passing thro the Middle of it, on the upper end of the Exle is a trundle which is worked by a large Cogged Wheel. communicating with the Wheels of

of the Malers Hork or a Home Mile which will also in an adjoining, Room The Ponders heard the granulated is put into the Screing which are Cylinder of Brak, more work placed Horizontally in the wooden cafes furned abore mentioned mile communicale mill a theel on each of the eiler of the Cylindiens ... The amale grains fall the between the Miner, and the large grain after a certain time of Morth are made to pass out of the Screen. by tomenney one end and afrening a dyment of 16 60 hals on each il, much suffers Revoutition . Hiere are Serens for several degrees of finenels. Whe deferma between amale ana large grained pomen conails merety in the dige of the grant They being exactly the same Convers made perhaps at the same time The Porder is taken to the Good penter.

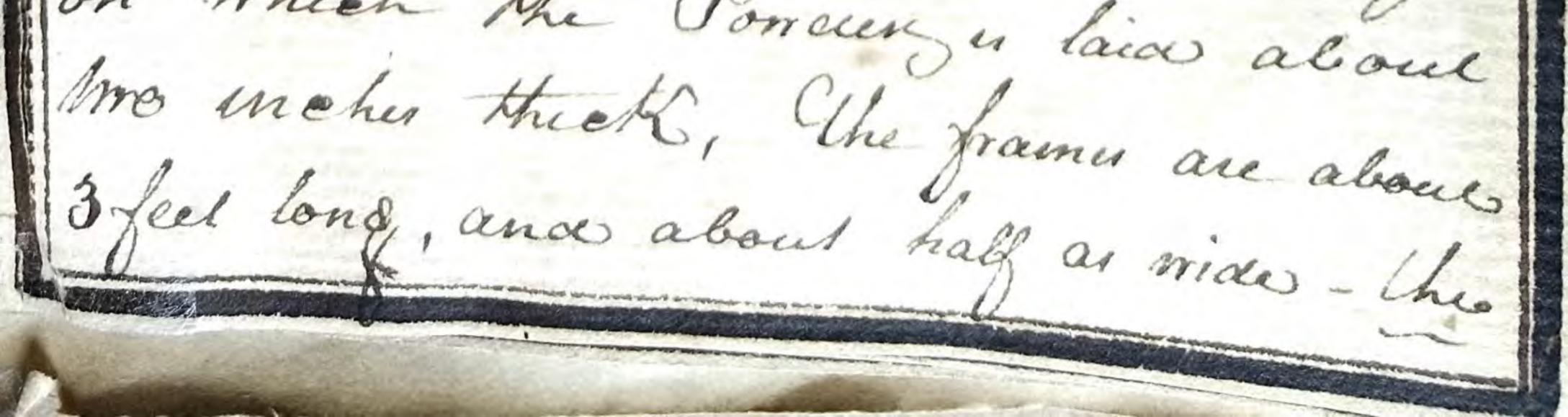


of the Water Work or a Horse Mill which mill also in an adjoining Room turn the Screws.

The Powder being thus granulated is put into the Screins which are Cylinders of Brass, wire work placed Horizontally in the wooden casses & turned by the Cogs of the Waters Wheel. The above mentioned will communicate with a Wheel on each of the exles of the Cylinder. The small grains fall thro between the Wires, and the large grains after a certain time of Work are made to pass out of the Screen. by lowering one end and opening a segment of it, which suffers it to pass on each Revolution. There are Screwes for several degrees of fineness. & the difference between small and large grained powder consits merely in the size of the grains they being exactly the same Powder made perhaps at the same time.

