Note-book containing entries on mines, industrial chemistry, patents, etc.

Contributors

Pattinson, Hugh Lee, 1794-1858

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32,25 = 32 1/4
12,625 = 12 5/8

63,125
252250
252250
37875

407,15625
17,25 = 17 1/4

203575
81430
285005
40715

7023,3375

7 3/3 3

6 3/8 3

In a Boll 10,000 [illegible]

277,274

3704

Nov 29 - 1840 - New York

Feby 29 - 1840 - New York

Rossie Lead mine

20 miles from Ogdensburgh - St Lawrence Co State of New York

The St Lawrence Republican - Ogdensburgh 28 Jany 1840 contains an advertisement of

The Galena Lead mine for sale on 11th day of March at the town of Rossie in Co of St Lawrence under certain writ of Fieri Facias viz - The right of said mine for a term of years or otherwise of in and to all that part situate in the town of Rossie &c &c and all the goods, chattels, ware &c of the said the Rossie Galena Company

Dated Jany 22 - 1840

L. Moody - Sheriff

George Ramsey - W. Smith

Rossie Lead Mine - State of New York - near Ogdensburgh

The soft coal at New York sells at $6,50 ꝑ ton - broken and carried down at the door - if not broke & in lumps it is $5,50

Peach Orchard coal costs $8.50

H Patterson pays for the coal he uses $7,50 ꝑ ton by taking a ship load

best coal would cost $4,50 or $5,00 ꝑ ton

a ton is 2000 lbs at New York

Rule for a Meniscus

radius of convex × radius of concave × 2

---

radius of concave - radius of convex

---

a Daguerreotype
Niagara Falls
April 3d 1845

Daguerreotype
=
Niagara Falls
April 3d 1840

1st trial - new Plate rubbed with acid & pumice cleaned off with Pumice - covered well with iodine to a gold yellow in cam.a - 20' sun shining on the scene - Heated in Box [illegible] - Image faint but perfect

2d trial - new plate - turned with [illegible] - covered rather thicker than No 1 with iodine [illegible] 30' - image faint but perfect

3rd time [illegible] plate had
been burnt but little which then
appeared - washed [illegible]
[illegible] then again applied it
in Camera [illegible] from 8.40
till 4.40 - time to weigh [illegible] to 75°
came out tolerably good and was
kept - but the solarization had
not been suppressed [illegible] it was [illegible]
the [illegible]

4th trial - <u>Plate burnt</u> - had
a fine white skin upon it
this was removed by rotten
stone and water until the
plate was quite polished - <u>no
vapor appeared</u> - iodine on
one side purple and crimson yel-
low on the other on account of
its being left too long in the
Box but determined to try it
to see the effect -

Box but determined to try it to see the effect –

In camera 50' Sun one third of the time – Came out after twice heating tolerably good but where the iodine was thick on it was positive – This on washing proved a good picture

3rd trial – Plate that had been burnt to a fine uniform [illegible] – cleaned with cotton [illegible] [illegible] applied once – cleaned off and with clean cotton then applied to a uniform gold yellow pretty hot box only by holding it over lamp [illegible] Camera 40 about [illegible] heated twice to 3 – Picture good [illegible] – It was without spots [illegible] only good [illegible] [illegible]

6th trial - New Plate - Acid applied twice and cleaned off very carefully with cotton - Iodine applied to full gold colour in box - Exposed 1' 15 Heated to 75° twice and the picture was a little spotted but would have done excess for a blotch in the centre of the plate - evidently in the plate

7th trial

New Plate - Rubbed with pure water and rotten stone - then with Caustic Potash - then with water & Rotten Stone Iodine to full yellow - Exposed 25' sun 18' of that should have been good but came out dingy and spotted

came out dingy and spotted

8th trial –
old Plate that had been burnt then covered with iodine – then polished with rotten stone and water – rubbed twice with caustic potash then with rotten stone and water – brought to gold colour with iodine –
Exposed 25' – Came out of mercury box a dingy white all over – scarcely an image visible – very bad

9th trial

new plate - heated and became uniformly white - cleaned off with Rotten Stone then with caustic Potash then rotten stone - then acid applied twice and cleaned off with Pumice - covered to full gold yellow with iodine - Exposed 40' at 4½ P.M. sun for the time came out a good picture but dingy and streaked with the potash

Potash abandoned

Monday April 5
Plate 1 - mixed to a fine opaque skin - Polished with rotten stone

Sunday April 5

Plate 1 - Burnt to a fine opaque skin - Polished with rottenstone and water then rubbed very clean with dry cotton -
no acid used.
Browned to full gold colour
Exposed from 16' before 8 to 9' past
= 25'

Heated

Plate 2 - after burning opaque uniform skin - Polished with Rotten stone and water - then acid applied thrice as well as could be done - Exposed from 8 " 15 to 8 "

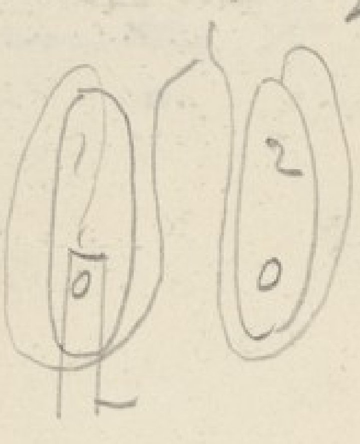
Patents granted to
William Gossage of
Leamington Priors - War-
wickshire. Chemist &
Druggist for a portable
Alarum to be attached
to and detached from
Clocks & Watches and
which may be regula-
ted to take effect at
any given period of
time Feby 11 - 1823
2 Months to enrol
=

Octr. 11th 1840

Cramlington - waggon way engine ~~leading down to river~~ on the banks between two planes - one to colliery the other to River

Engine 28 horse - High Pressure - worked at 35 lb of inch -

Supplied by 2 Boilers each about 5 feet dia and 20 feet long set in the usual way



Flue going round the Boiler

on F Sept 29th the Steam being blowing out of a joint where the saftey valve is attached to Boiler 2 – William Patterson the Engine man took hold of the lever to try the steam and ~~received a slight shock~~ found a prickly sensation in his fingers and the same thing was felt several times but he thought he had struck his fingers against the weight merely for some time. On friday Oct 2d it was stronger so much so as that when he took hold

of the lever end
he felt a more dis-
tinct sensation. And
he felt the same thing
all along the arm
He thinks this an
unusual effect was
produced by some steam
blowing out of the hole
in the joint

On Saturday 3 when
he came in the steam
was nearly up to her
pressure at which time
a good deal was blow-
ing off at the joint

On trying the steam
he felt the same

he felt the same

prickling and men-
tioned it to the fire-
man Thos. Nichols
He tried it found it the
same - then got ano-
ther man ups George
Dunlany Plate Layer on
the Waggon Way - He
felt the same. After
he tried it Patterson put
up his finger gently to
the iron and per-
ceived a spark. then
got a piece of iron
and tried all over the
end of the boiler and
obtained sparks where-
ever the steam

In A Oct 5 - several persons came to see it and they found when standing in the steam that sparks could be apparently drawn from each other 5 stood the first let the steam blow upon his left arm a side and the 2d took sparks from him and so on through the whole 5

The joint out of which the steam escapes is made with Scotts cement - the me-

king the joint a wire
is made and cement
is put below and above
and stuffed in about the
joint when it is screw-
ed tight down

On Monday 5 AM the
first shock was felt
by Patterson standing
in the steam and his
brother laying his hand
upon his shoulder

♂ - Nov. 17
Experiments on was
the Wellington

=

♀ Nov 20
Tried the Lightning
with points at 50 lbs
pt sparks 1/4 to 1/2
inch 5 inch water upon
the tubes

Atlas at 2 lbs 0 inch
gave no sparks

---

14 : 5 :: 1512 as 5 : 14 :: 448

```
   1512        9.0.4        448
      5        5.0.21        14
   7560                    1792
7) 3780                     448
    540                 5) 6272
                           1254 2/5

 1512     1512      500   4-1-24
 1254     1400      448
  258      112       52
```

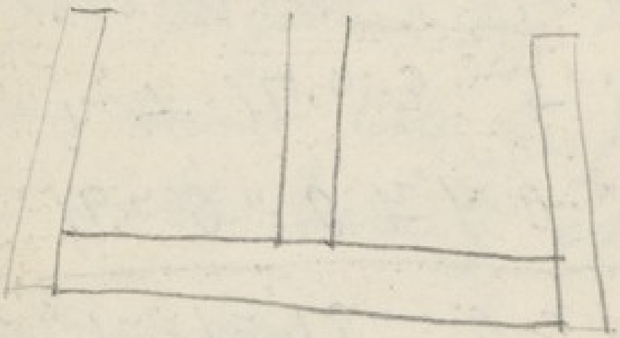
1234   1400   500

258   112   448

52

June 14 - Started grinding tube at Bill Quay

Dimensions



top dia 6 „ 0
bottom do 6 „ 2 } all inside
height 2 „ 8½

outside dia of tube } 6 inches

Chlorride of Lead from Walker - June 14 - 1841

1 - 2 " 2 " 11 to 0 " 20
2 - 1 " 2 " 16 - 0 " 14
3 - 0 " 3 " 15 - 0 " 7
4 - 0 " 3 " 4 - 0 " 8
5 - 0 " 3 " 15 - 0 " 7
6 - 0 " 3 " 19 - 0 " 7
7 - 0 " 3 " 3 - 0 " 8
8 - 0 " 3 " 7 - 0 " 7
9 - 1 " 3 " 8 - 0 " 14
10 - 1 " 2 " 25 - 0 " 14
11 - 1 " 3 " 4 - 0 " 16
12 - 1 " 1 " 13 - 0 " 13

x 13. 16 " 0 " 0 to 1 " 0 " 23

Nett 14 " 3 " 5 Moist

reckoned
= 13 " 2 " 0 dry = 1512 lbs

13
112
336
112
36
1512

Chalk

gr 9 " 0 " 4
to 4 " 2 " 8

nt 4 " 1 " 24 of Chalk

mill
The mill stood till the June

£ 4 " 2 " 8
nt 4 " 1 " 24 of Chalk

= 500 lbs added to milk

The mill stood till ☾ June 21st the contents being well stirred together by hand — then went till ☾ June 28 the water being changed continually

Feby 28th 1841

In Mr Price's boiler he heats 1000 gallons of water in 45 minutes to boiling point and above to 12 lbs on inch pressure

Coal required.

1/2 a ton barrel with straw to light it and 2 1/4 bush duff coal

This boiler weighs 5 tons — charge £38 p ton = £190

Bears 94 lbs p inch pressure

Mr Straker of Jarrow Lodge offered ...

1841 – Octr. 18 – 1841

Mr. Straker of Jarrow Lodge offered ground on the Don at Jarrow for White Lead Works at $1\frac{1}{2}$d. ꝑ square yard ꝑ annum rent on lease of 21 years which is £30 a year ꝑ acre & to be purchased any time within the term at 20 years purchase on that rent. These are the conditions on which Mr Emery has his lease

Carb acid 14.95
ox Pb – 85.02
99.97

Call this

Carb acid 15.00
ox PPb 85.
100

22 : 112 :: 15 :
15
560
112
1680 (76.36
154
140
132
80
66
140
132

85.
76.36
8.64

Carb Lead 91.36
ox ch 8.64
100.00

as 134 :
as 112 : 134 :: 8.64
134
3456
2592
864
11576 (10.33
1120

332
416

as 8.64 : 91.36 :: 112

11,5376 (10,33

347
336
416 92,97

as 8,64 : 91,36 :: 112
112

18272
9136
9136 134

102,32,32 (1184 (9
864 1206

1592
864

7283
6892

3912
3456

456

1842 – Oct 20

Engine at Germans Pit pumping barrel 20 in dia stroke 8 feet

makes 7 or 8 strokes pr minute – has made 12 or 14

to make 10 tons of
White Lead per week requires
22400 lbs
20 gall per lb

4 | 448000 gallons
64,000 = gallons 7 days per week
or 80,000 gall per day
100 gall per min = 6000 per hour
4 I reckon = 144,000 per day
which is about 25 tons per week
13 gall sol chloride per lb
2 - sol may -
5 - to wash with

now 80000 gall =
13,000 feet about
or a tank 40 feet square
by 8 feet deep for the
whole quantity of Water
But of Solution of
Chloride of Lead it

to make 10 tons per week
22400

But of Solution of
Chloride of Lead it

would require per day
to make 60 tons per week

22400
13 per ct
67200
days 22400
6 | 291,200

24 | 450,000
6 | 12500
6,0 | 208,3 per hour
34 2/3

50,000 gallons per day
or a tank 8,333 feet
which is 40 feet square
and 5 to 6 feet deep
or 2 tanks each
23 feet square
8 feet deep
or 2 tanks each
29 feet square
5 feet deep

To make 1 cwt. is required of solution of Chloride of Lead

112
13
6 | 1456 gallons
242 cubic feet.

which call 300 feet
or a tank 10 feet square
3 – deep

Boiler of this size is
15 feet long 5 feet dia;
or 11 feet long 6 feet dia
A tank double this or
600 feet is
14 feet square
3 – deep

Boiler of this size
20 feet long 6 feet dia

To make Manganese solution for a tank
of 10 feet square by 3

To make Magnesian solution for a tank of 10 feet square by 3 of solution of lead would require a Boiler to hold 50 cubic feet or 7 feet long 3 feet diameter.

To make Magnesian solution for a tank of 14 feet square 3 feet deep would require a boiler to hold 100 cubic feet or 8 feet long 4 feet dia

Magnesian limestone
when calcined should just
lose one fourth of its weight
of Carbonic acid from
magnesia

8 lbs lose 2 lbs = 14000 grains
or 30000 cubic inches
or 17 cubic feet
or 108 imperial gallons

[illegible] of 50 cubic feet
of magnesian solution
or 310 gallons will yield

Boiler of 50 cubic feet
of magnesian solution
or 310 gallons will yield
300 gall clear magnesian
solution. Every gallon
takes 12 gall of Carbonic
acid gas by experiment
hence 3600 gallons will be
required.

This quantity of magne-
sian solution will make
150 lbs white Lead.
(But 150 lbs white Lead
contain only 1355 gallons
of Carbonic acid gas
less than this will do
therefore in the great way)

allowing 3600 gallons
of Carbonic Acid Gas
for making one cylin-
der. A working barrel
of 1 cubic foot or 6 gall
would pump it at ~~6 strokes~~
600 strokes or at 20
strokes p minute in
half an hour
=

If magnesium solution contains
10 gr p oz avoir: then 1 imp gall
will contain 1600 gr - $4\frac{3}{8}$ gall
1 lb - 1 cubic foot $1\frac{3}{4}$ lb or 10,000 gr
now 10,000 gr Carb Mag contains
5238 gr Carbonic Acid or $6\frac{4}{10}$
cubic feet and to make a
cubic foot of solution of Bi-
Carbonate 12.8 cubic feet
of Carbonic Acid Gas will be

now a cylinder 10 feet long
by 4 feet diameter is 120 feet
area and it would dissolve

Carbonate 12.8 Cubic feet
of Carbonic acid Gas will be
required.

Now a cylinder 10 feet long
by 4 feet diameter is 120 feet
area and it would dissolve
171 lbs of Carb: Mag requiring
1536 cubic feet of Carbonic acid
Gas

a working barrel 8 in dia
and 24 in stroke contains 1152
inches and a double stroke 2304
inches or allowing 150 inches
for opening and shutting valves
the double stroke will propel
2150 in or 1½ cubic feet —
Hence 1024 strokes will con-
dense the whole and at 30 strokes
per minute in 34 minutes

a Gasometer 12 feet dia
15 feet high contains 1620
cubic feet

July 12 - 1842 On Railway to Dun

Mr Eastons condensing engine requires
6 Gallons of cold water of Horse per minute
Steam 3 1/2 lbs per inch

2 gallons of Horse per minute
to prevent for waste

Water extended by a
high pressure

8 Horse engine 10 1/2 cylinder
4 1/2 feet stroke 28 strokes per 1'

10,5
10,5
525
1050
110,25
,7854

Pressure of steam
25 lbs per inch

Coal consumed
2/3 of a Chaldron
per day of 12
hours

44100
55125
88200
77175
86,590350 = 86,6

area of cylinder

86,6
4 1/2
3464

[illegible] 3 8 9 7
6

2 3 3 8 8

86,590350 = 86,6
4½

433

cubic inches 3897
56

23382
19485

cubic inches 21823,2
of steam of water

1728)21823 (12
1728 12

4543 144 cubic feet
3456 of steam

1087 Now allowing
151 cubic
or say 86,6 feet of steam
54 per minute or

3464 151 cubic
4330 inches of water

46764 9060(32
56 831

280584 750
233820

12|2618784

12|21823

12|1818

151

1842
Feby 21 – At Felling there from Mr Armstrong

=

Mag: Lime from Marsden from Peter Allen
Price to him 2/- ₽ton he wins it for that has paid 2/6 ₽ton for Boatage and summer never less –
Remarks as to magnesia
Burns it in a Lime Kiln
Slacks it and it falls like common lime
to wash a Kiln of 20 tons might ₽ drag a month
2 men at least 4 washings ₽ drag – Rinse stuff as soon as it turns blue i.e after it settles
will get 25 ₽ cent of

same this
cost
2 men 4 weeks 30/- £6-0-0

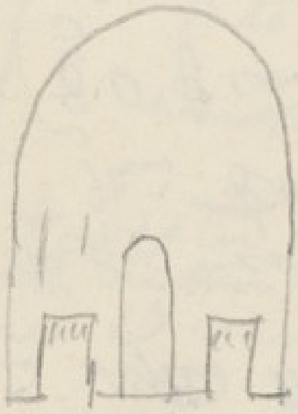
it settles
will get 25 per cent of

magnesia but is not certain
about this

cost

2 men 4 weeks	30/-	£6-0-0
20 tons Lime		4-10-0
		10-10-0

for 20 tons -



Kiln about
10 feet square
and about
10 feet high

Nov 21st 1842.

