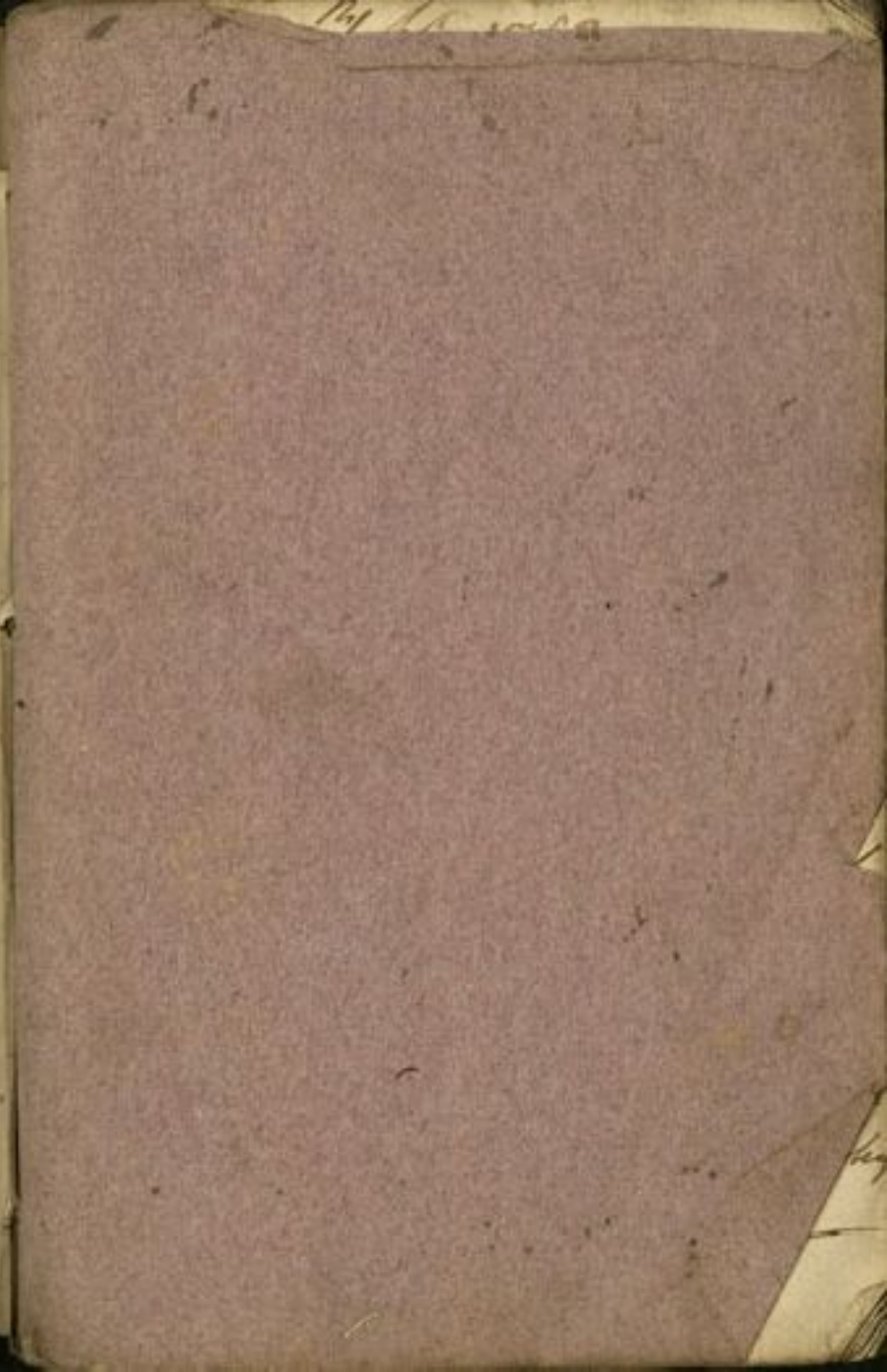
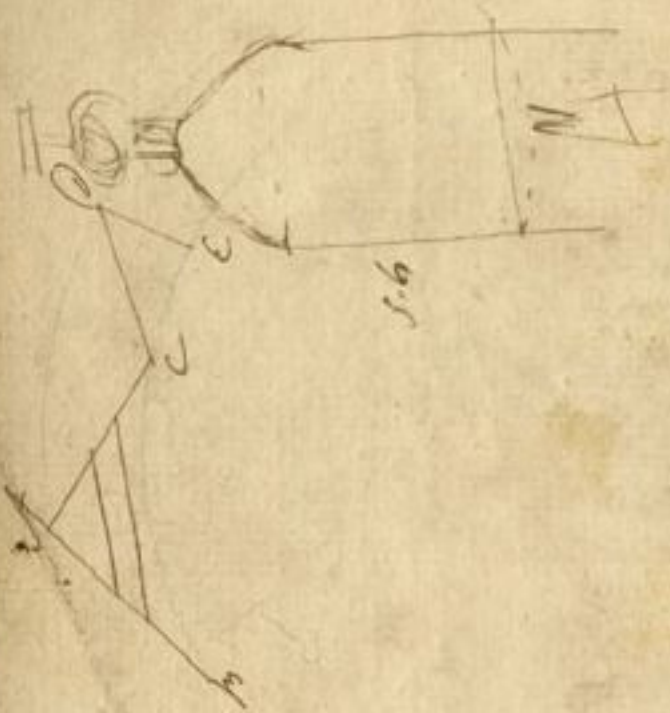