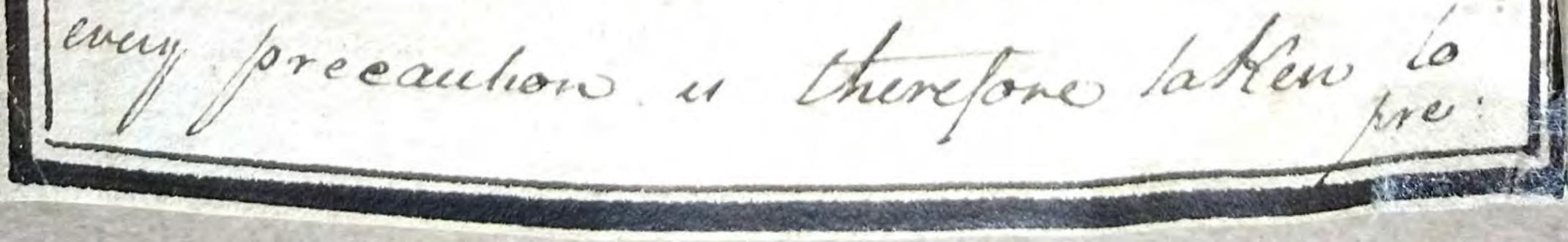
The Powder is taken to the Room which are Buildings having in the center

Center a fual place deperated from The argung Cloom by a Brick male an from pot y set on eage in this Male to that its Bottom appear in the Drying Room, against the Pol the The is made of in course, the Porders is dried by the heat thrown from the Bollom of the Iron hot, over the Pat is a projecting duce of Copper of In filing the Abom with Border and also in taking it array after drying, a bopper cover is placed over the part of the tot Shown in the Room and a Canvals hing over the whole to the Tround to prevent the possibility of aust flying lood The Room u al chose times, also covered with a painted Canvals, the form of The Room a semicurcular mith Rack from the floor to the Ceelino, to le: cewe frameny abrechede with Canool, on which the Porcery is laid about



Center a [fual] place seperated from the drying Room by a Brick wall an Iron pot is set on edge in the Wall so that its Bottom appears in the Drying Room, against the Pot the fire is made of in course, the Powder is dried by the heat thrown from the Bottom of the Iron Pot, over the Pot is a projecting sheet of Copper of in filling the Room with Powder and also in taking it away after drying, a Copper cover is placed over the part of the Pot shown in the Room and a Canvass hung over the whole to the Ground to prevent the possibility of dust flying too it The Room is at al those times, also covered with a painted Canvass, the form of the Room is semicurcular with Racks from the floor to the Ceiling to Re: :ceive framers stretched with Canvass, on which the Powder is laid about two inches thick, The frames are about 3 feet long, and about half as wide - the

The targest Slove contains about Bauch the fire i made on, and the heat quan is 132 of Jaren her o mithen the blove ana TOO outside the door by a theminites place in the door, there are values in The Roof to give went to the iflurio aucung from the Condex in arying as relearto bool, the Room when too hab, and which are opened by a diring brought out near the fue place. When the fire has continued hours it a le moved and the Slove duffered to cool The Concern a removed before Colas the not into the open ain, it is passed Mora Sereen in the same Building made anoularly in a portable caseldo a to pals about 14 feet over More work le ger out the dust, the real is then weighd and headed up in Bandles, and let Temain in that manners, her quit color I a then caused to the Some Marise;



the largest Stove contains about [believed missing number] Bandes the fire is made on, and the heat given is 132 of Farenheit within the stove and 100 outside the door by a thermometer place on the door. there are valves in the Roof to give vent to the ifluvia arising from the Powder in drying as well as to Cool, the Room when too hot and which are opened by a String brought out near the fire place. When the fire has continued { believed missing number] hours it is Removed and the Stove suffered to cool the Powder is removed before Cold tho not into the open air, it is passed thro a Screen in the same Building made angularly in a portable case so as to pass about 14 feet over Wire work to get out the dust, the rest is then weighed and headed up in Barrels, and let Remain in that manner till quite cold it is the carried to the Store House every precaution is therefore taken to pre

prevent the allraction of Moisture from The the there is also a sham Slove fifeed up, but which has not been asea al taversham, no of them have been said to have blown up in dome other Vonden mork. Al consulg of a large Gale of Coppen under which the deam Viepe of a great Cappen is conveyed, which Borley and ils furnació a in another room Reperated by a Buch male ... The Porcen is proved by the provisith already mentioned 2 Drams Cylinders ponders gave eight i hu of height the weight was raised in. as all the Charcoal u not made on by linder the Condex in de: meral use is a millure of bylinder pomain MM that made from boal charred in pels Ethere are also Grocels made by an eropa Inch Morlan ance a that of lot to might the general usall a leglinder pomer ---- 208 jal Panon 160 p of Ques Fil Pondens Half Glinden half Pil " 182 Sometimes a foe or two of Variation. The charge is 20fm each ease

prevent the attraction of moisture from the the [missing word here - possible ""air""] there is also a [chain] Stove fixed up, but which has not been used at Faversham, two of them have been said to have blown up in some other Powder work. It consists of a large plate of Copper under which the steam pipe of a great Copper is conveyed, which Boiler and its furnace is in another Room separated by a Brick wall