At Walkers

Wm Losh has 3 decomposing pans for the salt

feet in
3 – 9 long
2 – 0 wide
8 deep

Each of these dec. ^of Lead ore 1 cwt in 24 hours only attended during the day. One man did this and sifted the Galena

One man could do 1 ton ℘ week. This Chloride contained 80 ℘ cent soluble

He dried it also and packed it.

Mr Losh took 112 Galena and converted into Rough Chloride it weighed 121 lbs and contained 80 ℘ cent

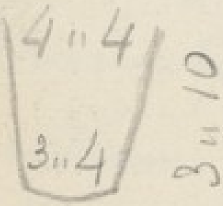
The rough Chloride is roasted on an iron plate after which it settles quadrupl...

121 lbs
and contained 80 p cent

soluble Chloride.

The rough Chloride is roasted on an iron plate after which it settles readily.

They have a copper pan with a lead crib



Into this they weigh 56 lbs of once roasted Chloride and fill up with mother water and boil 10 minutes but put it in when the pan is boiling - Can do 4 pans a day. with 2 pans - can only boil one twice. Get 28 lbs of dry crystals each boil

They have a cooler
16 feet
4 wide
18 in deep } lined with 6 lb lead

Mr W. S. Lash just used
Black Cement — It is
composed of
Ground Potters clay sifted
through a very fine sieve
Coal Tar
mixed well together and
made of the consistance
of Mortar

Feby 21 – At Elswick
with Mr Grainger

Quay 200 feet long
60 – broad
to road
Spring yields 40 gall
pr minute
cistern 2-6
by 2-0
1-17 deep
fills in a one minute
analysis

From Mr Paris March 3 - 1842

				lbs water	lbs fuel used	lbs water pr lb of fuel
5 " 2 " 0	Cinders	in 5 hours evaporated		4155	16	6,746
5 " 2 " 0	Balls	5		4700	16	7,63
4 " 3 " 25	Small Coals	5		4620	16	8,24
6 " 0 " 0	Large do	5		5570	16	8,28
6 " 0 " 0	Balls	5		4670	16	6,80
5 " 3 " 0	buff Coals	5		5080	16	7,88
3 " 0 " 0	do	5		2580	4	7,67

April 5 – 1842
Visit to Establishment at Queenwood – 1 mile West of the village of B
which latter is 3 miles from Stockbridge which is also 12 miles from the Andover Road Station on the Southn – Railway

Farm called Queenwood consists of about 500 acres rented of Mr Goldsmid at 15/– p acre in the Parish of Wytherly.

Mr & Mrs Rigby – Sup. Gov.
——— Atkinson. Fee
——— Skitcroft. Sup: Brick
——— Armsmith. Wheelwright
——— Hill. Sawyer (Foreman)
——— Smith. Lecturer
Miss Hagin. nurse
Robt Swindles Shepherd
Geo Crompton – Farmer or Bailiff
John Scott – Gardener: Sup:
James Gillow – do
Henry Smith – Time keeper in building
Mr & Mrs Sprague – Store keeper & Sadler

9 Children
20 adults
3 Youths Gardener
Bricks
Post boy

20 single do rooms for married people
4 Sleeping places for single men 8 beds each

9 Children
3 Youths gardener
Bowlder(?)   & Sadler   20 adults

new Building consists of
20 single bed rooms for married people
~~4~~ 6 sleeping places for single men 8 beds each
4 do for single women with 8 beds each
provides for 104 adults
dormitories provided for
50 children or say 40
3 ~~dining~~ eating Rooms 1 Children
1 Youths
1 adults
1 large drawing room 40 x 21
1 sitting room men
1 do women
womens sleeping room in one wing entrance separate
mens in another
married in centre
Children over the school
2 large } Class Rooms
4 small }

2 Sitting Rooms for teachers
2 Sleeping Appartments
over them for do
immediately connected with
Children

2 Cold Baths } for children
2 Hot }

2 Cold } Male adults
2 hot }

2 Cold } Female
2 Hot }

1 Large Kitchen

Governors }
Secretaries } Rooms
Matrons } to provide Stores
and superintend domestic
management

3 Matrons Store Rooms
Scullery & Pantry

appartments and cases
heated by Hot [illegible]

3 Matrons Store Rooms
Sculleries & Pantries

Hot & Cold water in every apartment and each heated by Hot Air

	£
Building to cost with furniture complete	20,000
Proposed Steam Stroke with 20 horse engine to pump water round Floors &c	

The Stock consists of
17 Horses
70 Pigs
4 Cows
3 Calves
700 Sheep & Lambs

The whole Farm of Queenwood consists of two

Queenwood proper	300
Buckholt	230
	530

try to get
Great Bentley 297 } 544
Little Bentley 247 }

Mr Rogers had it worked it with 3 to 4 or 5 men & 5 to 7 horses he only kept it as a sheep farm

Buckholt held by Richard Farmer - had only a shepherd and the Estate in Crop

The Communists propose to work at the farm men & women

Sheep 500 to be sold annually } £750
wool

the Communist propose
to work at the farm
men & women

Profit to be made

Sheeps 500 to be
sold annually } £750
wool

=

The cost of maintenance
of each individual averaged for
2 years has been including of
pocket money 8/- Food
only 4/- to 5/-

120 acres Clover
24 Wheat
100 Barley
60 Oats
30 Vetches
20 Rye
20 Turnips to crop off
126 Fallow sedum 22 [illegible]
530 Lea 50

Garden 22 Acres

Wheat	1/4
Beans	1/4
Sundry V.s	1 1/2
Parsnips & Kohl.	3
Turnips	15
not cropped	2
	22

Bernhardt's Patent Stove

Mr Galpin	3000	
Mr Bate	10000	an Artist
Mrs Black wife of Dr B was a Miss Pearson	400	Economy

New Decomposing Furnaces

June 8 - 1842

In 108 hours were used - under the pans Coals 20¼ Cast load
In the furnace 24
44

24 loads = 1 Keel this is 1 5/6 Keels.
tons cwt
In this 108 hours 70 " 17 " Salt was decomposed
The coal reckoned at £3 " 3 " 0 per Keel is £5 " 15 " 6
or about 1/8 ₰ ton
At these 3 furnaces 18 men £18 " 0 " 0 or ₰ Furnace
2 Wheelers 1 " 12 " 0
£6 " 10 " 8
19 " 12 " 0

Each furnace does 7 Batches in 8 hours of 5 cwt each
i. e 35 in 8 hours = 105 cwt ₰ 24 hours = 630 cwt - or 31½ tons ₰ week. The wages ₰ ton are 4/1 3/4

1842
June 8. At Walkers alkali works they decompose 4 Batches of 4 cwt each in 8 hours 3 men to a furnace at 20/- p week each. This is p furnace 16 cwt in 8 hours or 48 cwt p 24 hours or 288 cwt p week or 14 tons 8 cwt p week wages on this £3 or 4/2 p ton

They use 3 chaldrons of cinders for 5 tons of sulphate cost laid down at furnace 18/- making the just 3/7 p ton

The proportion of acid is 80 lbs oil of vitriol to 100 lbs of salt.

They obtain 50 tons of alkali @ 21 ℔ cent out of 30 tons of salt. This is 10½ tons alkali.
As 60:24::30:12. 30 tons of our salt contain 12 tons of Soda

Composition for building new Furnace for Pyrites from Mr Liston June 16 1842. This is used in building Gas Retorts

=

Potters slips } equal measures
Ball Liquor }

1/3 Sand

2/3 fine Erie Clay

The sand and clay well mixed and then moistened to the proper degree with the Liquids

5 July 1842
a very good sample of magnetic Iron-

5 July 1842

A very good sample of Magnesian Lime-stone brought to Mr Armstrong by Thomas Hogg a Fellman at Felling shore from Hartle Pool.

There is a quarry of very good up the Railway from Sunderland to Stockton and near Haswell Colliery.

July 9 - 1842

with Mr Clapham

He intends to make

Sulph Mag

Carb Mag

Bi Carb soda estimate £60

12. round wood tubs for dissolving

2 Brick tanks to be lined with lime
lead and then covers also
with lead pipes &c for car-
rying away Carbonic acid to
wooden cylinders £10.

Mr Claphams estimate

1 Drying Room & Stove	£ 60-15-0
2 12 tubs 7 feet by 5	60-0-0
3-2 Carbonating tops	10-0-0
4-2 wood cylinders & frame work	15-0-0
5-2 sieves & frame work and sheaves	6-15-0
6-Slate & Brick work	10-0-0
7-Lead Pipes & pumps	20-0-0
8-work mans tips	8-10-0
	£ 191-0-0

no 3- 2 tanks & tops to them
lined with lead for getting

8 - work mans wages 8-10-0

£ 191-0-0

No 2 - 12 round tubs for washing calcined limestone

No 3 - 2 tanks & tops to them lined with lead for getting Carbonic Acid

No 4 - 2 wood cylinders for Carbonating Soda in

No 5 - 2 sieves for sifting magnesian Lime

No 6 - Flue is to cover connection with main flue from new boilers and set boilers

No 7 - Pumps for pumping liquor from tanks to boiling and pipes to connect the tanks with Carbonating cylinders

No 1 Stove for drying Epsom salts & Bi Carbonate

1842
July 12 on Railway to Durham

a Pit at North Bidarik
sunk by Hugh Panton
through the Magnesian Lime
George Elliott viewer and
now viewer at Pembertons
Great Pit at Sunderland
from Mr Easton
Pit cost 32 or £33.000

1842 July 16
At Cox Green Copperas Work
manager
make about 250 tons of
season - i.e from October
to July but in wet sea-
sons sometimes bore through
a pit a little off to u-

Pay £5 of keel (21 or 22 tons
some times more) for masses-

pair - 3 weeks or so.

Pay £5 ℔ keel (21 or 22 tons sometimes more) for Grapes. Has got enough this year sometimes rather short. Put on 6 Keels last year and will put on 5 this. About 2/3 is from Grapes

Boiler holds 20,000 gallons there is 15 ton of Lead in her set on metal seats I think. Fill her with virgin liquor then pump mother liquor in every day. She boils in 12 hours and boils off in 9 days never more sometimes 5 (never less) but the liquor must be very strong for this. 2 Men only employed here over

Brought over

There are several Springs of excellent water on bank

Property belongs to Dawson

Lamb~~ton~~

	imperial
1st feeder	5 gall p minute
2 ——	.3 ——
3 ——	.6
	5.9 say 6 gall

p minute

There is a Building near Washington formerly occupied as a Paper Mill then as a Brick factory - now under lease to Mr Pickert of Shotley Bridge where he is a Brick maker

=

A Spring below Copperas Work ran 8 gallons p minute

=

At the old paper Mill water 80 to 100 gall p minute

2 feet wide. Water all Spring water

Property belongs to

Building 54 to 60 feet long by 22 to 24 wide. Wheel 20 to 22 feet dia 2 feet wide. Water all Spring water

Property belongs to

Sir Wilfrid Lawson

– James Musgrave

– Robt Shafto of Whitworth

Mr Pickard paid about £30 for mill and ground - Has a lease with 2 years to go - he paid the Rector £2-2-0 for water

Agent Mr Wm Bradley of Sunderland - Office in Bridge Street.

Washington Station 4 miles from Boldon and 8 miles from So Shields

Washington Station is about 4½ miles from Brandling Junction and they intersect about 5 miles from Gateshead

See next page but one

Nottingham 26th July 1842

Mr Sewells retorts for calcination of May Lime are formed

7 cubic feet capacity 67 / 7

469 lbs

7 feet long 7 inches high 2 feet wide - Holds 2 cwt or 3 filled full. a charge takes 2 to 3 hours - small pieces but in large pieces takes a longer time. The pieces they put in are from 2 to 4 lbs. Have had their retorts since Jany 1st 1841 a before worked at a moderate heat - 1 1/4 in thick

Mr Andrew Turner of Washington Staith who went with

worked at a moderate
heat - 1½ in thick

July 29 - 1842
Mr Andrew Turner of Washington Staith who went with me to see the paper Mill and adjacent spring mentions a large spring at Middle Harrington about a mile from Penshaw Hill this drives a Corn Mill - it is called Harrington Burn

Washington Colliery Engine makes 9 strokes ⅌ minute - working barrell 12 inches dia - length of stroke 6 feet - The Engine man said she lifted 28 gall ⅌ stroke. This is 252 gall ⅌ minute
She lifts 80 fathom and is about 60 Horse the Engine
see next page

From last page
The Engine works only 7 or 8 hours a day and always stands at night - the works on Sundays also

There is a very large Spring at Ferry Hill 5 miles south of Durham It is a mile S.E of Ferry Hill in the Rabbit Warren on the road to Little Chilton

There is a large Spring at Church Kelloe it springs just below the Church yard - Church Kelloe is a village about 2 miles East of Black Gate and

Durham =
Augt 1st at So Shields

land - Christ Keller is
a village about 2 miles

At Shotley Bridge
3 Augst 1842

Mr Pickard pays for carriage of 1000 fire bricks weighing 3¾ tons 10/- from Consett to Sheild - Consett is 4 miles from Pontop and 24 from Sheild

Old Paper Mill

The proprietor Mr Hasting died and all his Vats and utensils were sold by auction. Mr Pickard bought the sheads and some other fixtures for £13 - all these are here now. The chimney was

a brickmaker employed by Mr Pickard (Mr Wm Paget)

some other fixtures for
£13 - all them are here

not bought in the Machinery.

A Brickmaker employed by Mr Pickard (Mr Wm Paget) took the Marquis's Quarry for £5-0-0 a year. The Agent is Mr Matthw Ryall of Middle Herrington.

Biddick Hall was taken by the North Biddick Colliery Co and they have it till May 1843

At Sunderland Augt

Saw Mr Crudace and he agreed to transfer Mr Pickards Lease to me. He said he would allow £10 or £15 off the Rent to put the place

next page

in repair. He thought Mr
Pickard had no right to
remove the Brick Kilns
but that the shaft was
his and they would not claim the Brick Kilns. That merely the
wheel and main axle
and framing belonged to
the Lessors =

Mr Stephen Trinkler of
Fatfield - White House has
the letting of Biddick Hall
the head agent is Mr
Day of Hetton

Mr Coxton a farmer retired now dead paid for
north Biddick Hall £20 „ 0 „ 0
Land 54 „ 0 „ 6
74 „ 0 „ 6
but it could be had for much

Lapple of Usworth - assessor.
The north Biddick Hall

Land 54 " 0 " 6

54 " 0 " 6

less. this from Mr Sample

Raffle of Usworth. assessor.

The North Biddick Hall

belongs to Mr Bolcott of

London - the whole Estate

belongs to him it consists

of 3 farms besides the Hall

ground -

1st farm held by Mr Robson

2 - by Mr Marsden

3 - Mr Robt- Atchison

Tinkler has some gar-

dens

=

Glendenning has field

taken of Mr Pickard - £12

farm - to leave at X

mas

House at Braddock

Ground floor

on r. of entrance

Library

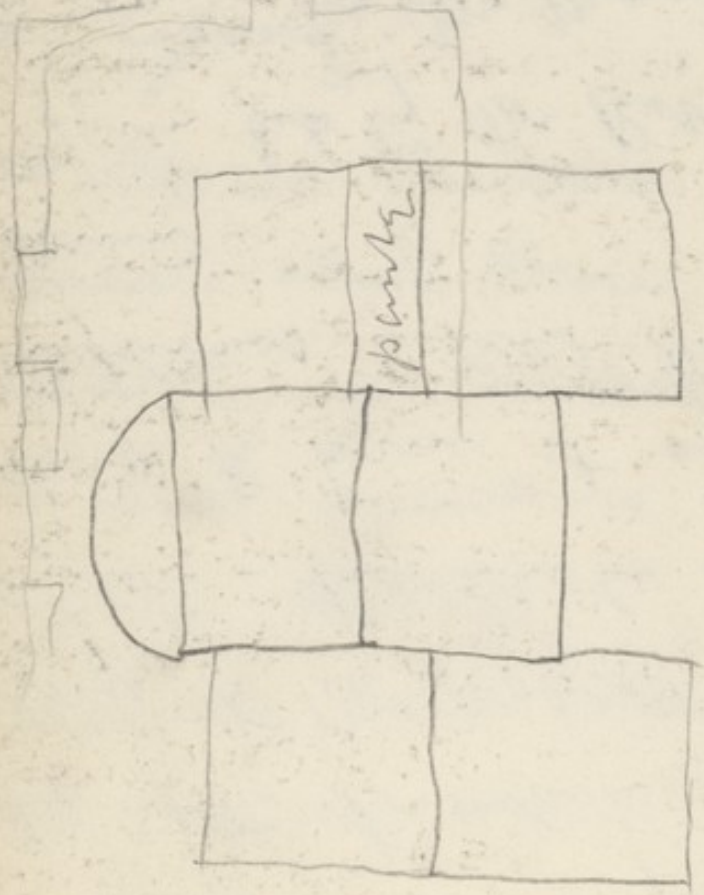
L. of do

Hall

through Hall are Dining Room

small back parlour

Large Kitchen



On Landing Room for

up Stairs

Drawing Room.