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Dublin 7<sup>th</sup> Sept. 1782

428. If a small quantity of steel  
is thrown into melted copper  
or common metal it will render  
it quite tough, this is now  
done in casting mortars &c.

X  
429. The royal observatory at  
Paris has no instruments  
equal to that of Greenwich  
Observatory not be so much  
expended on — D. H.

~~430.~~ The best Gun metal is  
composed of copper and brass  
and a small quantity of steel  
but if melted in a wind fur-  
nace the surface of the metal  
should be covered with arsenic  
to prevent the surface from roasting  
M. H. —

431. A sweep added to an overshoot  
mill is a disadvantage. Mr. H.  
found that with a core his ham-  
mer mill could not be made to  
perform more than 80 revolutions  
in a minute but taking away  
the core and placing an iron  
plate, he had 130 revs in a  
minute. —————



432. Sketches which should  
not be used where there is a  
scarcity of water — Mr. H.

433. The moon according to  
is now in crisis, and does  
this affect the weather, can this  
uncommonly bad summer  
and harvest be owing to this  
cause? —————

~~434~~ A machine composed of two  
concentric circles one moveable  
within the other each divided  
M into a hundred equal parts.  
The interior moveable one turns  
an index which revolves once  
for every ten of the inner circle  
This index moves on a plate  
divided into ten parts. This  
machine will sum any number  
whatever in an easy manner.  
H. H.

~~435~~ If condensed air is sent down  
into the diving bell, can ten  
M syringe equal answer better  
than best

~~436~~ To make flexible tubes  
water tight spin Crocus  
M in a spirit form <sup>new</sup> in the best  
bands and cover it with leather  
sewed with wax thread?

437 The spheroidal form of  
Jupiter can be observed and  
is taken to account in the cau-  
sation of the Eclipses of his sat-  
ellites.

438. The spheroidal figure of  
the earth cannot be observed  
in an eclipse of the moon.

439. The earth's shadow reaches  
no more than three times the dist.  
of the moon, but on account  
of the refraction of the atmosphere  
it ends in a point on this  
side the moon.

440. A stroke of a hammer that  
will break a solid cylinder  
7 1/2 of cast iron will have little  
effect on a hollow cylinder of  
the same diameter. M. Ricci.

~~441~~. Would it be of any advan-  
— tage to fix down the end of  
M joint or girder?

~~442~~. The inclined pump is the  
— simplest and best for drain-  
M the foundations of buildings.

~~443~~. The Chain pump is liable  
— to more accidents than the  
M above mentioned

~~444~~. Every Hydraulic app-  
— should have a number of  
M models of valves

~~445~~. Might not inventing any  
— combination of pulleys prove  
M that the upper pulley gives  
— no mechanical advantage?