The Powder is proved by the [eprovwith] already mentioned. 2 Drams Cylinders powder gave eight [in how] of height the weight was raised.

As all the Charcoal is not made in Cylinder the Powder in general use is a mixture of Cylinder powder with that made from Coal charred in pits

There are also Process made by an eightInch Mortar and a Shot of 67 lb weightthe general usall is cylinder powdergives208 feet RangePit Powder160Half Cylinder half Pit182 Sometimesa foot or two of Variation the charge is 2 of in each case

Copy of raily Proof of the Mill charge and Powders drawn from the Stove in the vertical epoor wellt. Store Heversham Lep! 3.73. Names of the Mitos Disting Disting Rames of Milemen Verical on the C. Sof hairs of Buns Scort Revo charger proved Exprovette Copper Plates John Holly " 1 15.2 Oshrinde Mills 4 Willin Coppero 1 14.7 Horse & bart mill 4 In Helson ~ 1 14.2 Hinds Mill A Will While n 1 14.4 1513 Tho? Bennet - 12 1413 Rob. Mrail .. 1 Jower water mill 14 " Ma- 6 In. Losdehilers 1 blean fine 13.1 Alerer A Will Silver 1 alers 14"7 Gluders Seo: Bourne 1 Imall Beaas 15.1 Bunels Mille M. Glassil. 1 13.8 Joro Horse mili 2 With Webbs ml Son Wildiag ~ 1 14"3 New Horse Mull 2 Hen Page 1, 15.0 Geo Spendy 1 10.1 Ingle Horse miles Min Conthul 1 13.2 Richi Tearce 14"7

Copy of daily Proof of th	e Mill Charges							
and Powders drawn from	-	2						
vertical [epro] mill & Co	Faversham Sep 3	1756						
Names of the Mills								
& No of pairs of run	& Sort	Names of Millm	en	Vetrical	on the			
ners employed at each	of Gunpowder	& No charges pr	oved	[Exprouette]	Copper Rate			
Ospring Mills 4		John Hobbs	1	15.2				
Horse & Cart Mill 4		Willm Copper	1	14.7				
Kings Mill 4		Jn Kelson	1	14.2				
		Willm White	1	14.4				
		Thos Bennet	1	15.3				
			2	14.3				
Lower Water Mill 4		Robt Wrail	1	14				
	МС	Jn Goodchiter	1	15.1	Clean fine			
	Alder 4	Willm Silver	1	14.7	a few			
	Cylinders	Geo Bourne	1	15.1	Small Beads			
Bennets Mill 4		Wm Claggil	1	13.8				
Loro Horse Mill 2		Wm Webb	1	13				
		Jn Wilday	1	14.3				
New Horse Mill 2		Henry Page	1	15.6				
		Geo [Ipendes]	1	15.1				
Single Horse Mill 1		Wm Cornlue	1	13.2				
		Richd Pearce	1	14.7				
		No 1/2	1	6.6				
	Glassed		2	6.4	Do			
	Alder 4	No 3	1	10.8				
Store Proof	Cylinders		2	10.5				
		F. G.	1	11.2	Do			
	Glassed		2	11				
Store Proof	1 Alder 4	F. G.	1	6.8	Do			
	1 Cylinder	S. G.	2	6.8				
	Returned	No 1/2	1	2.4				
			2	2.4	Many [Light]			
Willm Sumpter Esq.	Powder and	Sign Jn Yiking		Master Work	Large Beads			
	resolved	Alcester						