Best Bed Room

on landing   Room for

Laundry
up stairs
Drawing Room.
Best Bed Room
Small Bed Room
Larger do
Smaller do
do do

used as before. Condensed in upright condenser filled with Coke. They were-

House at Braddock

Ground floor

on r. of entrance

Library

at Hatton 13th August 1842

=

No Braddock Hall

from Mr Say of Hatton

House & Garden

and a plantation

about 2 acres

The Land about 22½

Probable Rent for House

& 2½ acres of Land £35

for whole Estate £120 say

including House

2	1	0	53
4		3	34
3		1	26
6	1	3	1
8	5	0	1
17	15	3	27

Mr Say had had two

applications previously

3 — 1 - 26
6 — 1 - 3 - 1
5 — 5 - 9 - 1

25 - 1 - 27

Mr Day has had two applications previously promised to write me

alive as before. Condensed in upright condenser filled with Coke. They mea-

House at Braddock
Ground floor

on r. of entrance
Lab[illegible]

Augt   At St Helens
with Mr Clough

Cost 48 p cent £11 10 s 0 d de
livered at Liverpool or Man
chester - costs 2/3 p ton by
flats by Railway 4/6

Mr Clough took a license from
Mr Lutwyche about latter end
of 38 or beg of 39. Built a
furnace before getting the
license and afterwards found
that they were infringing
L's Patent - upon his
getting to know he called.

Before they began were
using common Salt Cake

[illegible] [illegible] [illegible] [illegible]
[illegible] and [illegible] [illegible]

open furnaces and gas escaped. Then wanted to condense and wanted some means of separating gas from smoke - took off arch from old constructed furnace and replaced it with cast iron plates over which was thrown an arch - iron plates and under arch fire acted and went to into chimney. This furnace had the old Brick bottom & sides and the Salt was mixed with Acid as before. Condensed in upright condenser filled with Coke. They mean-

by boiled to a dry state
in this furnace after which
it was drawn out and
put into another furnace
with a double arch. The
fire passed over an arch
and then under the bot-
tom up a centre arch
and down an arch on
each side so.

This plan of decompo-
sing in a furnace heated
from top through iron
plates and drying in
furnace with double
brick arch was found

furnace with double
brick arch was found

too expensive - requiring
extra labour & fuel and
wear and tear of furnace
being very great was a-
bandoned. Then adopted
old open furnace with
coke passing fire and
gas through a long horizontal flue
filled with stones covered
with perforated flaps with
water trickling down. This
Mr C regards as cheapest
best and most effectual.
Mr Lee was over about
beginning of 1839 and were
then working with double
furnace.

Mr Lamber proved his
patent on being able to

then the change was
in operation but he also
claims decomposing in
one iron pan and dry-
ing in another iron pan
but the second iron pan
was destroyed immedi-
ately. He used only a
very short time and then
he must have adopted
the brick arch but Mr
C does not know any-
thing about this of his
own knowledge

Mr Clapp thinks Gam-
ble present mode of wor-
king is quite distinct
and separate from his

patent as any thing can be.

Mr Clegg found the main annoyance in his mode of working the taking out the soft parts. The workmen were blistered and almost suffocated

A man of the name of Dobbs of Wigan about 8 or 10 years ago decomposed in an iron cylinder worked through a hole in the door in which he thickened and this was situated on the top of a furnace (a common reverberatory) into which he pushed the thick mass and finished. He con-

desired the trial to
make Muriate of Iron
Mr G. never tried to dry
with a bottom heat only
nor ever carried the heat
otherwise than over the
top first

At Gamble & Crosfields
=
They break their Pyrites about
the size of gooseberries or
plums - smaller than ours.
ash 48 percent contains
9 to 10 sulphate 5 or 6 Muri-
ate percent. Some turns
blue when neutralized and
will not suit Soap makers
It probably contains some
cyanide of soda

They began to use Gambles
process Furnace about July
1840

... that ... ways in alkali
It probably contains some
cyanide of soda

From Mr Saml Crossfield

They began to use Gamble's present furnace about July 1840 at least the first retort is paid for Augt 31-1840 this was at St Helens but at the Alum work it had been in use long before

When Gossage came to Gamble & Crossfield and got them to accept his mode of regenerating sulphur in 1838 they agreed to condense the acid and tried his plan of decomposing and staying in the concentrating furnaces in which case they always finished through the chim-

ney but at length the che-
mists from Liverpool find-
ing that the dry Salt (or
apparently dry) yielded still
a great deal of gas stopped
them. They then used a
Gossages furnace to thick-
en and dried off in furnace
with double arch the same
as Clough's. They heated the
furnace up first and then
threw on a few cinders
and closed up with charge
of Salt and Acid.

At this time Gamble was
working at the Alum Work (a-
nother manufactory so called)

any other firm

working at the Alum Work (another manufactory so called)

because Gossage would not allow any other person

Sepr 12 - 1842

Mr William Hunton manager for Sir Robt Dundas at the alum work near Skinning Grove (Loftshouse Alum Works) says their make of Alum is about 1000 tons ℔ ann 800 to 1000.

His son Robt Hunton is also manager

at Boulby alum works manager Mr Westgarth make about 800 tons ℔ an and about 3 tons Sulph Mag ℔ week

They belong to Messrs Barker & Jackson

at Kettleness alum work

They belong to Messrs
Barker & Jackson

at Kettleness alum work
saw Mr Hope formerly of the
Walker - Lord Mulgrave's first
work. Here the Manager is
a German called Mr
Kagenbusch

He has introduced the process of digging the shale and breaking it very small and laying it in heaps moistened with water. At the end of 6 mos the alum is lixiviated and boiled down as usual.

They use some sulphate of ammonia

See Over

B over
which they think an
advantage
After crystallizing all
the Alum they separate
the Sulph Mag about
a ton p day
Then the ultimate liquor
coloured liquid like Brandy
is boiled down to dryness
a grey coloured substance
and sold as a mordant

from Mr Waddington
Ironstone is got at the
tunnel or a little [illegible]

Whitby Septr 14 - 1842

From Mr Waddington

Ironstone is got at the tunnel or a little below 6 miles up the railway and will be charged 5/6 ℔ ton free on board.

Freight to Newcastle they have been giving 2/3 but if for immediate delivery 1/9 at least but say 2/- ℔ ton. This is the whole expense

The Whitby people lie it out in the Hold and charge the Ship 3d ℔ ton

Is reported to yield from 28 to 33 ℔ cent

Alum without Potash

=

Mr Wetmann's calculation reduced into English numbers

100 lbs concentrated Sulph: Acid

200 - Clay -

make

160 lbs Concentrated Alum

Labourage ℔ 100 lbs of concentrated Alum 9d -

Coals 1½ cwt required for 100 lbs do

Precipitating the Iron from 100 lbs Conc. Alum 1/-

Interest of Capital ℔ 100 lbs do 1/-

Where

100 lbs Oil of Vitriol 1/2	4 " 2
200 - Clay - 1/- ℔ Ton	1 " 2
Labourage ℔ 160 lbs	1 " 2
2/- ℔ Ton	4
Precipitating ℔ 160 lbs	1 " 8

100 lbs [illegible] 4 " 2
200 – Clay 11/- per ton 1 " 2
Labourage per 160 lbs 1 " 2

Coals 2 cwt required } @ 3/- per ton — }	4
Precipitating per 160 lbs	1 " 8
cost of 160 lbs of con- } centrated alum }	8 " 6

This is 6/- per cwt or £6 " 0 " 0 per ton

Mr Wiseman stated the concentrated alum to bear to crystallized alum as 7 to 5 but their sample was as 7 to 5½ that is 5 tons concentrated alum (or 5½) = 7 of crystallized alum

Then as 7 : 5 :: 6 (9 above the 7 and 7 above the 5)

6

7) 30

£ 4 " 6 " 0

(on the right:)

4/6

9) 42

4 " 14 " 0

4 " 15 " 0

See Over

Alum without Potash

=

we shall make what is equivalent to a ton of alum for £4„6„0 (pencil above: 4„15„0)

Now a ton of alum costs us £7„15„0 particulars thus

(pencil: 4„15„0 / 3„0„0)

Clay	10„2
Acid	1„10„2
Potash	4„7„0
Coals	4„0
Wear & tear	4„4
Wages	19„9
	£ 7„15„5

To make 1 ton of alum requires

1 ton of moist clay which containing 20 p cent water is 16 cwt dry clay

... containing 20 per cent
water is 16 cwt dry clay

11 cwt of concentrated
acid off which to be de-
ducted the acid in the
mothers which is of no
value a

1 ton Sulphur to 5 tons
of Alum

37 cwt of Coals in-
cluding drying clay
wages includes 3 Horses
and men a fair pro-
portion of Cartage
wear & tear is for
Lead, metal, Bricks, &c
&c &c

See over

Alum without Potash

Analysis of Mr Wissmann's concentrated Alum

Sulphate of Alumina	45,8
[Sulph: acid 31,55	
[Alumina 14,25	
Free acid	3,0
Insoluble	0,36
Water & a trace of Iron	50,84
	100,00

Analysis of our own crystallized Alum

Sulphate of Alumina	36,
Sulphate - Potash	18,
Free acid	0,1
Water	45,9
	100,0

Sulphate of Alumina 36,20

100,0

Composition of alum by Gmelin

Sulphate of Alumina	36.20
Sulphate of Potash	18.34
Water	45.46
Or	100,00

Alumina	10.82
Sulphuric Acid	25.37
Potash	9.94
Acid	8.40
Water	45.47
	100,00

Theoretical composition of alum

Aluminium 13.7

Alum

$2\,Al + 3\,O$	= 51.4
$3\,S.O_3$	= 120.0
$S.O_3 + K.O$	= 87.15
$24\,H.O$	= 216.00
	474.55

Brussels 5 Octr 1842

Mr Hagenbuch lived first at Sprockhovel afterwards at Hagen near Elberfeld
Sprockhövel
near Duesseldorf (6 hours off) at Sprockhovel he was a colour maker and he bought half a natural Alum factory at named the Good Hope (die gute Hoffnung) at Situated near Hagen) but did not pay for it and having the name of being the owner he ran into debt and then ran away. He made at first instead of Alum a bitter salt (sulph Mag) raw and sent it to people he knew and pretended

bills were never paid he-
cause the substance was

to draw upon them which
bills were never paid be-
cause the substance was
of no value - By this
he showed a great pro-
fit and his share and
ran away. Then went
to England about a
year & a half ago

At Borrowstoun[ness] Nov^r

Nov^r -

		in
upper Black band iron stone —	}	13
Blac parting		3 to 4
Parrot Coal		11 to 12
under Black band Iron Stone —	}	13 in

St Helens Nov^r 29th 1842

Mr Hanks gets from 100 lbs Pyrites from 125 to 130 lbs Salt Cake at 96 p cent pure sulph^t of Soda

---

Wigan Nov^r 30 - 1842

John & James Dobb

Wallgate - Standish

John & James Dobb
Wallgate – Standish

John Swindells of
John Swindells & Co
manufacturing Chemists
Manchester
10 Chancery Lane
& Soho Chymical
works 14 Poland St

Mr Wm Maddock
Beswick
near Manchester

Dec 7th 1842

Water Wheel at Washington

Dia 21 feet from

centre to centre of Buckets

Each Bucket 28 inches

broad - 10 deep 5 wide

the circumference ~~about~~

~~xx~~ 60 buckets ~~or saying as~~

~~feet of Bucket~~ of that size

Spring yield 100 gall ℔

Minute

Washington Colliery 252

gall ℔ minute for 7 or 8 hours

a day

Whence 3520 lbs decend 21 feet

21

3520

7040

73920 one foot

33000) 66000 ($2\frac{1}{4}$ horse

7920 power

Dec 12

H Smith said the 7 Horse

Engine cost £130 with Boi-

73920 one foot
33000) 66000 (2¼ horse
7920 power

Dec 12

H Smith said the 7 Horse Engine cost £130 with Boiler and all complete - It was sold for £100

water should move at the rate of 30 yards or 90 feet ꝑ minute in iron pipes thus a 3 in pipe will run 27 gall ꝑ minute -

To find capacity of pipe square the dia and remove decimal point one figure to the left shows content of a yard in galeons

4 in pipe = 48 gall ꝑ'
5 - do = 75 - -
6 - do = 108 - -

Dec^r 14 = 1842

5 lbs mag: Lime: calcined

Put into Greysons Barrel with 4 3/4 gall or 47½ lbs of water - Pumped in cylinder 25 in diameter by 29 inches of Carb: and Gas then opened Stop cock to Gasometer and 25 in dia by 2 inches came back then pumped in out of Gasometer 25 in dia by 17 3/4 inch

Gasometer
25 in dia by

then opened stop cock to
Gasometer and

25 in dia by
3 1/4 came back (3 1/4)

Pumped In

25 in dia by
8 1/2 inches of (8 1/2)

Carbonic Acid Gas

Then opened cock to Gas
ometer and

25 in by
5 1/4
came back

Then pumped

25 in by
7 3/4

of Gas

In	out
29	2
7 3/4	3 1/4
8 1/2	5 1/4
7 3/4	4 7/8
53	15 3/8
15 3/8	
27 5/8	

Then opened cock to gas
ometer and

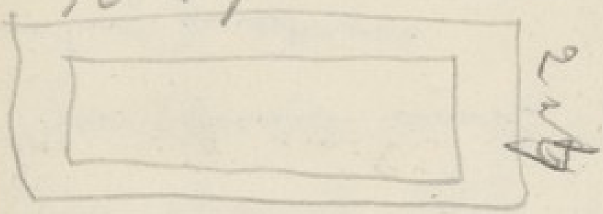
25 in by
4 7/8
came back

Edge stones

4 ft 6 by 8 in weight 83 cwt
@ 5/- per cwt

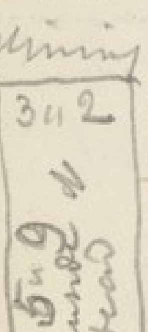
belong to Mr Surtees -
Peel Street
Newcastle
they are at Low Walker

Engine at Miss Abbots
10 ft 9



Windows at new House

2 dining room



inside or exact bead 3-1 3/4
outside of bead 3 ft 3

Best bed room
5 ft 8½ high
3 ft 0 3/4 wide
within bead
Little room same

Drawing Room
8 ft 0 high
3 ft 7 wide

Front Bed Room
5 ft 7½ high
3 ft 1 3/4 wide

Little Bed Room
6 ft 0½ high
3 ft 3½ wide

Drawing Room
8 ft 0 high
3 ft 7 wide
Little Bed Room
6 ft 0 high

Front Bed Room
5 ft 7½ high
3 ft 13/4 wide

Mr Courtland will make a ten Horse condensing Engine complete Boiler Steam pipes Funnel and every thing for £240 finished as well as the Engine at Selby except that no patterns

Jany 4 - 1843 the Batch put into barrel 5 lbs lost 21 oz by cal

At Greyson's

Mercury Bottle { 5 / 11 inside } 4 do

put in 5 lbs uncalcined but dry powdered Limestone

Gas in Gasometer 1st trial 28 per cent Carbonic acid

Residual gas from barrel at same time 10 per cent

=

Gas in Gasometer 2d trial more accurate than last 45 per cent

do from Barrel after 20 strokes stirring all the time 12 per cent

=

3d time Gasometer 45 per cent

Barrel after 20 strokes 12 per cent

at this time solution contained magnesia

This was just at end of 1st Batch

=

2d Batch

Gas in Gasometer tried after about 6 minutes had come

2d Batch
gas in Gasometer tried after
about 6 weeks had come

out of Bottle at a very low
heat 27 p cent

~~[illegible]~~ Gas from Barrel after
pumping in some 20 strokes
24 p cent

Gas from Barrel after
turning agitator a good while
after ceasing to pump
24 p cent

Gas from Barrel after pumping in 60 strokes making a
considerable pressure and
turning agitator vigorously
some time after ceasing
to pump 27 p cent

It was here discovered that
in consequence of Eudiometer
leaking all these results
were somewhat erroneous but not much