~~446~~ What is the best method  
of clearing the foundation of a  
M. building of water, which does not  
exceed ten feet in depth —

~~447~~ You can make the soil to be in  
action when it exists so many ad-  
vantages to the touch from solidity —  
solidity the effect of cohesion & ab-  
solute attraction, and all<sup>th</sup> implies  
activity —

~~448~~ A man's Math<sup>o</sup> is incapable  
of examining the works of nature —  
By his sense of his time and  
angles and he is at a stand  
— Euler: imagine that if the all  
you had destroyed the planet must  
be annihilated —

x  
~~449~~ — Man has discovered the source  
of his own ideas, has anatomized  
a particle of light, (Descartes) has



of its thunder, and sound the bells  
in chains

X  
450.  
X — Two Kingdoms of nature depend  
on each other — Connecting link in  
susceptible — Animal and Veg:  
resemble each other in their prop:  
— Plants from seeds Animals from  
eggs — Reproduction of sex in both  
— both are sometimes propagated by  
slips — Polyfers — sea nettles —

X  
451. Why does the succubus plant  
X shrink from the touch - why  
does every part shun (darkness  
and) stretch towards the light -  
branches shoot down warts - and  
stem upwards - that they seem  
at night as if the whole to rest  
moving plant - comes fly trap.  
- if this is owing to mechanism  
show the law by which there  
are rept. and on which they rest

452. If 5 parts pure Lead 3  
Tin and 2 Bismuth are  
<sup>fusion</sup> melted together they compose  
a metal that will melt in  
boiling water or on paper  
held over the flame of a candle  
N. H. — c

453. The Dishring of a wheel  
in shows of the Dent from the  
Carriage and the nave —

454. If two pieces of Copper  
are brought only to a blood  
red and laid together so  
that they will unite as  
intimately as if they had  
been in fusion, this takes  
place with no other metal

455. Tycho's objections to the  
motion of the earth

1. Because it is not perceived
2. Stone thrown upwards &c —
3. Fall off — the <sup>we</sup> might expect  
for an obstacle blown &c.
4. Scripture —

X  
456. One might say a just man  
is said to have been the first  
who was likely to suffer for main-  
taining the motion of the earth.

X  
457. An observer would first  
perceive that the sensible horizon  
is distant according to the height of  
the eye — On the top of a mountain  
he sees farther than on a plain  
the sun shines on the tops of  
he reaches the bottom of mountains

when the earth is flat the water  
would continue visible till it  
reached the curvature and then  
disappears all at once — Nay the  
boat is day — This demonstration  
— The Traveller, under the sun  
on Monday at 12 o'clock,  
one traveller went east of the  
sun, he has the sun always  
in the Zenith, consequently  
reaches the same day at his  
return, because the sun has  
not set; the other will call  
it Tuesday —

458. In every piece of mill  
— with cog and cog is preferable  
to cog and bevel, because  
in the former case the friction  
is and was in both, in the latter

it is lost in the flames of the furnace  
It is our object to make the brand  
burn on their axes.

~~457~~. The following composition will  
— greatly diminish the pitting  
— of wood on wood, In a gallon  
M of oil throw as much powdered  
— black lead as will bring it  
to the consistence of thin cream  
boil a small quantity of beer  
wax is necessary to give it con-  
sistence —

~~460~~. Best proportion for bell me-  
tal is 100 Lib Copper. 10 Tons  
one Quarter of Antimony —

~~+~~ The Coll: bell and St. Marks  
are related to each other The  
Coll: weight is 16 Cwt. St Marks  
13 Cwt. — Bell metal should  
be put into pigs —

~~161~~ To turn Lead into, clean  
it well and immerse it with Sol.  
Ammoniac. then when pretty  
hot dip it into melted Lin and  
it will take up a sufficient coat

~~162~~ Bubbles with an unstable  
lime finely powdered make  
a strong cement which dries  
immediately

~~163~~ Juice of Garlics a good  
Cement - long in drying

~~164~~ Composition of 5 Lead  
Lin & Vermilion will melt  
in boiling water

~~165~~ Will black marble perfectly  
a white powder in the muriatic  
acid?