Copy of Monthly Groof of Sumponciers by Montan Carbine & Vertical Roy! Powciers Atile Faversham ST Aug "1796 When Store Meight Distinguishing mark Randes in the 8 inch No of Boards penetraled I I englis of the Remarks on Dried - When proving Distinguishing mark Reg of Poweler- and a carbine. Weight 4 the Pencerks on Ball of Poweler- and a carbine. Weight 4 the Plates ... Nº. 12 207 " 200 " 203/2 17 110 196 70 10 71 Glazzed L. S. 212 " 207 " 209/2 in " m 1 m Alcler I No. 3 m " m " m 12 " 16 " 16/2 103 " 107 "103 16 " 17 " 16/2 111 " 112 "11/2 n " m um Glear fire Gral 25 1011 " 189 " 191/2 Glazzed A. J. Sin the Square fear small Beachs 5 53 198 ... 197 " 197/2 means Cylinders with Alder m 11 m 11 m Cylinders ... 81 . 8:6 . 8:3/2 16 " 16 " 10 A03 | m " m " Gron shoes instead of 8.7 . 8:3 8:5 E.G. 15 " 16 " 13/2 carthen now discontinued 843. Lo port Jusicle store for Wind E. Concy dimino Porreles Sign. Hym Sumpter Mi Cloudslyn

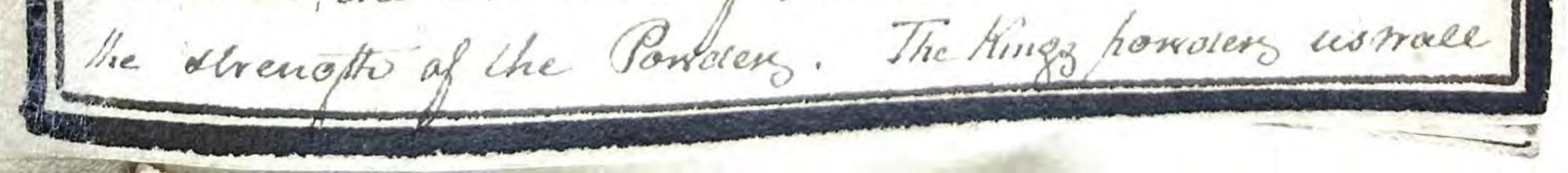
Copy of Month	nly Proof of Gunp	owder by Mo	ortar Carbi	ne anc	l Verti	cal							
Royl Powder N	1ill Faversham 17	Aug 1796											
When Stove	Weight	Distinguishing mark		Ranges in the 8 inch		No of Boards penetrated			Height of the			Remarks on	
Dried of B when proving				Mortar fired with 2		By a steel Ball fired from		Vertical			the Plates		
				oz of Powder and a		a Carbine. Weight 4 dm			1st Round 2d Rd				
				Ball o	of [C a	les] 1oz 1st	of Po	owder 1	Round 2d	Mech	m		
				Round 2 Rd Medm		Round Medm							
			No 1	207	200	203 1/2							
			2										
17 Augt 1796	70 to 71	Glazzed	L.G	212	207	209 1/2							
	Į		S.G										
		Alder II	No 3				17	16	16 1/2	103	107	103	
		Cylinder	F.G				16	17	16 1/2	111	112	111 1/2	
No I. S in the s	quare	_	1	194	189	191 1/2							Clear fire []
means Cylinde	•	Glazzed	2										few small beads
Iron shoes inst		Alder II	L.G.	198	197	197 1/2							
earthen now d	liscontinued	I.S.	S.G.										
		Cylinders	No 3				16	16	16	8.1	8.6	8.3 1/2	
		-	EG				15	16	15 1/2	8.7	8.3	8.5	
													[MB] to front
Wind E Cloudy													Inside store for
Col. Congreve						Signd Wm.	Sum	pter	Jn	Cloud	lsly		drying Powder