Eudiometer corrected and
gas in Gasometer 58
p cent

Gas coming off 90 feet

see next

Gas ~~coming off~~ in Gasometer 82 $\frac{p}{}$ cent

do. from Barrel 62 —

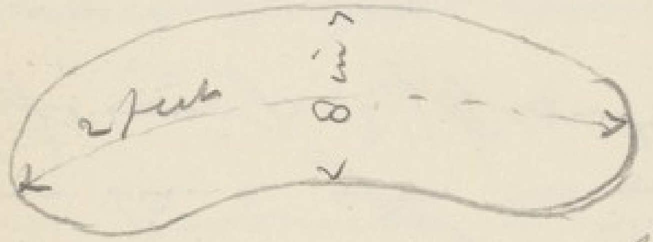
=

Gas coming off towards the last 70 $\frac{p}{}$ cent

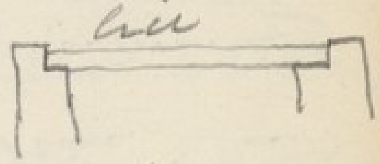
do from Barrel 62 $\frac{p}{}$ cent

=

Gas Retorts



8 feet long



say 20 inches wide long

8 deep

160 inches

~~160~~

~~9600~~

~~160~~

25600

12800

12 fe 2 0 9 6 ½ feet =

1728

.7854

256

47124

39270

15708

201.0624

(4) 2 0 0 8 6, 2 4 0 0

78 inches

16060 S

140602

1566628 1

Gas Retorts

7 feet long

1 — diameter

.7854

7

5,4,978

16 9 6 0 8
14 8 6 0 2
1028   5 | 1 5 6 [illegible] 2 5 1

Gas Retorts

7 feet long   ,7854
1 — diameter   7

5,4,978

It will contain 5,5 feet
off 1/3 — 1,8

3,7
10 stone per foot 140 lbs

1480
37

518,0 lbs
No of retorts 3

4 | 1554 lbs per charge

388 lbs gas

Haydon Bridge 30 Jany 1843

=

Partners in Blagill Mine

	shares
Stephen Latham	11 2/4
Exect of Wm Hedley	7 3/4
Wm Dickinson	2
John White	1
Mr Bentley now belonging Chapmans Bank	1
John Smith Haltwhistle	1 1/8
Mr Elliott of Carlisle surgeon	1 1/8
Robt Carrick	1 1/8
Charlton went to America	1 1/8
Wm Bidlington of Ovington	2 1/8
Mrs Brown Corbridge	1

Mr [illegible]
Counts & Cake [illegible] up and down } 6..0..0

Mr Bedlington } 2/8
of Covington
Mrs Brown Cambridge

Nov 6, 7, 8, 9, 10 & 11th

~~Mr Swindells~~

Coach & Cab hire up and down } 6 „ 0 „ 0

Paid Mr Blackmore 5 „ 0 „ 0

Cash to Mr Wilson 6 „ 0 „ 0

do Mr Leech 8 „ 2 „ 6

Bill at Shop 11 „ 11 „ 9

do - Salopian 7 „ 16 „ 3 — 19 „ 8 „ 0

Cash to Mr Anderson for Water — } 4 „ 0 „ 0

2d Bill at Salopian 14 „ 0

3d do at do 1 „ 5 „ 7

Bill to 1 box Savory 1 „ 5 „ 0

£ 51 „ 14 „ 7

Sundry payments by self — } 20 „ 9 „ 11

72 „ 4 „ 6

Got Office - £10 „ 0 „ 0
8 Custer - 20 „ 0 „ 0
do 30 „ 0 „ 0
do 15 „ 0 „ 0 — 75 „ 0 „ 0

2 „ 15 „ 6
payments for self 5 „ 5 „ 0
½ my debit 8 £ ... 8 „ 0 „ 6

a Spring in Preston Quarry
on left bank of Tees - 4 miles
above Stockton - 1/2 way be-
tween Yarm & Stockton. It is
a blue flint & pebble quarry
on opposite side is Back
rock Quarry.

a Beck from Leven Brigg
carries a mill - falls in
below Eaglescliffe

There is a strong one of sa-
called Greatham Beck all
spring water comes from
about Hembleton & N runs
into Sea near Seaton

From Mr Appleton - merchant
Yarm. Marsh

=

A 60 ton Keel goes between
Stockton & Yarm. [& can go at all tides] - Heavy
Goods cost 1/- p ton from Stock-
ton. Good Coal for a Steam
Engine is at present 4/- p
ton at Railway Staith.

=

From Mr Stainsby at Lord
Nelson Public House. Yarm.
pays for Coal for Steam
Engine 4/4 p ton. Lime from
Sunderland freight 4/- a ton
Limestone from Harth [illegible]
could cost about 2/- a 2/3 p ton
for Coal from Clarence Staith
but they cost the same

From Mr Stagg

Skerne Burn rises near Thistleton Gap near box-hoe runs into Tees at Darlington.

Waters at Pith burn but is not a large spring

Lead ore from Garrigills Mill will cost 6/- to Stockton and 5/- more to Sunderland

---

March 17. 1843

Mr George Elliott
Belmont Colly
near Durham
agent for Washington Colliery

March 18

Mr Matthew Ryall
Herrington House
Painshaw Durham

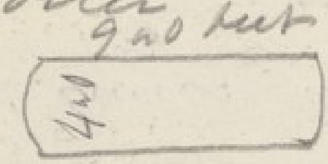
16 feet ...
12 - ...

Mr Matthew Ryall
Hermington House
Ramsham Lanham

Gasometer at Walker
16 feet dia
12 - high

Capacity 2204 cubic feet
=

a Boiler   9 feet by
                4 do



holds 712 gallons or
113 cubic feet and at 10 per
Foz this gives 162 lbs of
magnesia

$4 : 9 : 3 :: \frac{27}{4} = 6\frac{3}{4}$ as $4 : 9 :: 40 : 90$

Boiler $7\frac{1}{2}$ feet long by ~~[illegible]~~ feet
~~[illegible]~~ 3 . 4 dia

40	7854	1728 1256	
40	16	90	
1600	47124	113040	(65
	7854	10368	6
	1256,64	9360	390
		8640	16
			406

Richard Barber of new Painsher offers.

walling Stones 3/- ₰ waggon
but said ap he had them twice to pile 6d more
7 waggons makes a Kiel

Pillar Stones 6d ₰ cubic foot
they measure them

Quoins 3½d ₰ foot 8 & 9
inches but if a foot in the
bed 4d

Heads & Soles 5d ₰ running foot

Steps 5d ₰ do

He delivers at the place
but we empty the waggons

=

Nicholas Thompson
Brickmaker offers
Bricks @ 28/6 delivered at

working ... ...
he ... out of ...
Tiles 60/- ₰ thousand

Brick maker offers
Bricks @ 28/0 delivered at

a Keel load is 8 tons
Washington Staith, but to
be led out of Boat
Tiles 60/- p thousand

=

delivered at landing
Small Lime £2. p Keel,
delivered at Washington
and £1 p Leading to ~~[illegible]~~ Paper Mill
which includes filling into Carts
from Keel — Good Lime 12/- p chaldron
(by Tom Baxter)
Sand, must be got out of
River — 8/- p Keel ~~and~~ ~~[illegible]~~
barrowings and for loading
into Keel 8/- more that is
16/- p Keel — Leading up
to be 15/- p Keel this in-
cludes filling into Carts from
Keel — The Cartage by
Mr Elliott of Washington

Bricks p Keel 16/-

George Hudson - Smith
at Washington Staith
=
Marine work of all weights
simple forging 2½ to 4½ ℔
screw Bolts 4½ -
Iron Hinges for doors to be 3d ℔

Jo Nicholson mason ^ & Stevenson the
Quarry Man at the Marquis
of Londonderry's Quarry at
Penshaw.

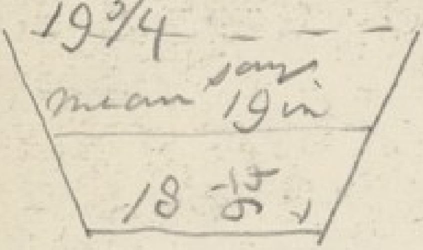
Mr Elliotts Timber
£3 " 5 " 0 ℔ load (50 cub feet)
Pine Batons 5d ℔ running foot
Sawing to be 2/4 ℔ 100 sqr feet

Sawing to be 74 & 100 sq feet

May 1st 1843

Spring at Washington tried at fall below manufactory.

Washing tub filled in 5 seconds



19
19
171
19
361
,7854
7854
47124
23562
283,5294
9 1/4
25515
71,9
2623,4
12 of minute
277,27) 31 480,8 (115 galls of minute
277
378
277

1010

the old mill with Mr Pickard and before
Pickard Water Wheel 15 Horse

277.27) 31,480,8 (115 galls
277 a minute
378 1010

William Speight worked at the Old Mill with Mr Pickard and before

Pickard Water Wheel 15 Horse power but had not water to work this - Got all the water from Washington Pit and the water collected over sunday served till tuesday after that had not 1/2 water with Mr Pickard it drove two edgestones and in wet weather coud fry the Clay benders

At Washington Colliery
12 inch ~~set~~ barrel 6 feet stroke
7 strokes ꝑ minute 7 hours ꝑ day including sunday

now take Buckets 28 in broad 10 deep	1728) 84000 (48 feet
280	6912
5 wide	14880
1400 60 number of	13824
84000 Buckets	

See next page

from last page

48 feet of water in one revolution

10 revolutions ℔ minute at 10 feet ℔ second

480 feet ℔ minute or

21 diar of wheel

480	480
960	6¼
10,080	2880
62¼ lbs ℔ foot	120
	3000 galls

20160
60480
2520

¼) 627,480 lbs
156870 off for loss

33) 470,610 (15 horse nearly
33
140

now the supply of water is 350 galls ℔ minute reckoning to gather 250 galls ℔ minute from colliery 17 hours ℔ day and 100 ℔ minute in addition for 24 hours we have

100 galls ℔ minute or
6000 ℔ hour or
144,000 ℔ day
and 7 days for 7 } 1008,000

from colliery 7 hours p day
and 100 gall in a 22 hour for 24
hours ... hour

7 days @ ~~2400 p day~~
100 gall p minute or
6000 p hour or
144,000 p day } 1008,000

and 7 days for 7
hours each at 250
gall p minute =
15,000 p hour or
p day 105,000 } 735000

Total water in a
week of 7 days } 1,743,000
gallons

suppose wheel to work 10 hours
p day for 6 days is 60 hours
or 3600 minutes

hence 36) 17430
6 / 2905
484 gall p
minute of water supplied

as 3000 : 15 :: 484
15
2420
484
3 / 7,260
2½ horse

or 2,415 horse

May 3 - 1843

3 inch Iron pipe 2/3 ℔ yard (from Mr Hunter) or 6/- ℔ cwt

May 4

at Walker Iron Works

3 inch Iron pipes 2/3 ℔ yard

a yard weighs about 43 lbs

yards lbs ℔ yard
400 × 43 = 17200 = 8 tons

They are in lengths that lay 9 feet and the men lay them at 10d ℔ joint which includes Lead 6d ℔ joint Spun yarn 1d & Labour 3d ℔ joint.

The Newcastle Gas Co have a Cast Iron Tank about a cube of 5 feet - they asked £6..0..0 for it some time ago

a man and a boy will lay from 50 to 60 yards ℔ day

washington = May 24 - 1843
2d time
1. N 71° W - 233 feet 232

from 50 to 60 yards of clay

Levellings for Pipes at Washington = May 24 - 1843

2d time

1. N 71½ W - 233 feet 232 to under batting
2. N 55 ~~W~~ to middle of gate 57 - 57
3. N 41 E 112½ to near dam door - 113½
4. N 6 E 26 over dam door - 26
5. N 20 W 294 to corner of my croft - 293
6. N 5 ~~E~~ W 55½ into Mrs Pattinsons land 55½
7. N 29 W 69½ up Mrs Pattinsons pier 69½
8. N 45 W 36½ to corner of Mr Lindsleys 36½
9. N 10 W 248 to Well head - 248

3 | 1133 — 377-2   3 | 1131 feet — 377 yds

1. Level of water at head to end of 8 } fall 3 - 8½
2. from end of 8 to end of 7   1 - 0
3. 7 to end of 6   1 - 4½
4. 6 to end of 5 rise 3 in
5. 5 to end of 4 up 7

---

1. Top of pipe at end of no 8 - 3 ½ 4 below surface of water at head. Level passes 5 - 10 above this pipe and then pipe 2 ½ 6 above water at head
2. Top of pipe at end of 7 - 4-0 below
3. ——— 6 - 5-4 —
4. ——— 5 - 4-8 —
5. ——— 4 - 5-9 —
6. ——— 3 - 5-0 —
7. ——— 2 - 10 —
8. ——— 1 - 7-8 —

Bottom of Box 6-7 below this

Pipe at beginning of no 1 10-4 below water head

Mr Glendinning - May 17 - 1843

Tenants in Houses at Paper mill

John Hull - in detached Cottage took it of Mr Pickard - thinks they had to pay £4 a year

Mrs Richardson - in single room (now occupied as Office) taken by Washington Colly Co - Mr Pickard wanted him to pay £4

Oxclose Colly took the other two Cottages - one for £1 for the winter the other for £2

[illegible] 1 - Hagues [illegible]
2
3 } various forms of
4

Losh's Wheels

Plate 1 - Haynes Wheel.

2, 3, 4, 5, 6 } Various Forms of Losh's own

7, 8 } Bramah's Wheel

9 Hawkes & Co

10 R Stephenson Hbs

11 Mssrs Hawthorns

12 Mssrs Abbot Hbs

13 Bdlington Iron Co

14 Lloyd & Foster

Copy of order given to Losh Wilson
& Bell May 28th 1843

Water pipes with rose fixed
with box water tight.

" one cast iron frame 4 feet
square with opening 3 feet square
one frame (of iron or metal)
3. 6 outside 3 feet opening hinged
on the other.

" 2 sets of grate Bars for fire
places 2 ft long 1. 6 wide &
doors 14 ins × 10 ins made of
frame together with bearing
bars, covers & slab plates
& tools for fire places

" 2 horizontal dampers for
flues 1. 6 × 10 ins

" Grates, doors & tools for retort
furnaces

flues 1.6 x 10 ins

2 iron doors 5.6 x 2 ft
with registers at bottom
2 sets of grate bars for fire place
3 ft x 2 ft with bearing bars
slab plates covers & 2 doors
14 ins x 10 ins
4 dampers for flues 12 ins x 10 ins
2 frames for glass 12 ins square
with a vertical bar for 4 panes & horizontal.
6 bars of rails 10 ft long
2 sets of fire Bars, slab
plates, covers & bearing bars
for fire places 3 ft x 2 ft
2 dampers for flues 2 ft x 1 ft
4 Registers for stoves

9 June 1843

John Greene - living at
Bill Quay - applied for
Engine mans place

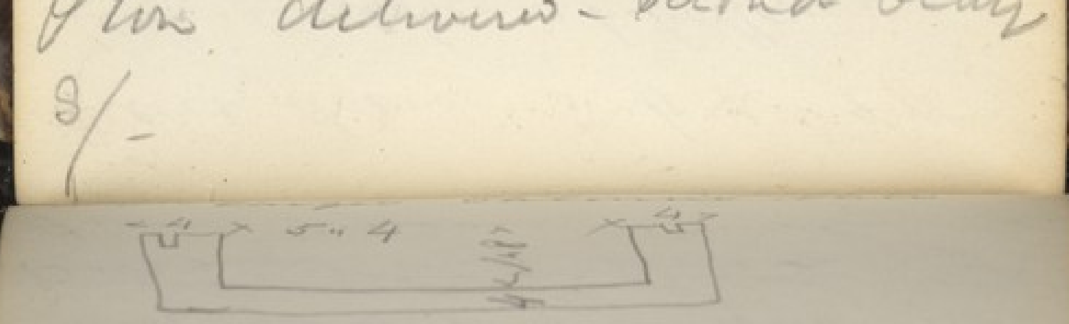
12th June - Mr Foster's prices
at Springwell Quarry

Flags 2 feet square 7/- per doz
- Randoms 2 feet by from } 4/6
16 in to 20 in
at Quarry - delivered at
Washington 9/- & 6/-

Mr Archbold - Fire Brick maker at Fatfield

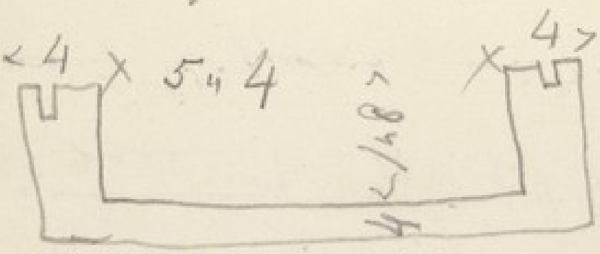
Best Bricks 60/- per thousand
5 per cent off for Cash in a
month - delivered

Best ground Fire Clay 10/-
per ton delivered - Second Clay
8/-



Best pound Fire Clay 10/- p ton delivered - Second Clay

Wm's Larger Chlorine Stills



Stone in an iron cases with Rosin & Tallow between. Leaden top secured in groove with Fire Clay & Tar - 1 Batch works off in 18 hours but the furnace would do it in less time if they had more chambers - Stone costs 2/6 p foot delivered

Put in 2 cwts of Manganese and 760 lbs of Muriatic Acid 28° and expect to make 4 cwt of Bleaching powder but have not quite got it yet

June 20th 1843
Agreed with Thos Hoggett to pay for ground damages by laying pipes @ the rate of £15 per acre - the area to be measured.

The Magnesian Limestone got by Mr Clapham is shipped at Seaham and comes down the Railway from near Hartlepool - There is a large Keel belonging the works taken by a Keelman who has brought some - also Edward a Keelman at Felling Shore has brought. Mr

---

Clapham brings it down in his own Waggons and the Quarry is in Mr Burdon's

at Hartlepool July 31 - 1843
saw John Cuthbert. Rob-
son Br[illegible]

Clapham brings it down in his own waggons and the

Property.