~~The~~ The Gothic Architecture  
is <sup>equal</sup> to the ancient in Power.  
In circumstances in which the ancient  
are most commonly admired, i.e.  
in strength, and superior in solidity.

Method of laying the foundation  
of bridges

~~2<sup>nd</sup>~~ A quality building one even  
with terrace masonry, i.e.  
part of the lime must be un-  
slaked and reduced before it  
is mixed with the sand.

~~3<sup>rd</sup>~~ In springy ground piles  
are frequently the worst method  
of securing foundation, they  
calling the ducts they lay the  
after lay the plate under  
water.



~~470~~ There is a particular kind  
of earth found in Derbyshire  
on which if oil be poured  
it takes fire -

~~471~~ In some parts of the east of  
England particularly about  
Thurlthorpe are a great many  
ditches, than there is one in  
1 or 10 years the mud thrown  
out on one bank produces  
a crop of white mustard suf-  
ficient to defray the expense  
of cleaning. There is no mud  
in any part of the country

~~472~~ What is the best method  
of hooking and salting  
W<sup>h</sup> up any skins in water?

~~W. Bolton~~ W. Bolton of ~~Prussia~~  
M ~~reports~~ reports that a cylinder of ~~Copper~~  
is a steam-engine will give a  
circular motion in effect equal to  
four horse

~~W. Bolton~~ With the sun's rays collected  
in a lens fire a body in vacuum.  
M. Their reports they will not.

475. Phosphoric matches, com-  
position

476. A clock to alarm and  
M then light a candle

477. To alarm a house in case  
of fire - Hang a large wire to  
M to the ceiling by the metal which  
will melt in boiling water.

478. It is a curious circumstance  
that condensed air does not sup-  
port life and flame in proportion  
to its quantity. In the diving  
bell an animal will live no  
longer at any Depth than  
in the same space at the  
surface — W. Sp — 7

479. It is remarkable that  
fossils imprinted with soft  
or vegetable substances  
in many <sup>parts</sup> of England  
are seldom to be found  
on the surface — I have  
seen a piece of sugar cane  
found in a mine in  
just below the  
surface —

480. Has a dead body any  
smell in water? It is said  
that the bodies in the royal  
George furnished a most offensive  
smell.

481. In the Diving bell two  
— people cannot keep their  
In faces near each other the  
— breath is extremely offensive.

482. The houses in London  
— have no party walls, every  
In house has its own wall.

483. Fires are much less fre-  
quent in Dublin than in London  
or any other great city. This  
is said to be owing to the  
particular property of the  
Mortar —

484. It is alleged that there  
is plenty of iron ore in  
Ireland yet it cannot be  
wrought for want of wood

~~485~~ for the Steam Engine  
— forcing pumps are never  
in use — Common sucking  
pumps — Pump rods of  
cast — Pist. beams to sup-  
port the great weight —

The water from the mine  
corrodes the boiler — sulphur

~~486~~ An inch of water pro-  
duces a cubic foot of steam  
— According to Mr. Watt the  
proportion is as 1 to 1200

~~189~~ Smoke ascends in a  
Shimmy in a spirit, from  
vents should be round. —

~~188~~ A Good steam Engine  
will make about ten  
M strokes nine feet each in  
a minute.

~~189~~ A Fly should move  
through about 32 feet in  
M a second. N. W. — to

~~190~~ A contrivance for perform-  
M ing work in the kitchen  
what is  
mentioned above. —

~~191~~ A contrivance to make  
M windows fall down of them

silver when a shower comes  
on.

~~179~~ <sup>on steel</sup> Phosphoric spar, its  
powder thrown on a hot  
iron appears extremely lu-  
minous. —

~~178~~ <sup>Explosion</sup> In a <sup>Explosion</sup> steam  
— the piston should work  
<sup>177</sup> near the bottom, for when  
it works high the smallest  
air leak will prevent its  
action. — In the steam Eng  
the strokes of great valves  
make the whole engine  
shake. —

~~176~~ <sup>176</sup> Will dissolve lead when  
sour, this has given rise

to the purpose practice of  
 forming wire into lead vessels  
 to contain it sweet. - Does how  
 can the lead <sup>be</sup> exhausted? -

~~179~~ In Lavoisier's museum the  
 streams of light were made by  
 rods of twisted glass burning  
 in the air.