Method of proving Conders al Rusfleet 1796 The tots of Conders received when from the Kings Milles at Faversham or Wallham Maby when in a sufficient quantity proved as follows Samples of each sont latten from the middle The fingures to find the deflure and hardness of the Grain, and that they are no lumps in it. It is then taken to the flashing house, and More parcels of each sont meighing I Dr. lach parcel, Begining myth some approved already in dore, and put upon small bopper Plates and fired by a heated from mith round naked Head. on the amartness of the explosion, the clearness of the Fine, the freeness from Garty in fireino, and many large Beady left on the Plates, which wrney the fourness of the meterials and want of care in the Manufactors, the porner " Rejected ... The second proof of the grained or common Condens u by fireing two 8 meter mortand with each a Charge of 200 of every Sample, be gining as before with a charge of the Comparative Powden to each port, _ " The attornant Powden to each sont, -



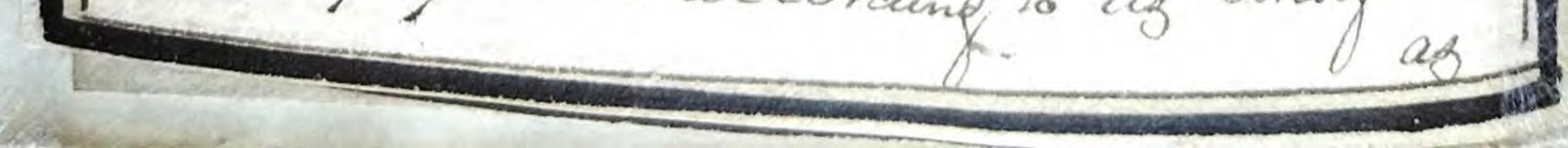
The lots of Powders received either from the Kings Mills at Faversham or Waltham Abby or from the different powder makers are when in a sufficient quantity proved as follows. Samples of each sort taken from the middle of the Barrles, are tryed by pressing between the fingures to find the texture and hardness of the Grain, and that they are no lumps in it. It is then taken to the flashing house, and three parcels of each sort weighing 2 Drs each parcel. Begining with some approved already in Store, are put upon small Copper Plates and fired by a heated Iron with round [nabed] Head. on the smartness of the explosion, the clearness of the Fire, the freeness from Sparks in firing, and many large Beads left on the Plates, which eveness the foulness of the Materials and want of care in the Manufactor. the powder is Rejected . The second proof of the grained or common Powder is by fireing two 8 inch mortars with each a charge of 2 Oz of every Sample, begining as before with a charge of the Comparative Powder to each sort. The Mordars

The Montday are laid at 45 Deg! of elwation and carefully mached and mixed clean and dry afters each Rounde. The Ball thrown is of irow Weighing 64th, which is also made very clean and dry each time of givenon, The Ponders. mæde at the Kings mille nikk pure maleriale ana the Charcoal dustilled in Non by linder ques a Range of 180 foot Sometimez morter 200 3 foot. That made Charcoal from the Vil gives from 130 log 160 and approved accordingly To the sont of Woods used, The Merchants porten giver in geheral from 140 to 150. and upmarch ance the Resaburd powders which is such as has been on Service or al des ana returned and has been deflea and rearged in the Sloves usually gues from 107 lo 117 or thereatout The deconce proof for the fust grain or Muiquel Powders u which a remarked in the discription The Manufactory is only that which passes thro the Wines in screening by fireing to charge of 4 Dr. each from every parcel / begining with the Comparative as before from a allusquel barrel Vinea in frame/ this throws a died Ball thro wet Com Boards of I Inch in Mickings and 4 in afunders fined in another frame al 139 feet 10hi deatance the Numbers of Boards



The Mortdars are laid at 45 Deg.e of elevation and carefully washed and wiped clean and dry after each Round. The Ball thrown is of iron Weighing 64 [drs], which is also made very clean and dry each time of fireing. The Powder made at the Kings Mills with pure materials and the Charcoal distilled in Iron Cylinders gives a Range of 180 foot Sometimes more 2 or 3 foot. That made Charcoal from the Pit gives 150 to 160 and approved accordingly to the sort of Wood used. The Merchant powder gives in general from 140 to 150 and upward and the Resolved powder (which is such as has been on Service or at Sea and returned and has been sifted and Redryed in the Stoves) usually gives from 107 to 117 or thereabout. The second proof for the fuse grain or Musquet Powder is (which as Remarked in the discription of the Manufactory is only that which passes thro the Wires in screenings) by fireing two charges of 4 Drs each from every parcel (begining with the Comparative as before from a Musquet Barrel fixed in frame) this throws a Lead Ball thro wet Elm Boards of 1/2 Inch in the [Kness] and 3/4 in asunder fixed in another frame at 39 feet 10 ins distance, the Numbers of Boards [believed missing word - possibly "determines"] the the strength of the Powder. The King powder uswall