At Hartlepool July 31 - 1843

Saw Wm Cuthbert. Robsons Buildings

His bargain with Mr Clapham was to lead out the stone and load it into the waggons including the winning at 1/8 ℔ ton. Railway dues 1/2 ℔ ton 4 miles. Hoising up the waggons will cost 6d ℔ ton

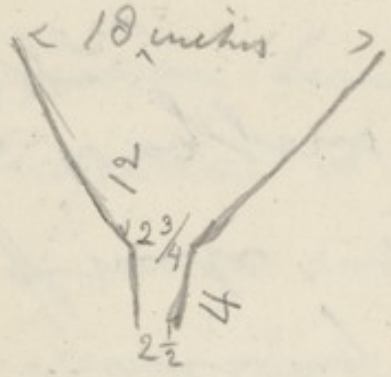
Agreed to give him 2/6 ℔ ton & include all except Royalty (3d ℔ ton & Mr Burdon). They had 2/- ℔ ton for taking the stone & the Lyme

1843

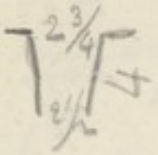
August 8th

Hole for charging Cylinder accurately $2\frac{15}{16}$ diameter.

The tin (a Copper) Funnel to be

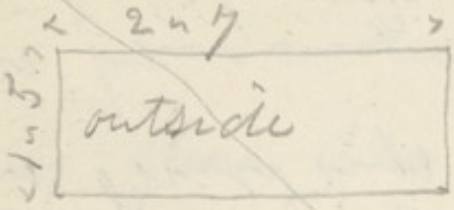


piece to go thrust upon



=

Frame for ovens in Stove



to be made with 8 bars or 7 spaces

to be made with 8 bars or 7
spaces

Wanted – 2 bars each 9 ft 0 long
1 do – 3 ft 0
to fix uprights in furnace
=

Wanted –
40 feet } $1\frac{1}{2}$ in Lead pipe
70 do }

also 20 feet 1 inch do

~~1 – $1\frac{1}{2}$ in Stop cock~~

Hair Cloth
19 in wide 2/6 p yd
=

£50 a year Rent – to Mr Sowerby
a Lease of Ellison for 40 years
=

Glass wanted
Engine House $9\frac{3}{4} \times 6\frac{1}{2}$ – 16 panes
Two Stivers House $13 \times 9\frac{1}{2}$ – 12 do
$14 \times 9\frac{1}{4}$ – 1 –
$9\frac{3}{4} \times 7$ – 1 –
Office $13\frac{1}{2} \times 8\frac{1}{2}$ – 3 –
Laby – $12\frac{1}{4} \times 8\frac{1}{4}$ – 5 –
$9\frac{3}{4} \times 7\frac{1}{4}$ – 3 –
$6\frac{3}{4} \times 7\frac{1}{4}$ – 1 –

Drawing House
$8\frac{3}{8} \times 5\frac{1}{2}$ – 2
$8\frac{3}{8} \times 6\frac{1}{2}$ – 1
$10\frac{1}{4} \times 6\frac{1}{4}$ – 2

Pack'g House 3 windows each 3 ft $6\frac{1}{2}$ high with
6 bars each to glaze 5 in: broad
Stoves $5\frac{1}{2} \times 5\frac{1}{2}$ – 8
Drying House 3 windows each 2 ft $5\frac{1}{2}$ high 8 bars
each to glaze 5 in broad

1843 – Sept 9
Total length of Web of Hair Cloth from Harrison 17½ yards

My table is
1st piece 5 " 2 long
2d — 4 " 7
Leaf 1 " 8
The space at washing tom is 8 " 4 ~~for Desk~~ feet in

Mr Bells Boxes for Magnesia

3 feet long	hold 1 cwt
2 " 2 wide	nett.
2 " 2 deep	

Made of American ½ in deal not planed. Papered inside – pasted in. Pays 1/2 a piece for making them Boys

them
His drawing Boxes are

Papers ... – pasted in. Pays 1/2 a piece

american logs and cuts them

His drawing Boxes are 17½ in by 11½ inches inside. buts blocks 6 in square by 2½ or 3 in thick

His Stoves 8 feet by 7
another 8 — 12

Iron Frames 2 feet by ½ of 6 bars i.e 5 spaces put on 9 blocks each 2½ or 3 in thick

Rasping knives 2 feet by 3

Sept 30th 1843

Wm Wille of Offerton Quarryman

Offers to put stone from Mr Pemberton's Quarry at Hasting Hill on board a Keel at Cox Green - will work the stone at 6d pr ton

Weatherley of Shiney Row is a likely person to lead the stone. Thought 8d a ton would be a fair price as it is a good lead all down hill - Distance from Quarry to River about 2 miles.

Harper of Shiney Row

Spencer has a good stack of stone at Offerton ready

is also willing to haul

Spencer has a good deal of Stone at Opperton ready worked

=

Mr Pemberton's Agent is Benj^{n} Stafford Esq^{r}

Bed Room 5 ps of Paper
32 yds of Bordering

Parlour 8 pieces
45 yds Border

Bkfst Room 4 pieces
26 yds Bordering

3 lbs Blue verditer
1 - Lamp Black
3 - Glue
=

wanted
6 Bars for top of Stove
1½ doz Branders 3 feet long
=

For top of Stove
2 Bars 9 feet long
1 inch wide
¼ thick
1 — 3½ long
do

1/4 thick
1 — 3 ½ long

They force 2200 feet of air ? minute with Blast Furnace at Walker

A woman can dress a Box in a day.
Employ
1 Manager
1 Fireman they damp the fires
1 Joiner
6 Women
1 Cartman at times
make 10 cwt or to 15 ?? week. 6 Boilings average 10 cwt 9 make 15

| 14 0 ~ 21
| 1 ~ 9
| 3 ~ 12 to 3 ~ 17

~~[illegible]~~
Boxes are 2-11 ½ long
2-2 wide
2-2 deep

Sometimes when very poor the Boxes are 1-0-21 {22 24 26
then 0-1-9 to 1-14 or to 1-1-1 then excellent
But now 1-1-14 to 1-1-24

women get 6/- a week
Girls 8d pr day

Heat the stove as hot
as they can get it when
the Magnesia is put in
dry a stove in 36 hours
i.e. fill & empty a stove
in that time Stove holds 2 cwt & 3

Our stoves dry in 36 occasionally

Boxes
or 3 in deal at 4d pr foot
1 foot of this cuts into 6 and
costs to saw 1½d making 5½
for 6 square feet - now
a box is 42 feet = 3 " 6
making — 1 " 2
nails 3

4 " 11
waste on timber 2
some not good —

5 " 1

The timber is American
yellow pine Batons Scotch

3 - 0 long
2 - 2 wide
2 - 4 & 2 - 3 deep

waste on timber 4 " 11
some not good — 2

Boxes are feathered and glued. Size inside measure
3 - 0 long
2 - 2 wide
2 - 4 & 2 - 3 deep

Calciner holds 1 cwt made of 2 sides and 2 ends ^fire bricks bound rods at first 2 batches in 24 hours easily do so now with hand firing.

Bitumen costs 1d per gal and 312 galls costs 5/- carriage - 60 galls makes 1 cwt.

Fireman gets 18/- and when 3 extra boxes 6 p week or 19/6.

Foreman 22/- (House and fire) and 2/- for extra time

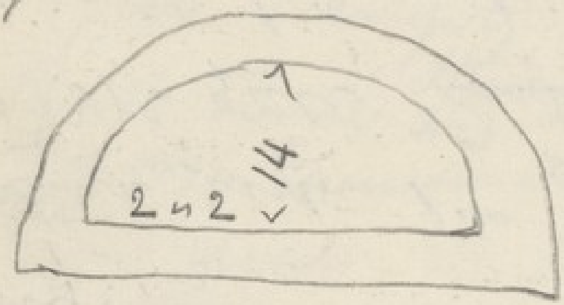
Decr 15 = 1843

made for Graner

Length outside 17" 7 to 17" 9

thickness 3 inches except charging and swelled out to 4

Another form making for Glasgow



price

Bought of Mr Cowen 10 Retorts for £35" 0" 0 and Bricks for setting at 70/- ꝑ thousand - delivered into my place at Washington. Payment by Bill at 4 mos in March

The small lenses when together ... 3 ft in focus from centre between them

... Payment by Bill at 4 mos in ... month

Jany 23 - 1844

The small Lenses when together are 3⅞ in focus from centre between them

The large Lenses about 3¼ in from surface of nearest lens

Diameter of large Lens 4½ in

of small 2 in

= Tom wants to know if Ellen has a German Book with plates & poetry

Have of Philosophical Mag: vols 27 to 38 both included being from Jany 1807 to 1811 end of Decr (want 6 vols here) also vol 45 to vol 62 i.e for 1815 to end of 1823 (want here 6 vols)

also New Series vols 1 to 4 i.e for 1827 to end of 1828 (want to end of 1843 - 15 vols)

Total wanted	Have
26 vols	12 vols
6	18
6	4
15	34
53 vols	

Mr Morson
19 Southampton Road
Bloomsbury

For Stopping cracks

Powdered Glass	1	part
Sulphur	1	—
Salt	1	—
Fire Clay	2	—

Answered when the crack was large but not small.

---

1 Iron door Furnace 5 in 8 high
2 - 2 inches in the clear

Ordered at Walkers - April 6
1844 for Stove
=

1 Iron door Frame 5 x 8 high
2 x 2 wide in the clear

Door for do of Sheet iron 1/8 in
thick furnished with register
at bottom - opening 1 foot high
Sheet of door to open also from
the inside

Slide of Register to be made
of sheet iron 1/8 in thick

One Fire door opening 14 in
by 10 with bearing bars, slab
plate & cover with fire bars
for fire place 3 feet by 2

1 dampers & frame for
flue 12 inches by 10

2 dampers for top of
stove 12 inches by 10

4 dampers for tops of
stoves already built each
12 inches by 10

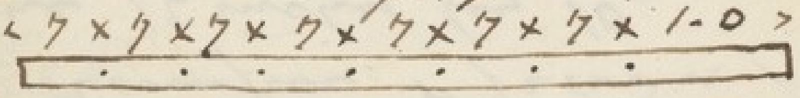
28 bars of 1/2 inch round
iron each 10 1/2 feet long

(over)

(B. oven)

14 bars of 1/2 inch round iron 9 1/2 feet long.

10 bars of iron 1 inch broad 1/4 inch thick and 5 ft 1 in long perforated with holes to receive the round 1/2 in bars as in figure



2 bars of iron 1 inch broad 1/4 in thick 9 1/2 feet long.

1 bar 1 in broad 1/4 thick 4 1/2 feet long

40 flat open sand castings of plates to cover flues each 18 inches long 12 in broad and 3/4 in thick

4 do 18 in long 6 in broad 3/4 thick

6 waster Rails each 9 1/2 feet long similar to those sent before

Coals may be got at Sackerson Colly - Pitter J C Gibson

3/4 thick
6 waster Rails each 9½ feet
long [illegible]

May - 1844

Coals may be got at

Sackerson Collry - Fitter J C
Gibson

Wallendge - Mr Sowerby

Crag Head - Mr Hedley

South Moor - do

=

Cinders 10/9 ℔ Newcastle
chaldron to weigh 30 cwt

---

18 June 1844

At Mr Phillips Spencers
Bailiff Gate

Box of Magnesia from
Mr Ogilvie

	foot	in
length	1 "	10 7/8
broad	1 "	4
deep	1 "	5½

weighed
gr 0 " 1 " 24
Tr 16
nett 0 " 1 " 8

{ at this rate a
Box 3 feet long
and 2 - 2 wide
and deep would
hold 136 lbs or
1 " 1 " 8 nett

{ Block Mag-
nesia

Weight of Ogilvies Mag-
nesia as invoiced to York

1 „ 0 „ 12 Nett
1 „ 0 „ 18 —
1 „ 0 „ 8 —
1 „ 0 „ 0 —
3 „ 27 —
3 „ 27 —
3 „ 22 —
3 – 22 —
1 „ 0 „ 13 —

} mean of the 9 Cases & 1 „ 0 „ 4 ℔ case but in my cases this would be qrs lbs & 1 „ 0 „ 8

Size of these Boxes

2 „ 4 deep
2 „ 11 long
1 „ 11 5/8 wide
} = 23152 cub: inches

my Boxes are cubic 23998

Magnesia makers
at Glasgow
Mr White - Thornliebank nr
Glasgow
Robt Smith Hon - Port Dundas

Glasgow - July 30 - 1844
=
Bryce & Young's Boxes for
magnesia are

40½ in long
21 - wide
23½ - deep
} = cub: inches 19986¾

Mr Bryce said that when precipitating Bittern with Bone Spirit (Carbonate of ammonia) the Magnesia was always heavier than when precipitated with Carbonate of Soda
when using ammonia
30 cases weighed net 25 ℔ 1 ℔ 24
and
10 cases do - 8 ℔ 0 ℔ 5
40 33 ℔ 2 ℔ 1

See Over

Brot Over cwt qrs lb

This is ℘ case 0 „ 3 „ 10

and this for one of my cases is 1 „ 0 „ 0½ nett

when using a mixture of Carbonate of Ammonia and Carbonate of Soda 100 cases weighed nett

cwt qrs lbs

90 „ 3 „ 2 or ℘ case 0 „ 3 „ 17½ which for one of my Cases is 1 „ 0 „ 10 nett ℘ case

When using Carbonate of Soda only as the precipitant

30 cases were Nett		29 „ 2 „ 24
20 do	——	19 „ 2 „ 4
20 do	——	19 „ 2 „ 7
70	cwt	68 „ 3 „ 7

which is 0 „ 3 „ 26 ℘ case

20	do	19 " 2 " 4	
20		19 " 2 " 7	
40		£ 6 8 " 3 " 7	

This for one of my Cases
of 40 lbs
is 1 " 0 " 22

His boxes are lined with
Blue Paper and papered over top.

He mentioned Hunt & Co's
Chemists. Dublin as likely
to buy Magnesia
made about 8 to 10 cwt pr
week but when working at
night 15 cwt Have for
this

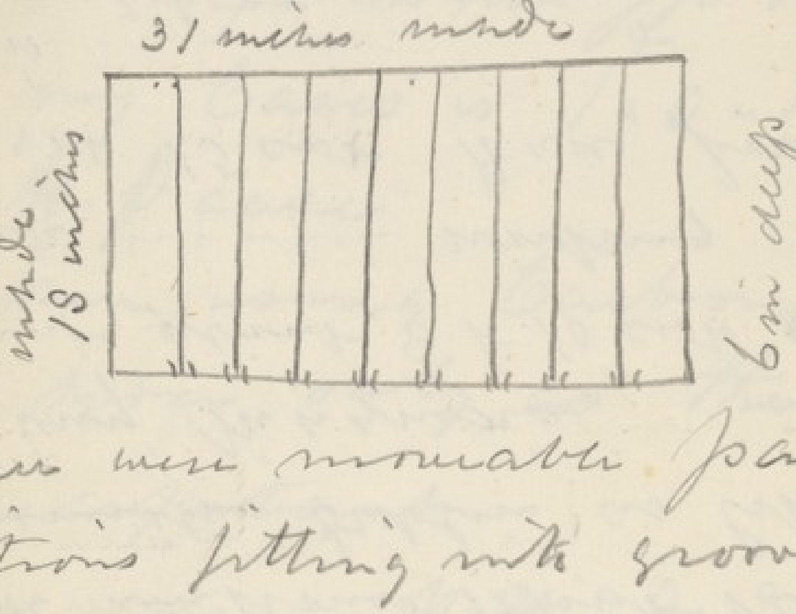
1 Woman
1 Boy
2 Men
} did all

Boxes cost 3/6 to 4/- ea
Pan night 1/6 to 4/- please.