~~180~~ To clear a water pipe of  
 its air -



A B C is a water pipe on the  
 upper bend of the pipe common  
 meeting with it. A small plug is  
 placed at B a foot downwards  
 it is kept tight by a beam and weight



44. A piece of wood  $h$  is connected  
with the valve by a chain.  
When the vessel is filled with  
water the wood rises and the  
valve is shut when the air gets  
into the vessel the wood descends  
and the valve is opened the air  
escapes. — L. H. —

~~44~~ To evaporate salt water  
a large piece of broad cloth  
may be turned on rollers  
continually, one roller in  
the water —

~~45~~ The new reflecting  
telescope <sup>is</sup> in shape like  
an apothecary mortar  
it is placed with its long  
diameter uppermost

firmly polished on the out-  
side; a row of lamps are  
placed round it.

~~1799~~ This Day Saturday the

31<sup>st</sup> of May 1753. My

friend Mr. Henderson and I

stepped into a tin shop

and bought two of the new

invented phosphorus matches

we went to Henderson

room set to work and in

about two hours produced

matches equally good with

the French ones in point.

Mr. H and I have agreed

to set up a manufacture

of this kind

~~500~~ The Allum Phospho-  
res put into small  
glass tubes, and mixed  
with nitre will probably  
light a taper with powder  
on it.

~~501~~ Oyster shell will  
produce a good hole in  
Sulphur without  
Sulphur - L. N. -

~~502~~ A weak red wax  
thin spring beak on the  
sunder web of the web of  
slight of Newcastle is  
tarnish wound with the weak  
web. This has given rise to  
Hypothesis & Song.

~~the~~ ~~Friday~~ Monday the  
2<sup>d</sup> June at 12 o'clock I  
received the melancholl, and  
of the death of Mr. the Spot  
being in the Downy vessel. He  
was engaged here with the under-  
writers to save on the East  
India ship which was  
lost on the 15<sup>th</sup> last  
off the coast of New Britain.  
On Monday the 2<sup>d</sup> June  
about 4 in the morning  
the vessel down with a  
young man of the name of  
Watson from Glasgow. They  
were brought up in the  
bell to the dead. —

X  
504. This day I saw some  
new Soap on the Ethereal  
papers which did not  
melt.

~~505~~. Capers: Glass Men  
then took other Glass yet  
had this property, when  
heated red it appeared  
a beautiful ruby col-  
our, which it retain-  
ed after Beads &c.  
are made of this

~~506~~. The expense of erecting  
a steam Engine is cal-  
culated in this way  
Square the Diameter of

The Cylinder in inches gives  
the capacity in pounds  
This will answer for small  
sized Engines that is from  
20 to 50 inches, but in  
small engines it is too little  
in large, too ~~small~~ <sup>much</sup>. —

~~X~~ 07. This Day Sunday the 8<sup>th</sup>  
of June 1783 I attended the  
funeral of Mr. Spalding of  
his apartment. There were 20  
knew been interested on this  
Day but but of there were  
no signs of preference  
on either, it was judged pro-  
per by the Physicians to  
keep a Day or two longer

It is remarkable that they  
continued quite fresh and the  
same their natural colour, the  
muscle was also quite fresh  
on the Seventh Day after Death.  
The cause of this unfortunate  
accident is not sufficiently  
known various conjectures  
some of them much against  
the people who had the  
management.

X  
508. What is the best method  
X of proving that vegetables  
produce a quantity of gas  
in water and that the  
smell of dead bodies can  
be propagated thru'  
water? —

~~Sag~~ A stone mill for both  
sand & gas. The stone should  
be at least 12 inches broad  
& very heavy. radius of  
the circle should be small  
it then acts pretty as a  
muller.