usunale preirees 15 or 16 dometimes the whole and lodges in the frame, The Merchant powders from 12614. The Resolved powders from 16612 The numbers of Ranky are 17m ____ Che Poncers havenog undergone the Proof. Parcels of Hor of each soll, accurately weighter, au placed in Suve Bolloms of about 1601 diament Emaxe on purpose, and properly marked. The Concers is spread over the whole Ballom so as that each experes an equal despace, they are then placed in a thest perforaled on all Fidez, and allowed to remain 17 or 18 days to The purity of the Materials by the I moisture from the almosphere is is then again Meigheau ana the defference marked down. When these remarks mere taken/bel." 6. 1796 The parcels meighed, which had been exposed 17 Days, had not in any instance gained more Than 2 a Frain in weight, many Parcels had no sensible difference ... The same Goog as before are than again gone thro, & the Small Received and paid for accordingly to its compara: Time derength . This appears to be the Whole Process of proving Conden for Service u the Powder for Service u Pringth & meter in proportion according to de Strength 20



usuwall peirces 15 or 16 Sometimes the whole and lodges in the frame, The Merchant powder from 12 to 14. The Resolved powder from 16 to 12 The numbers of Ranks are 17 The Powder having undergone this Proof, Parcels of 1 lbs of each sort, accurately weighed, are placed in Seive Bottoms of about 1 foot diamet made on purpose, and properly marked, The Powder is spread over the whole Bottom so as that each [experes] an equal surface, they are then placed in a Chest perforated on all Sides, and allowed to remain 17 or 18 days to try the purity of the Materials by the [possible word missing] of moisture from the Atmosphere it is then again Weighed and the difference marked down, When these remarks were taken Oct'r 6th 1796 the parcels weighed, which had been exposed 17 Days, had not in any instance gained more than 1/2 a Grain in weight, many Parcels had no sensible difference. The same Proof as before are than again gone thro, & the Powder received and paid for accordingly to its compara tive Strength. This appears to be the whole Process of proving Powder. The Powder for Service is mixed in proportion according to its Strength so as

as lo bring il lo a mean or uniform force as much as possible, for the purpose a mixing House a insected in one Room, of which a a Machine of the Kind durded al Jop into seven parts as happen, into each of much a Barrel of Powders is put a proportion of the Nof Barrely according to its alrength is byfinder Ponders morily 3/1 By lifting a handle a valuas la spened , which suffers the Conders to run thro the Wine Bottoms of the 7 hoppens into a Slabe, having a simicurclan Ballom of mine I this thend into deven wooden spouls each of which conveys it, to a Barrel placed underneath, This Conder is again releved to the hoppens at the top of Machine, and Lecevea as before in the Banely uncurnent Beeng now Throughly mixed, it is headed up, and is that sort of Borders marked With a Blue ES Sthe figures & or with IS & the figuer 3 whore mean force u from 150 6 160, the is the Vorders used for practice & and experiment. and for severce - The Powerer marked E. G. SS a generally awhile E.S & 13 the Second sort of Powders of the above qualtity, which is put under the Brefs & made



as to bring it to a mean or uniform force as much as possible, for this purpose a mixing House is irrected in one Room, of which is a Machine of the [believed missing word] kind divided at Top into seven parts as happen, into each of which a Barrel of Powder is put a proportion of the No of Barrels according to its strength is Cylinder Powder (mostly 3/7) By lifting a handle a [valvan] is opened, which suffers the Powder to run thro the Wire Bottoms of the 7 hoppers into a Globe, having a semicurclar Bottom of wire & thro thence into Seven wooden spouts each of which conveys it, to a Barrel placed underneath, This Powder is again returned to the hoppers at the top of Machine, and Received as before in the Barrels underneath Being now throughly mixed, it is headed up, and is that sort of Powder marked with a Blue E G & the figures 1/2 or with F G & the figure 3 whose mean force is from 150 to 160, this is the Powder used for practice & and experiment and for service. The Powder marked E G S G is generally a white E G & is the second sort of Powder of the above Quallity, which is put under the Press & made