His practice was to
precipitate, drain, wash,
then to turn pulp into ano-
ther tub dilute it with
water take the consistence of
sea water

Bird Oven

became a thick butter milk and then to boil it by steam - This caused it to swell up considerably and become lighter than it was put into Boxes. His Boxes were

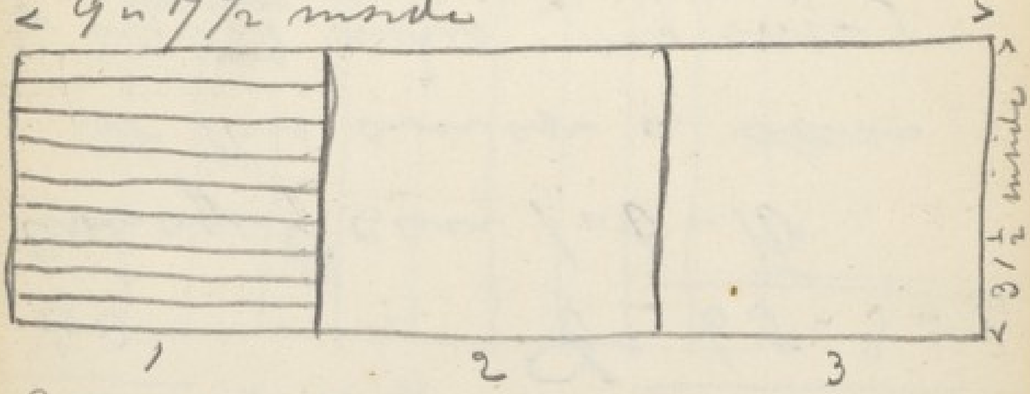


there were movable partitions fitting into grooves in a frame and all sits over a moveable bottom perforated with holes and covered with flannels

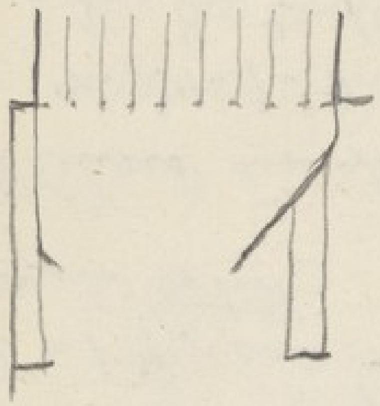
He afterwards adopted

over a moveable bottom
perforated with holes and
covered with flannel

a large table on a simi-
lar plan which he thought
better



Fronts of Nos 1, 2, 3 moveable
side view



Other makers of Magnesia
in & near Glasgow

Wm Burns & Son, Salt Coats
near Ardrossan make 6 Cwt
per week
Mr Henry McDonald makes
6 to 7 Cwt per week

at Mr astley's manufactory
augt 1st 1844

Mr astley packs his Magnesia in Boxes

ft	in		
3	7	long	capacity
2	1	broad	2 7/681
2	2	deep called but really 2 1 3/4 and allowing this	cubic inches

20 Cases weighed
gr 31 1 0
lb 8 2 19 Mr 22 2 10

40 do nett 43 0 22

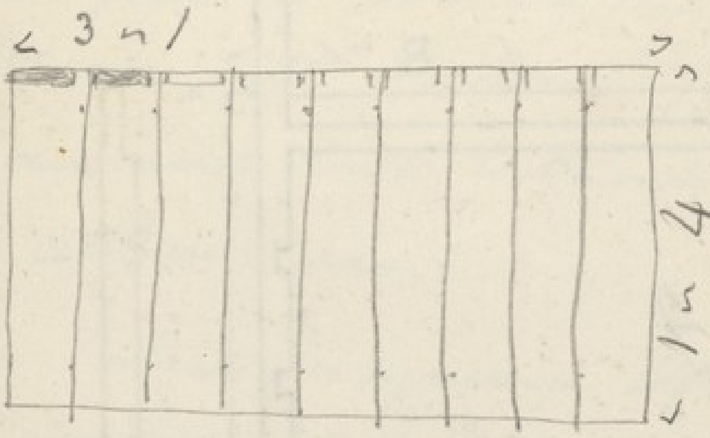
60 £ 65 3 4

average £ case 1 0 10

at this average a case of 24000 inches (my case) would weigh 105 3/4 lbs or £0 3 2 1 3/4

of 24000 inches (my case) would weigh 105¾ lbs or

after boiling the magnesia is put into Boxes



depth 6½ inches. Each division is 3/4 inches the wood and space 3¾ in. Then

$3\frac{3}{4} \times 9 = 29\frac{3}{4}$ in

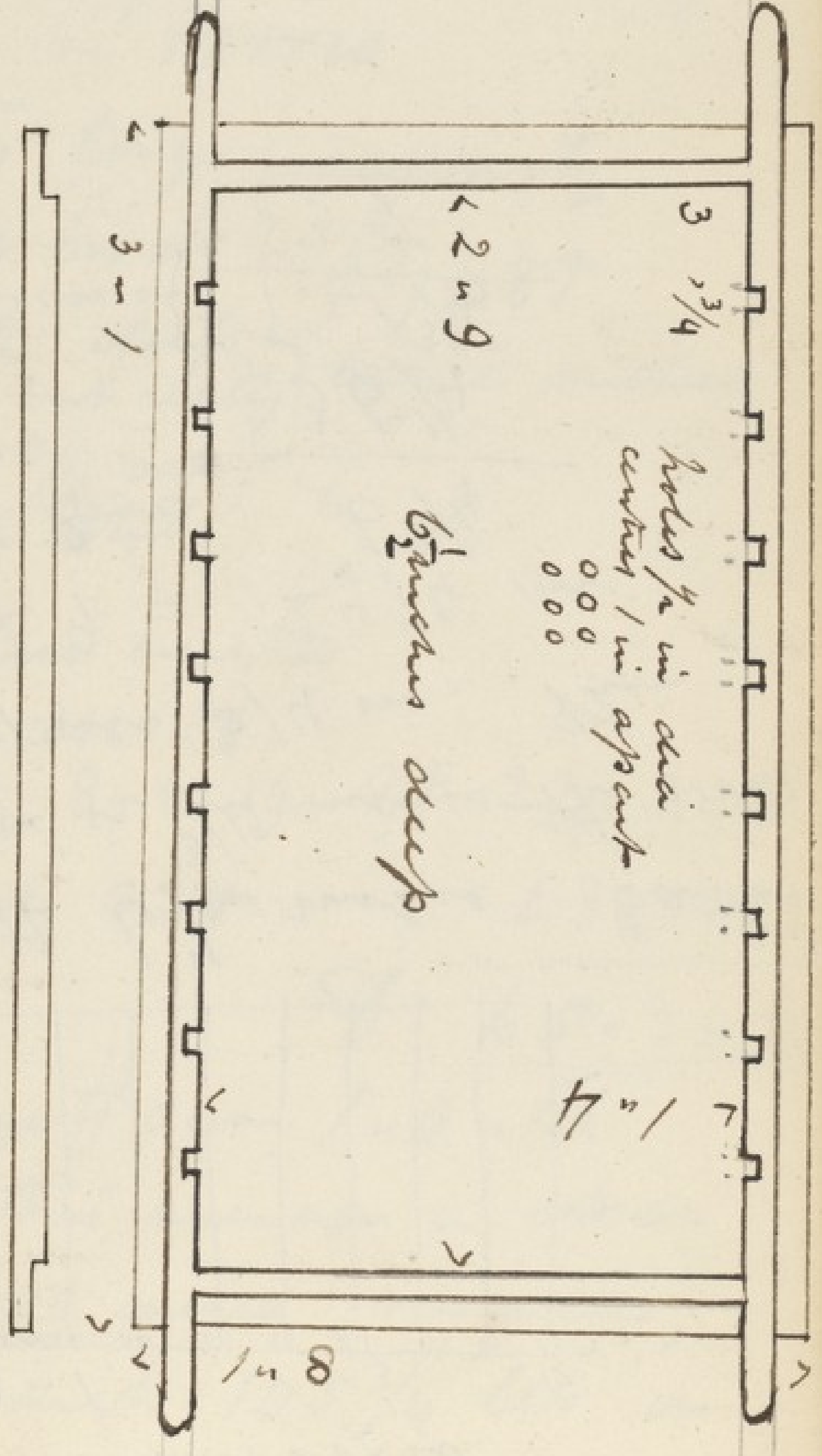
$\frac{3}{4} \times 8 = 6\frac{3}{4}$

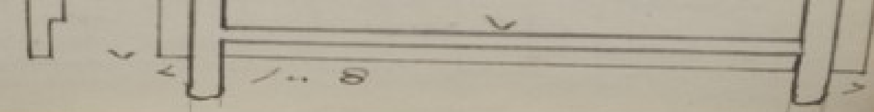
$35\frac{1}{4}$

to space for ends } $1\frac{3}{4}$

37

Magnetic Frame ordered of Mr Wilton 6 Aug^t 1844





London - Sept 6 - 1844

Quoted price of Heavy Magnesia in Blocks with Powder 62/6 p cwt delivered but without Justice allowances

The Patent Magnesia Mr Murson recommends to put up in ½ oz 1 oz & ¼ lb packages - to sell at 6d p oz to be charged to the parties the retailer 4/- p lb or 3d an oz and to Wholesale Houses @ 3/- a lb —

Mr Huskisson - Swinton St Grays Inn Lane

Sept^{br} 18 - 1844

Size of Magnesia Box-
es and cost of the same
=

For 1 cwt of Magnesia Alba
in Blocks

3 feet long } cost
2 by 2 deep
2 by 2 wide

=

For 1/2 cwt Magnesia Alba
in Blocks

2 by 6 long
1 by 10 deep
1 by 10 wide

=

For 1/4 cwt Magnesia Alba

2 by 11 long
1 by 6 deep
1 by 6 wide

=

long
deep

2 " long
1 - 6 deep
1 - 6 wide
=

For 28 lbs of Calcined magnesia

long
deep
wide

=

For 14 lbs of Calcined magnesia

long
deep
wide

=

For 10 ℔ s of Calcined magnesia

inches
15 long
12 deep
11 wide
=

For 7 lbs of Calcined magnesia

long
deep
wide

See over

Size of Boxes - Bot^t over
=
1 Cwt- Box of Seidlitz Powder
made from Heavy Mag-
nesia Alba

34 inches long
24 deep
24 wide
= cubic cap: 19584 in

1/2 box of same
28 long
19 1/2 deep
21 wide
= cub: in: 11460

1/4 cwt- box of same
20 long
15 wide
16 deep
cubic in 4800

15 wide
16 deep

at Bristol 31st Augt 1844

Mr John King. Optician
Bristol

Microscope with wooden bottom including 2 eye pieces and condenser complete with all apparatus

	£13 " 13 " 0
one inch objective	4 " 4 " 0
1/2 inch do	5 " 5 " 0
1/4 inch do	6 " 6 " 0
1/8 inch do	7 " 7 " 0
	£ 36 " 15 " 0

The 1/8 inch objective is very seldom required and without it the price is £29 " 8 " 0

Same Microscope with brass stand, mechanical stage, polariscope & rack £25 " 0 " 0. This includes

4 of which would cost as above £23 " 2 " 0 making total £48 " 8 " 0

brass stand. mechanical
stage. polariscope & rack

every thing but the objectives
4 of which would cost as
above £23„2„0 making
total £48„2„0

They put 3 eye pieces
occasionally. There is
50 diameters difference
between each in mag-
nifying power.

Microscopic objects
transparent. 2/- per slide
opaque — 2/- ——
injected — 3/- ——

Nov 12th 1844

Agreed with Ralph Mason for Magnesian Limestone at 1/2 ₤ Ton put into Waggons

Messrs Charles Morris & Sons

Have made Mur Acid for sale 20 years.

Use an Iron Cylinder and also an Iron Pan

=

Used a Clements Condenser 22 years ago - got the idea from some book - It was 6 or 8 feet high - conical 4 or 5 feet at base & at top filled with cinders or coke - Gave it up because it did not condense all the acid.

Seat Earth

Clayton Collry about 3 miles on the Ashton Road from Manchester - belongs

Mr Bradbury - manager

Novr 20th saw Mr John Bradbury son of Mr John Bradbury saw the Seat Earth such as they sell in Manchester - they deliver at Piccadilly at 8/6 p ton - a good many use it as fire clay. They sell to Norris of Halifax & Swindells of Manchester & Maddox: use it for alum making

Mr Wm Ridgway of Hanley.

Mr Wm Ridgways of
Hanley.

Mr Meigh - Hanley

Mr Davenport of Long-
port -

Mr Minton of Stoke

a Cask of White Lead
2 a 3 cwt to
Mr Wm Ridgway
Hanley
Staffordshire Potteries

Nov. 22d

Mr Peter Ward - manager
for Messrs Robt Chance & Co

was at Walker Alk. Works
in 1828 or 9 as mang. of the
Muriatic acid Warehouse -
to Mr Allen for Retorts put
up - iron Retorts round - a
hole in front for a worker
to pass - Salt & acid put
in and mixture stirred
through the door - Gas
went out of Back into an
set of [illegible] - 9
flags upright 2 feet by
4 - 10 high filled with
staps - four of them -
Acid used for Bleaching
Powder

Left in 1831-

went to John Caton Thompson

& Co Liv'pl - as Manager of

the Alkali Works - then

he adopted one of Losh's

Lead in pans for a while.

discontinued this and used

semi cylinders with

and also brick arch

stone tops, - finishing the

stuff afterwards in a

furnace - drawing it

out of front door -

then carried on business for

himself but always on

this place

Recommends me to see

Mr McGuire

a Maker of Manure: [illegible]

Salford

Dec 4 - 1844

Mr Bailey of Wolverhampton told me of Brockedon's patent for pressing powders into solids - 29 Devonshire St. Queens Square. London

---

Large Cisterns for Chloride of Lead

ft in

$9\frac{1}{2} \times 10\frac{1}{4}$ by 3 " 4 deep

```
     10,25
       9,5
   ---------
     97,375
         3 1/3
   ---------
    324,533 cubic feet
      62,1/2
   ---------
     6490
   19470
     162
113 ) 20281    lbs water
      8 9 8    179 lbs Chloride
      791
   ---------
     1071
     1017
```

And as 32,5 : 180 :: 2200

180

176000

2200

32,5) 396000 (12185

325   112

710   985

650   496

108

600

5 tons 8 cwt

325

/week

2750

2600

1500

At Village of Fourstones

Feby 20 - 1845 — 6 Boll Fother 59891 in

I measured

Cart used by Marshall Stephenson to lead Lime

Length 5 .. 6½

Breadth top 3 .. 10¼ - bottom 3 - 5½

Depth 1 .. 5 content 49742 in

This cart was up heaped but used without overings

Another Cart

Length top 5 - 8 - 5 - 2 bottom

Breadth top 3 - 8 - 3 - 3 bottom

Depth 1 - 5.

content 45857 in

These are called Fother Carts

=

James Stoker - Labourer of Fourstones

was employed by Mr Joseph Rewcastle to burn Lime one year

was paid by the Fother

1/3 of fother - a fother is
6 load - never measured the load
in a tub the time he was
there - When they came with
a cart they fothered the cart
according as they calculated
the measure - a cart
same as there measured
held 6 load - never carried
more than 6 - If they
had ever carried more
would have been paid
for more. Sometimes when
they put down 3 or 4 load
small Carts with a Pony
or Cuddy, would come
never sent away 8 load
and put them down 6

Thomas Proud - Labourer or Hind for Marshall Stephenson. Lead Lime from Johnstons Lime Kiln with the Carts measured and they were just filled with a shovel as full as they would hold - rounded over the top - but not built up by hand. Lead Lime all the first summer he was here - that was in 1839. Lead also for Maughan of Newbrough Lodge - Nicholas Maughan Esqr. in 1842 - and in 1843. The Carts were

and not filled them so full

Lodge - Nicholas Maughan
Esq - in 1842 - and -

a little bigger but he
did not fill them so
full

John Robson employed by
Mr Jos Reavartha to burn
Lime at 1/4 of fother -
a fother was what we called
6 load - the load was what
was used at different Kilns -
never measured in Carts
but the Carts were the
common Carts of the Coun-
try just such like as Mar-
shall Stephenson - some
carts were bigger than others
but none carried more than
6 - some might put on a
few shovel fulls more than
their measure that

was any way friends
but never knowed
them clearing man
then & lived - wrought
several years at the
quarry but only once
as a contractor.

Edw^d Pattison worked at
the Quarry many a
years - 12 years and
more - All the time
was measured and set
as agreed by Jno Robson
John Robson & Edw^d Patti-
son think that if one
of them Jammers were
very carefully built
up they might see a

8 Load but the cart would not carry this quantity. They might carry 7 but this they would not attempt although it might be done - but very seldom

Mr Wm Heslop - tenant of Fenstones West Farm - belonging to Hospital

Had a Cart in field - a Corn cart

Length	top	5 ft 6	5 - 5½
	bottom	5 ft 5	
Breadth	top	3 ft 8	3 - 7
	bottom	3 ft 6	
Depth		1 ft 6	1 - 6

This Cart was rather Larger than common and held 6 Load without much setting up. They paid for 6 Load

|||||||| |||||||||½

Mr George Ridley
sent for a 6 Boll fother
and a 5 Boll fother
by his Carts from Saun-
stones Kiln. They were
filled full up and heaped
over the top - till the man
at the Kiln told him to
give over

we got a Box

32¼ inches long	}	content
12 5/8 — broad	}	7023¼
17¼ — deep	}	in

The first cart held 9½ of
these Boxes = 66723 in = $6\frac{6831}{9982}$
The second cart held 8 of
these Boxes - the Last Box
was finished full = 56186 in
= $5\frac{6276}{9982}$ Bolls

The second cart held 8 of
these Boxes – the Last Box
[illegible]

The 1st Cart was

Length top 69 inches
bottom 60 –
Breadth top 46 (46 in)
bottom 38
Depth – 20

The 2nd Cart was

Length top 64 in
bottom 60 –
Breadth top 44 –
bottom 38 –
Height 19 –

Mr Ridley's man says the first Cart was measured at Fourstones this summer and 6 Tubs or Bolls filled the Cart fuller than it was today

Library

15 " 3 long } 2 windows
14 " 9 broad }

East Room

16 " 4 long } 2 ws
14 " 9 }

Drawing Room

17 " 7 long { Recess 1 " 18½ in
15 " 6 { each side of fire
{ place long
2 ws

Office

16 " 4 long } 2 ws
13 " 0 broad }

Hall

9 " 5 broad
19 " 8 long

Mary's Dressing Room

9 " 4 wide } 1 w
13 " 9 long }

17 " 6 } 2 ws
13 " 0 }

9 " 4 wide
13 " 9 long
} 1 Do

Mary's Room
17 " 0
13 " 0
} 2 Do

West Room
13 - 2
16 - 0
} 1 Do

Small Room between
6 - 2 wide
17 - 0 long
} 1 Do

Uppermost Story
7 Bed Rooms
1 Store do
} 3 Do

1 Large Room 3 Do

Clackmannan Colly
27 March 1845

5 Shafts -
deepest 40 to the Splint Seam
3½ to 2 - 8 sometimes
36 4 feet average 1 yard
& same ~~above~~ seam
22 to the iron stone