made into a Solice Jump, thence brok. comed and Screened afresh, only however laking k deed away, which dust is entirely remanufactored this sont of Vonders, as noticed in the Re Sulawong for the supply of the Mary. is Sometimes abronder, Bui not so uniform in its effects than the Blue, E. S it is used for filling Shelly Kauch things as do not require great accuracy, The red E&ES is Condersentirely made at the Kings allile with bylinder coals and is used as present only in particulars cases, in comparision to mig with the othen sorte la bring il la mean force ----- Othe figures 1. 2. \$3 denal that the Porcen is made with Lattpeter obtained from damagea Sunponder 4.5.8 6 from Sallpetre Refined from the grough Mayesty Savy with Sun powders



made into a Solid Lump, thence brok, corned and Screened afresh, only however taking the dust away, which dust is entirely Remanufactored This sort of Powder, as noticed in the Regulations for the supply of the Navy, is sometimes stronger, But not so uniform in its effects than the Blue E.G. it is used for filling shells & such things as do not require great accuracy The red E & EG is Powders entirely made at the Kings Mill with Cylinder Coals and is used at present only in particular cases, in comparision & to mix with the other sorts to bring it to mean force. The figures 1, 2 & 3 denot that the Powder is made with Saltpetre obtained from damaged Gunpowder 4, 5 & 6 from Saltpetre Refined from the grough. Regulations for the supply of His Majesty Navy with Gunpowder.

This for Repository Papers In the Worki al Faversham the quantity of Saltpetre required is so great that the common Mode of Pil: the whole a therefore ground in a Horse delle having two stone Rollers of about 3 feel drameter standing al right angles to each other, and in the open pall of the Angle a wooden Rack to seperate the Salthetre ana que nen durfaces for the Stone to page over when ground it is prefsed in small quantilies thro a Wine sieve placed on crafs Wires in a happen the bed u closed and with a guare strett having a match to calch The eage of the Science. Man passes il backman and foreward, The finners particles are collected in a Jules under the happen, and the resedue hound again in the Mills, - By using a covered hoppen agreat deal of the fineal parts which would fly offi ane retained Similing Atilles are used for Sulpher and Charcoal with the ot ferance, there is an delational handle, perpendiculars afte which luring a large Wheel in an adjoining Room, and by it working the screens this which the Sulphers and Goal are made to hals and which are semilary to the Screens for.

This for Repository Papers

In the Works at Faversham the quantity of Saltpetre Required is so great that the common Mode of Pulverizing as used in the Laboratory would not be sufficient. The whole is therefore ground in a Horse Mill having two stone Rollers of about 3 feet diameter standing at Right angles to each other, and in the open part of the Angle a wooden Rack to seperate the Saltpetre and give new surfaces for the Stone to pass over, when ground [missing word] it is pressed in small quantities thro a Wire sieve placed on cross Wires in a hopper the bed is closed and with a Square stick having a notch to catch the edge of the Scieve. A Man passes it backward and forward. The finner particles are collected in a Tub under the hopper, and the resedue pound again in the Mills. By using a covered hopper a great deal of the finial parts which would fly off are retained Similar Mills are used for Sulpher and Charcoal with this difference, there is an additional handle, perpendicular Axle which turns a large Wheel in an adjoining Room, and by it works the screens thro which the Sulphur and Coal are made to pass and which are similar to the Screens for Powder.

Method of Freating Sulphers ab Freemaham Mac The Lulphers ice from Sciely being very ford a it laid in the Stone floor and broken amage then put ento Caldrons and Bocled, taking the Sum off as it rises, and which usgan After boiling till the Sum ceases to rese, il is Boiled out into earthen Vanz and set to book, when a great sectiment will be formed called Sulphen viorin. the clear have are depierated from the Sectiment, broken ance Moiled in another Capper as at first and the Process repeated the there time, When the clean Sulpher from thes Proces " for making Orden, but the refining il, and for obtaching the Sulphers, as Cannat be gat by the common Mode the Subleming and Relast are used -" The Sulphen to be sublined a pal mis the Iron retort with the Iron cover filed the having a hole to Receive a toatt ons Stapper intended to admit Mins on any violant

Method of Treating Sulpher at Faversham 1796

The Sulphur recd from Scicly [should probably be "Sicily"] being very [] is it laid in the Stone floor and broken small then put into Caldrons and Boiled, taking the Sum [probably Scum] off as it rises, and which is again mixed with the next quantity to be boiled After boiling till the Sum ceases to rise, it is Boiled out into earthen Pans and set to Cool, when a great sediment will be formed called Sulpher [viosim]. the clear parts are Seperated from the Sediment, broken and Boiled in another Copper as at first and the Process repeated the third time, when the clear Sulpher from this Process is fit for making Powder, but the refining it, and obtaining the Sulpher, as cannot be got by the common Mode the Subleming [possible missing word] and Retort are used The Sulpher to be sublimed is put into the Iron retort with the Iron cover fixed on having a hole to Receive a Bolt or stopper intended to admit Air on any violent

wohnt effort of the matter, in the retord the Sulpher using in Sublimation pasel into the receiver or hoom and adhere to the Roof a part of the Assinic sulle passes over mitte the Sulphers which is deperated by mellind the Satphens again and casting it in mouldis of the form of Roll Bremotone as sometimes The covers of the Getont will be thown of and The Sulpher there are lattes fine, a male flee of theel from is made to cover the flame and vapor out of the Building an a cover map: 100 rounde migh flannel Vis set near at hand in the passage between two doors, a Man enters the Mindward door and places this booirs on the Mouth of the Retord which climquishes the flame gives time to read just the proper one from the Refining house is grounded in a rale: ing like similar to that used for salt petro and aftermarder passed thro the Sereen turned If the same Mile, it is then fine enough or meting with the other inquestiments. al. Congrive. Seems to think the expense might be so Reduced, as that all the Sulpher used for Sunpowders might

violent effort of the matter, in the retort the Sulpher using in Sublimation passes into the Receiver or Room and adhere to the Roof a part of the Arsinic still passes over with the Sulpher which is seperated by melting the Sulpher again and casting it in moulds of the form of Roll Brimstone as sometimes the cover of the Retort will be blown of and the Sulpher there in takes fire, a wide [flice] of Sheet Iron is made to cover the flame and vapor out of the Building an a cover wraped round with flannel is set near at hand in the passage betwen two doors, a Man enters the Windward door and places the Cover on the Mouth of the Retort which extinguishes the flame gives time to read just the proper one The Sulpher for Gun Powder from the Refining house is grounded in a rolling Mill similar to that used for Saltpetre and afterwards passed thro the Screen turned by the same Mill, it is then fine enough for mixing with the other ingrediments. Col. Congrive Seems to think the expence might be so Reduced, as that all the Sulpher used for Gunpowder might

Might be Sublimed in which case it would be Considerably more pure than by the fre: send Process it a possible to make it, up from the upper Works as the vale of Inglesa much is considerably cheapers but Is found to contain a very great quantity of Arsnic, which has not yet been able to be seperated oning to the Arsenic sub! lumino with the same heast necessary to pafe over the Sulpher it may be easily distinguished in fumps by its feins full of small ged spide which is the Arsine According la some trali made by Mr Cruckshanks in the Gog Jabornton the Comparative results were as follows 4 of of Sciely Brinstone as imported yeited by stow Combustion in



might be sublimed in which case it would be Considerably more pure than by the present Process it is possible to make it. There is lately Sulpher sent up from the upper Works at the Isle of Anglesa which is considerably cheaper but is found to contain a very great quantity of Arsnic which has not yet been able to be seperated owing to the Arsenic subliming with the same heast necessary to pass over the Sulpher it may be easily distinguished in Lumps by its being full of small Red spots which is the Arsinic. According to some trials made by Mr. Cruickshanks in the Royl Laboratory the Comparative results were as follows 4 oz of Scicly Brimstone as imported yielded by slow Combustion.