The Iron stone is 9 a 10 inches - the Black Band - all worked to rise - sell it to the Devon folk - Came down as 5 a 6 years - they paid 7/- p ton for washed stone now offer 10/- - distance 3 miles costs 6d p ton

next shaft 20 fathoms down to Splint Coal in South field 3 miles off

16 fathoms to Splint

pay 6d a raw ton royalty on the Iron stone

Inclination of Seam 10° but at North Pit 5°

In 22 fathom first
alluvial sand &c feet

at North Pit 5°

Fault E & W one

In 22 fathom Pit

	feet
alluvial sand &c	35
Sandstone & Shale	36
Coal	1
Hard sandstone	24
Shale containing Iron Stone }	3
a Band besides Balls	
Coal called 9 feet coal	6
Hard white Sandstone	48
Shale	2
Ironstone (9 in to 12 in)	1
Coal	2
alternating Sand Stone & shale with thin band of coal none exceeding a foot }	132
	96
Shale	2
Iron Stone 3 inches	
Coal called coal Mossie }	2

B. [illegible]

White Sandstone with coal 1 foot in middle	42
Shale	3
Cherry Coal or Household coal	$3\frac{1}{2}$
Shale & Sandstone	18
Splint Coal	3
Hard white Sandstone	102
Coal - Smaughton Main Coal or Bottom Splint 3 ft 10 in	4

☿ March 26 - 1845

Blair Colliery - Mr Mill's widow.
=

1st seam is is a 3 feet
seam - they deliver the
water i - called the 3 feet
coal - crops a dyke N & S
then it is a Blind Coal
2d - seam is the 6 feet
seam 10 fathoms down
3d - seam a 2 feet coal
not wrought very soft
4th - seam they are wor-
king - 4 feet - called the
4 feet coal
dip N W rise S E

In a quarry near this
Colliery
Alluvial feet 4

In a Quarry near this Colliery

	feet
Alluvial	4
Sandstone	3
Shale with Ironstone very little }	3
Coal	2
Shale	1
Sandstone sticky first to see }	12

dip to NW
=

There is a Limestone in the Estate of Devonshaw near Crook of Devon - belongs to Mr Paton at Devonshaw House - this is 9 miles from Alloa and 2 or 3 from Saline

Blair Burn

to side} Bonnie belongs to
Mr Clarke 15 a 18,00
acres – a lease of the northern
half from turnpike taken
by Lyne Iron Co at 6^a
$ Raw ton, for 19 years & a small
fixed Rent £100 a year?
The North side of Bonnie
the minerals are sold to
Alexander Allison Esqr
101 Princes St Edinbro
for a fixed Sum subject to
this lease
The North side of Blair
Burn belongs to the Duke of
Argyle (the minerals) surface
to Mr Oliphant) called Upper
Kinneddar is taken by Mr
Allison – his boundary is
a little west of the works
nos of the Lyne Iron Co

The ... the South side ... called
Nether Kinneddar belongs to
Mr Erskine (Capt in the ...

a little west of the works

Then the north side called
nether Kinnedder belongs to
Mr Erskine (Captn in the In-
dian army) of Torphicken
St Edinbro'

At this S E corner the
first Bore Hole was put
down - It was 5 fathoms
deep Stone 20 inches thick

About 100 yards up Blair
Burn to the W the 2d
Bore Hole was put down
8 fathoms - The Stone
was 22 inches very hard

About 230 yards due
W is the 3d Bore - it was
17 or 18 fathoms - thickness of
Stone not determined

At 4th Hole depth 13 fath
thickness 1 foot

At 5th Hole bored 16 fathoms stone 4 inch thick

Aberdona - Colliery on the Forrest Road from Clackmannan to Saline

Seam splint 2½ feet

do Cherry Coal 4 -

6 fathoms apart - the Cherry Coal is 14 fathoms from surface and first 20 fath deep. About 3 or 4 miles from Saline.

Ship at Kincardine 3 miles off first pay 1/8 if for Cartage. Can be worked for 2/- the 25 cwt fms. hewing - weight + putting th
Royalty 1/8 Price of Coal 5/-

to make 1 ton Pig iron
1¾ tons of Roasted

[illegible]
for 2/- the 25 cwt for
[illegible] – [illegible] + [illegible]
Royalty 1/2 Price of Same 5/-

To make 1 ton pig iron

$1\frac{3}{4}$ tons of Roasted
Black Band – this is rather too little but 2 tons
is too much

17 cwt Limestone

2 tons of Coal to be used
in the Furnace

15 cwt cross for Engines
and stoves

Coal at the Port of Clackmannan 5/3 ℔ ton of 21 cwt
Cross Coal 2/3 ℔ ditto

At Aberdonnie Collr
March 29th 1845

Pit 11 fathoms to Cherry
Coal – total depth 17 fath:
Distance to Saline 4 to 5 miles
Price Cherry 4„2 to 5„0
Splint 2„6 – 2„9
Pay 2/2 pr 24 cwt to hewers
who bring it to pit bottom
Cartage to Alloa 1/10 pr
ton – distance 4½ miles
to Kincardine the same

mills' bored on Lady Baird's
estate and found a seam

Sandy Henderson of New
Mills bored on Lady Baird's
Estate and found a seam
of splint called 5 feet

At Mr Fosters - Haswell
April 1845

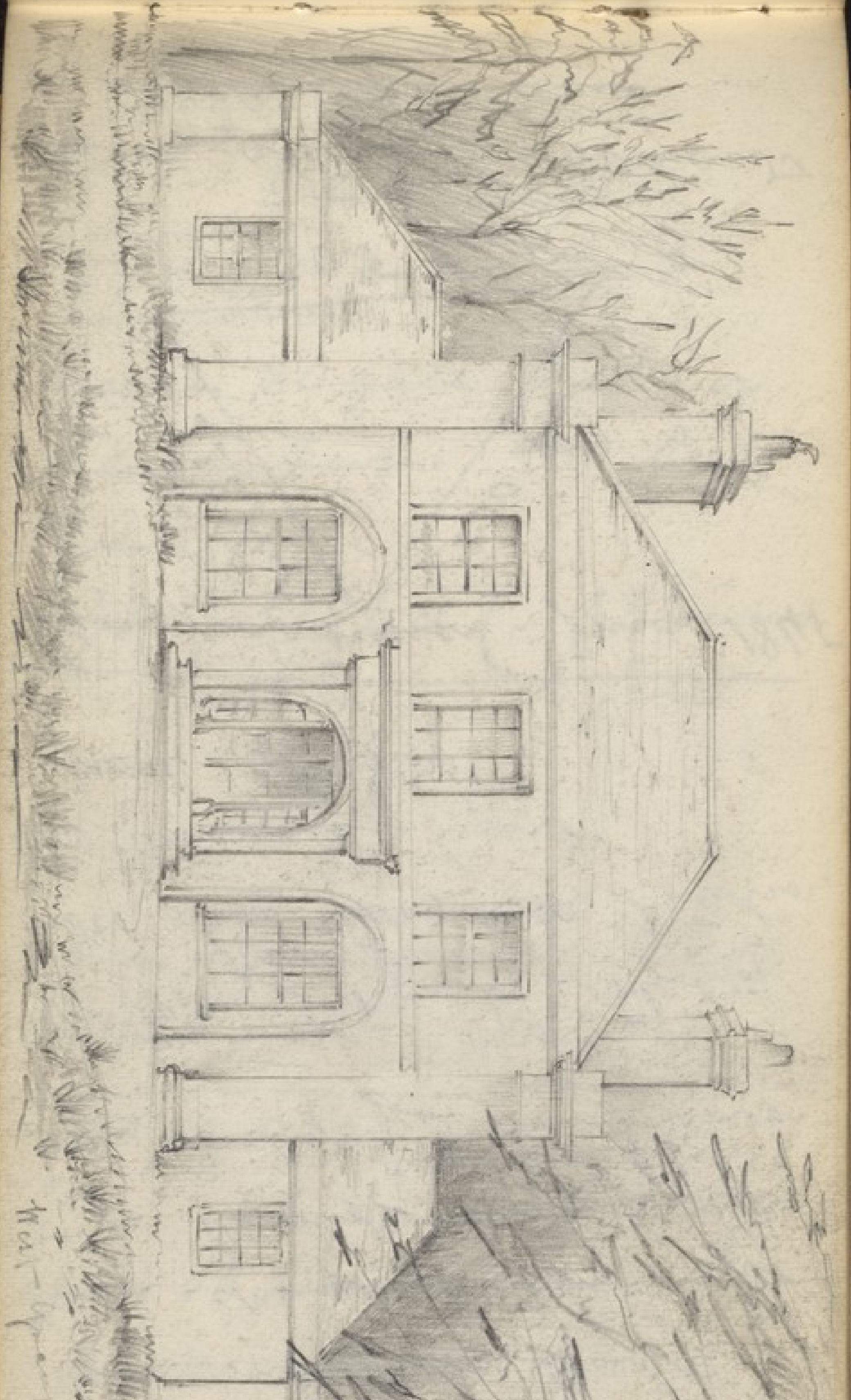
Recommends Stone to go from Mr Burdons Quarry up Railway & up the Wingate branch to Garmonds Way Colly and up to the Byers Green Branch of the Clarence and so on to the Newcastle and Darlington near Ferry Hill -

Distance from Quarry to Ferry Hill	}	miles 8
Ferry Hill to Wash "	=	12
		20

probably charge per Ton per mile 2d at outside

apply to Mr Burdon

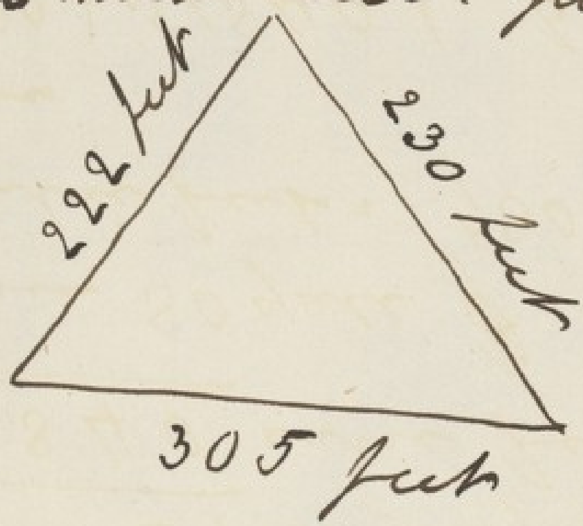
Porch 2d at outside
apply to Mr Brandon



April
Saw William Taylor
who has Hezleton Hall
Farm - who gave permission
to go through his field
from Quarry to give him £1-0-0 for summer damage

Mr John Thorman - Chilton
Moor near ~~Leamside~~ Fence Houses Station
the Marquis's Agent
June 24th 1845

Dam measured. June 1845



Area about 2880 yards

or $\frac{2880}{4840}$ of an acre

9
25920 feet
2 feet deep

or $\frac{2880}{4840}$ of an acre

2880 yards
9
25920 feet
2 feet deep
51840 cubic feet

stream 80 gall ℔ 1 or
13 cubic feet = 780 feet
℔ hour

780) 5184.0 (6 6½ hours
468 to fill
504
468
36

when filled 1 foot- holds
25920 feet. This is

300) 25920
86 Large Cisterns
each 10 feet square by
3 feet deep.

May 17 - 1845 - Called on and saw Mr Powell of Powell & Lealand 24 Clarendon Street Somers Town.

Their prices for Achromatic Object-Glasses for Microscopes are

2 inch	£3..3..0
1 —	3..3..0
1/2 —	4..4..0
1/4 —	5..5..0
1/8 —	7..7..0
1/12 —	9..9..0
1/16 —	10..10..0

Total for full set £43..1..0

For each one guinea in addition if they do not make the

These lenses consist of a triplet at

in addition if they do not make the

Microscope

These Lenses consist of a Triplet at bottom and two double Lenses each set cemented together.

The best Microscope with 2 eye pieces and Object Glasses of $\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1, 2 inches with Condensing Lens and Polarizing Apparatus complete £70 " 0 " 0

With $\frac{1}{12}$ in Ob: Glass £9 " 9 " 0 more

From Seaham down to Rainton meadows 7½ miles

$7\frac{1}{2}$ at 2d = 1 - 3
6 - 1 6
1 - 9

Ralph Mason recommends a Quarry at Tunstall or near Tunstall Lodge - There are two ~~or three~~ quarries belonging to Mr White - Tunstall Lodge
Mr Gregson of Shotton Hall

July 4th 1845

At Haswell then to Seaton Bank top - then up Marquis's R.way to Warden Law Engine 4 miles from Seaham saw Engine man or Brakes man John Wood

Mr R. White - Money Close near West Herrington has a Quarry

man John Wood

Mr. Rd White - Thorney Close near West Herrington has a Quarry of White Stone

---

Mr. Andrew White. Tunstall Lodge near Sunderland.

His farmer Mr John Thubron. his farm Tunstall Lodge Farm

July 5 - 1845 at Seaham Harbour - Saw Wm. Maddison. Under Harbour master ~~could~~ agreed to give ~~him~~ William Sheridan 1/6 Ston for putting Stone into Wagons on Marquis's Railway.

Wm Nixton. Foreman at
Pedwell Quarries - Sunderland

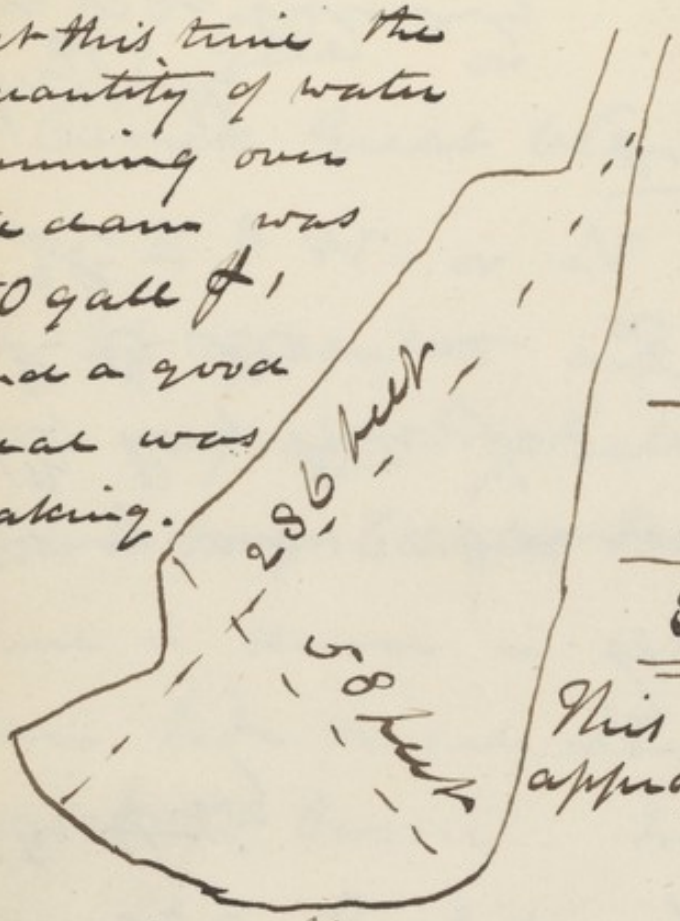
Mr Givans - Manager for
Sir Hedworth Williamsons at
Sunderland. Office on No side
near Ferry Boat Landing in
Wear Street. Manor Office

Wednesday 9 July 1845

at this time the
quantity of water

Dam at Washington
measured 18 July 1845

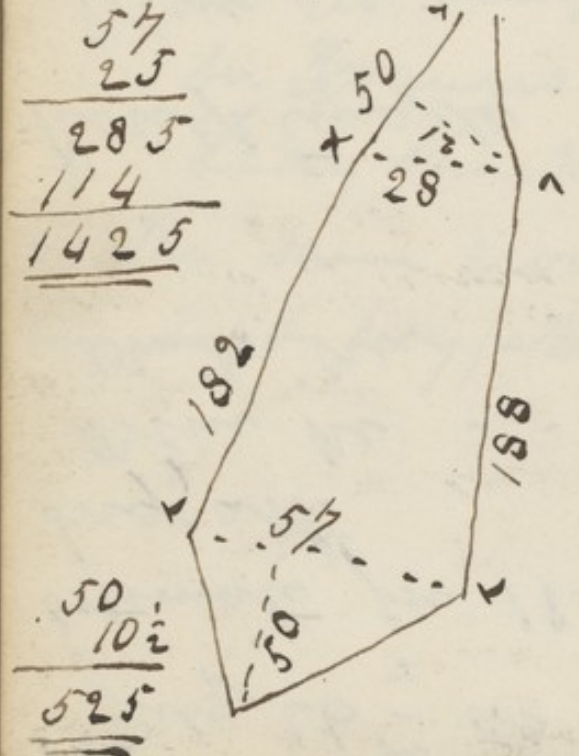
at this time the quantity of water running over the dam was 50 gall ft / and a good deal was leaking.



286
29
2574
572
8294

This is a rough approximation

Again thus



57
25
285
114
1425

50
10 1/2
525

185
42 1/2
370
740
92 1/2
7862 1/2
525
1425
9812

1845 July 26th at Alston

Estimate for 1845

Briggath

Blue ore - - -	130
White ore - -	70
	200

Roughtengill

Blue	300
White	150
Cutting	30
	480

Money now advanced

1st Pay Bill for

R G ill —	£ 283
2d	101
	£ 384
Briggath one pay bill only	280
	£ 664

the ore Mr Cain brought is from

Brig Gill or

me pay bills only 2 5 8

£ 6 6 4

The ore Mr Cain brought is from

Dry Gill or

Carrick Great vein

it is E & W or N W & S E

So he describes an E & W vein crossing Dry Gill and also crossing Carrick Burn - a level is driven in out of C. Burn side nearly N W - apply to Mr Currie - In manor of

Lord Lonsdale
Sir Geo Denys
Sir Francis Shuckburgh
Lady Shuckburgh

in the same ground as Roughton gill & Dry Gill.

Carlisle Sept 4 - 1845

=

Roughtemarks are
to be made into
5 parcels

1 - All the Blue are
now at Carlisle

2 - all the White
are do

3 - all the remainder
of the Blue are

4 - all the remain-
der of the White
are

5 - all the Cuttings
are

=

Dr Smith are to be
in 3 parcels

No 1 - all the Blue

2 - all the White

3 - all the Cuttings
if any

in 3 Parcels
nos. - all the Blue

2 - All the Grey
3 - All the Cutting
if any

May 4 - 1849
At Boston with Mesmerist

Lungs feels tight - Your
Lungs look frothy - pale
the cause of the tightness
Inside look at your Liver
and see how that does look you are
a nice man - You must
not be down hearted - you
can be cured - There does
not seem much the mat-
ter with the Liver - My
pulse will beat three to
your two - You feel tired
your nerves are weak
your tight chest - Lungs

Octr 22 - 1845

Common
500 ^ Bricks weigh nearly
30 cwt

8 times *

Mr Robinson agrees to
lead Bricks at 20/- ₽ Keel
and to load them by hand in-
to the Keel at 2/6 ₽ Keel

Agreed with Mr Wakefield
for 40 to 50 thousand Bricks
at my option not less than
40 at 23/6 ₽ thousand.
Cash

---

look pretty. Your lines
is flat not rose up e-
nough. It shews well
but is too flat. You
must soon be [illegible]

there is no danger with
proper means -

there is no danger with
proper means -

Mid man - not a gentle-
man - not a very poor
man - outside of lungs is pale
crispt - No blebs or ker-
nels upon it he is very
tired - his stomach does not
look right. He is very poor-
ly - The nerves across his
chest look so weak - He is
not in a dangerous state
because he can be cured,
He is laying down on a
bed now but he can get
up.

FSR

2319 prices of Lead of Water Nymph to London about 1 cwt ca

	my Balance	Mr B's Bal
No 1	240	245
2	240	245

6 dwt gr

p ton 13 " 5 " 8

[illegible] 17 " 18 " 6 their assay

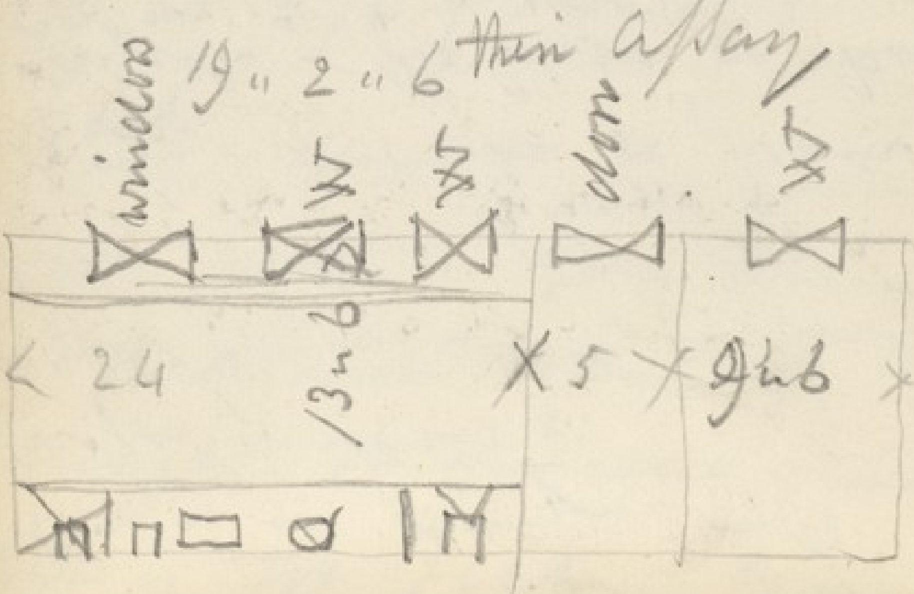
1479 FSR of Mary

	my Bal.	Mr B's Bal
No 1	256	262
2	255	262

9 dwt gr

p ton 19 " 11 " 4

19 " 2 " 6 their assay



Keel 20 feet wide Canal
the 50 feet.
Make 12,000 tons of
rubbish (tank sediment
& damm and including
all waste from 15 to 20,000
tons

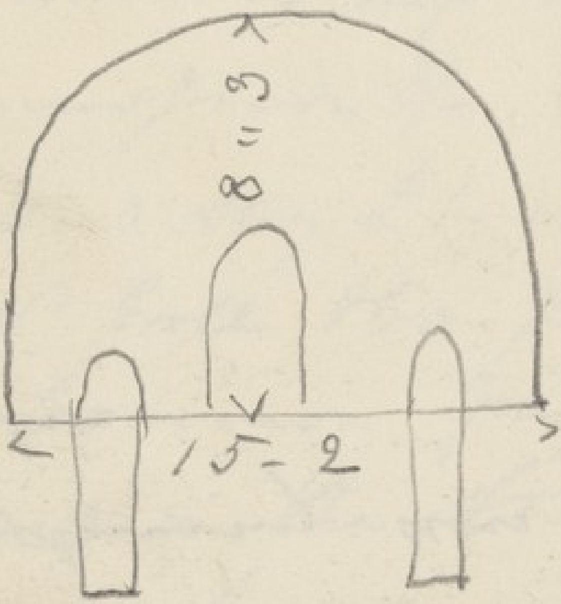
at Jarrow Chemical
works –
Have a Kiln that holds
about 40 tons – Burnt then
put into Edge Stone – Makes
pitch
till it falls – then put
into Edge stone – Have
ft in
2 pits each 15 " 8 feet clear
7 feet deep – put 7a a
Kiln into the 2 – give
them 7 waters each – then
pump it over into ano-
ther tank and give it
3 or 4 washings more
In about 12 washings
get them sweet

and man is not

Get them sweet

mes there a day wat-
ing and night
an man is not
fully employed in
this

Third Kiln



8 " 3 high   door 4 - 3 wide
15 " 2 wide   6 " 3 high
16 " 6 long
It burns off in 3 shifts
or 36 hours burn one a week

B. Ore

L. C. Charge - burn &
empty Ore a week - It
is connected with a chim-
ney about 24 feet high -
Ore charging does for
2 Kilns

The Minerals of Manga-
nese costs us £2 10 0 0 Ton

May 1st 1849

The Muriate of Manganese costs us £2„0„0 ℔ ton delivered at Birmingham casks and every thing included

delivered in London costs £1„11„0 Mess Nichols commission 3/- is £1„14„0 say £1„15„0

Mess Cole & Co ~~[illegible]~~ Bow Common pay us £3„0„0 in the Stream 2½ off for cash

They contracted for 320 tons and have got about 500 to 540 tons

May 1st 1849

The understanding with E. W. Pernie & Co
no 6 & 6a Hay St. Westminster
is. That they supply
us with 64 per cent Man-
ganese at £3..0..0 per
delivd in Tyne - pay-
ment easy - If below
64 they allow 1/- per cent
per ton if above they
charge the same

at present we have
from Lave, Knobb & Co 64
per cent Manganese
offered at £2..15..0
They call themselves
also The Metallurgical

May 4th 1849

may call themselves
also the Metallurgical

Society

May 4th 1849
with the Mesmerist Emma

It is a kind of a light and dark - It is not a book - we cannot take any more with it - Many lines in it - It I make a pass over your head wh you be lighter two - It is not writing - It looks like a thing just on - drew on

Treatment of Magnesian
Limestone at Jarrow
Chemical Works

Run at 6 A.M. and
6 P.M.

Messrs - Haworth & Sons
Church Chem: works
near Accrington
Lancashire

Deliver the Arsenic Phos-
phate at Haworth & Sons
Wharf - Church Che-
mical works near
Accrington
15/- per cwt casks included
4 mos Send a ton or two

Treatment of Magnesian
Limestone at Jarrow
Chem Works
=

A Kiln holds 2 Keels
burn this in 8 shifts –
It then slacked and ground
with water – Pits are
round of stone 15 feet
dia & deep –
They run them twice
a day – It takes 15
washings – Have 4
pits and divide the
2 Keels among them
1 man does this – as
they only run them
twice in 24 hours
It takes a great deal
of skimming –

Run at 6 A.M. and
6 P.M.

hydrate of protoxide combined with a small portion of nitric acid which is converted into carbonate as already detailed beginning with the solution of alkaline carbonate.
3dly. They dissolve lead or its protoxide in nitric acid then precipitate the lead by any of the well known caustic alkalies or earths. They prepare lime and baryta hexanes by adding sulphuric acid these will be precipitated in a solid form leaving the nitric acid in a state to react on a fresh portion of lead. The hydrate so obtained is converted into carbonate by Carbonic acid gas. They also make the oxide of Lead act upon fatty matter so convert it into oleates, margarates or stearates and then displace the oxide of Lead and convert it into carbonate.
Claim. Use of sulphuric acid to convert chloride of Lead into a hydrated protoxide and afterwards into a carbonate and also a chloride of Lead thus used - precipitating oxide of Lead by caustic alkalies or earths and making oxide into carbonate - use of oleates, stearates & margarates in making Carbonate of Lead.

Charles Watt of Manchester. Lecturer on Chemistry and Thomas Rainforth Sebbutt of the same place merchant for certain improvements in the manufacture of the Oxides of Lead and also of the Carbonate of Lead. 5 January 1838.

1st Cy - They boil peroxide of Lead with chloride of Sodium, Potassium or Barium to obtain chloride of Lead - mix this chloride of Lead 3 parts with 1 part red oxide of Lead and add $\frac{1}{3}$ the joint weight of concentrated sulphuric acid so as to expel Chlorine and produce sulphate of Lead. This sulphate of Lead is well washed with lime water and then they add by degrees a solution of some alkaline or earthy carbonate choosing such of the latter as are soluble in sulphuric acid - This converts the sulphate into white hydrate containing much Carbonate which is made perfect Carbonate by Carbonic Acid Gas.

2d Cy. They take Chloride of Lead and add $\frac{1}{4}$ its weight of nitric acid diluted with its bulk or twice its bulk with water by which Chlorine is expelled and the Lead left in the state of

Thomas Robt Sewell of Carrington in the County of Nottingham Lace manufacturer for Improvements in manufacturing White Lead. 14 July 1838
See Repertory vol 15 page 200

1st He makes oxide of Lead by taking yellow Lead and heating it and hot for 3 or 4 hours then cools it in a close vessel - Second He precipitates White Lead from nitric or acetic acid by a carbonated alkali and also by Carbonic acid - Third He obtains Carbonic acid from charcoal and Gypsum - charcoal & sulphate of Barytes - Charcoal and sulphate of Strontia and Charcoal, Carbonate of Lime & Lead ore and by passing steam over red hot charcoal. Fourth He claims a new mode of washing under pressure.

There is no recapitulation in a claiming clause

John Woolrich of Birmingham - Professor of Chemistry
for an improved procss for manufacturing Carbonate
of Lead commonly called White Lead 11th Sept. 1838
Specifn pubd Repertory vol 11 page 354.

His plan is grinding metallic Lead in a tube with
acetate of Lead and using Carbonic acid to con-
vert the substance produced into Carbonate of Lead.
Other solutions may be used as Solution of Protoxide of Lead
in nitric acid or a solution of Carbonate of Potash or
Soda in water or weak acetic or nitric acid

-

Horace Covy of Narrow Street Limehouse. Bachelor of Medicine for improvements in the manufacture of White Lead. 3d Novr 1838

Specification in Repository of arts Vol 12. Page 234

His plan consists in acting upon a basic solution of Lead in acetic acid by Carbonic acid which latter he procures from Limestone in the burning of Lime. The gas is conveyed into a chamber in which the solution is exposed to its action in finely divided streams. Claims application of Carbonic acid obtained from Lime and mode of exposing solution to its action.

John Leigh of Manchester Surgeon for an improved mode of obtaining Carbonate of Lead commonly called White Lead. 28 February 1839.

= Repertory vol 14 page 102

He dissolves Galena in Nitric Acid and converts it into Chloride of Lead by Common Salt. Upon this a Nitrate of Lead or Sulphate of Lead he acts by Carbonate of Ammonia from Gas Liquor to make it into White Lead

Claims dissolving Galena in Nitric acid and use of Carbonate of Ammonia on Salts of Lead

Charles Slade of Liverpool. Chemist for certain improvements in the manufacture of White Lead. 20th July 1839.

Claims first mode of converting Oxide of Lead into sub acetate of Lead and obtaining them from the White Lead by injecting Carbonic acid Gas into it. Second mixing Steam and Carbonic acid together and injecting same into do. He has another plan of collecting into and injecting from Hydraulic Holders the acid Gas. He also claims a mode of making White Lead by subjecting Lead to a great heat and obtaining a vapour from it into which vapour when in a volatile state the Carbonic acid Gas is injected and the Lead deposited.

H L Pattinson of Benham Grove Gateshead Manufacturing Chemist - for Improvements in making White Lead - 10 September 1840

Specification Inrolled in Repertory Vol 15 page 292

Geo: Wildes of the City of London. Merchant. For certain Improvements in the Manufacture of White Lead dated Decr 16th 1840.

George Wildes of the city

Large bridges of the city

Paid for opening the Office at Whitehall } 10 " 6

attending for Appropriation } 6 " 8

Paid enrolling 1 " 2 " 0

£ 141 " 15 " 4

Of this = fees to Law Officers

Secretary of State with petition } 2 " 2 " 6

Attorney General for Report } 4 " 4 " 0

Kings warrant 9 " 1 " 0

Kings Sign Manual 15 " 18 " 6

Secretary of States do 9 " 1 " 0

Keeper of Privy Seals warrant } 5 " 0 " 6

warrant from Keeper of Privy Seal to Chancellor } 4 " 15 " 6

Passing Great Seal 52 " 7 " 0

£ 102 " 10 " 0

Brt. over £123 " 2 " 0

1840 Nov. 1

Postes Letters and Messengers —	1 " 0 " 0
Dec 7 – Instructions for Specification	13 " 4
Drawing same	1 " 16 " 0
16 attending Mr. Rotch with do	6 " 8
attending Mr. Rotch for drafting Specⁿ	6 " 8
Paid Mr. Rotch	5 " 10 " 0
Engrossing 16 folios	10 " 8
Paid for Stamps	5 " 3 "
attending execution 2 clerks as witnesses and Mr. C as master extra taking acknowledgment	13 " 4
26 attending at the enrollment of sic therewith	13 " 4
Paid for opening the Office it being a holiday	10 " 6

attending for Spec-

Paid [illegible] 5..0..6
10 agents attending

to obtain warrant of Keeper of Privy Seal } 13..4

11 attend the Keeper of the privy seal for his warrant to the Chancellor to affix the great seal } 13..4

Paid for [illegible] 4..15..6

16 agents attending to obtain warrant of the Chancellor } 13..4

Pay attending the Ld Chancellor's secretary with the privy seal warrant for patent to be made out and sealed } 13

Paid for preparing warrant [illegible] engrossing the Patent and Stamps and for passing the Great Seal } 52..7..0

Solicitors fee on Patent } 10..10..

[illegible] £192..3..

Brought over 20..
40

[illegible] agents attending at the Patent Office with the Warrant and attending and bespeaking Bill for Kings sign manual — 13..4

Paid for it — 15..18..6

attending for Bill — 6..8

attending at Secretary of State Office to get the same and afterwards to bespeak sign manual — 6..8

Paid for sign manual — 9..1..0

attending to obtain the same — 13..

5. att[d] at Signet Office Westminster with same and bespeaking Warrant to Keeper of Privy Seal — 13..4

Paid for same — 5..0..6

10 agents attending

to obtain Warrant to Keeper of Privy [illegible] — 13..4

Extract from Carr and Wings Bill for Patent

1833

Augt 22	Instructions for petition for Patent	6 8
	drawing same	10 0
	drawing & engrossing affidavit & Support	10 0
	paid for Stamps	2 8
Sept	Agents attending at Secretary of States Office with petition & affidavit	13 4
	attending at Secr of States Office for petition answered but it was not ready	6 8
	attending again that day when they obtained it	13 4
	Paid	2 2 6
	att to the Attorney General & thereto for his Report	6 8
	Paid	4 4 0
Oct	attending to lodge same at Secretary of States Office and respeaking the Kings warrant	13 4
	Paid for it	9 1 0
	3 Agents attending for Kings warrant	13 4
	Carr	£ 25 3

These two are all that occur from 1815 to 1823 both years inclusive

=

None from 8th Sept 1826 to 6th Feb 1830

=

92000

George Frederick Hagner
late of Philadelphia for
certain improvements in
the art of manufacturing
pigments commonly known
by the names of White
Lead & Verdigris
27th January 1818
6 Months

=

To John Sadler of Penning-
ton Place - Lambeth - Sur-
rey Gent: for his new or
improved method or pro-
cess of manufacturing
Carbonate of Lead for-
merly denominated
Cerusse but now commo-
nly called White
Lead - Sealed 3d Janr
1821 - 6 Months

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0 Inch 1 2 3 4 5 6 7 8
Wellcome Collection

Feb 29 - 1840 - New York

Rossie Lead Mine

20 miles from

bought - St Lawrence

State of New York

Company

Dated Jany 2

L. Moody -

George Ran

The Wellcome Library