~~500~~ ~~500~~ Boiler & wheels  
M Engine will raise 500,000  
cubic feet of water 1 foot high for



every hundredweight of Coals.  
The old Engine only  $\frac{1}{4}$  of that  
quantity.

~~III~~ Bolton and Watts Engine  
will work <sup>load</sup> with 11 pound  
M in the square inch of the Cy-  
linder. The old Engine  $6\frac{1}{2}$   
Lb on the square inch.

~~III~~ An Engine would as  
a low work run strokes  
M in the minute, each min  
fet.

~~III~~ One of these Engines will  
work a pump as high as  
the Cylinder to the height  
of 24 fet.

314. A pump 5½ bore with a  
 stroke of 6 feet will raise 7½  
 Gallons. — If the Diam. of the pump  
 is squared and to this be added  
 the square of the Diam. and the sum  
 multiplied by the yards in  
 depth the product gives the  
 weight of the Col. in pounds.  
 In this case it is

$$\begin{array}{r}
 5.5 \text{ Diam. of the pump} \\
 5.5 \\
 \hline
 27.5 \\
 27.5 \\
 \hline
 30.25 = \text{the Diam. part} \\
 .65 \\
 \hline
 30.98 \\
 70 \text{ yards deep}
 \end{array}$$

$$\begin{array}{r}
 7.1 \overline{) 2165.10} \text{ pounds weight to be raised} \\
 \underline{2165.10} \\
 30.6 \text{ inches}
 \end{array}$$

305 (17.4 Diam. of the Cyl. —  
 27 | 205  
 34. | 1600 old Engin would  
 take a Cyl. 21. Inches —

In this calculation there is <sup>about</sup> 7.1 lbs  
to the cubic inch at the rate of  
9 to a square inch, at which  
a good fraction of water con:  
will give 12 strokes in 10  
minutes. The Diameter of the  
surface of the water in the  
boiler should be four times  
that of the Cylinder here it is  
 $17.4 \times 4 = 69.6$  inches  
For the quantity of steam a  
Cylinder 6 feet long and  $19\frac{1}{2}$   
inches will contain about  
10.1 cubic feet of steam.

The Common sea water con-  
tains about  $\frac{1}{2}$  oz of salt  
to the Gallon, if made into  
salt in the usual way it  
will require 3 Tons of Coals  
to one Ton of salt, but if  
evaporated first in pumps to  
a brine of 74 Lit to the cubic  
foot 7 Lit. of Coals will pro-  
duce a Ton. The pumps  
should be divided into  
pans, the water rises in  
vacuum, the Evaporation may  
be greatly promoted by  
pumping up the water  
to a certain height and let-  
ting it fall through

needs. The brass should not  
be incorporated to produce more  
than 74 per cent in the <sup>crystal</sup> ~~crystal~~ part  
otherwise it will crystallize  
before it boils and the salt  
will be impure. —

Exp. A roller is three feet  
diam. a piece of wood laid  
on it and pushed pressure  
was brought to bear the  
glass of the roller.

Manchester — In Manchester after  
~~the~~ repeated trials could not  
possibly fix a particular  
kind of yellow in a case one  
of the workmen an American  
the effect a can of butter made  
when the piece was taken  
out to the great surprise.

Monday the  
of August a fine ball passed  
over Manchester in a dark  
blue ~~ball~~ it was of an oval  
figure, of a beautiful orange  
colour on the front and  
on the other side of the middle  
it was followed by a long  
train of light which in  
some places seemed over  
spread like a comet.

of the Proprietor it was of the  
color wanted, he then has  
recourse to the mineral acids  
as to Vinsgar, preparing it  
sometimes in London & other  
in Birmingham &c —

~~III~~ III III Why cannot cotton  
be dyed? —

~~III~~ III III In Dyeing may not every  
color be considered as a  
Crystalization? —

~~III~~ III III A Cording Machine will  
— turn or twist Yarns  
in a woman can card  
pounds a Day. 35 Rolls  
in a Minute each 100 lbs

is length and <sup>Amount</sup>  
She has <sup>J. Little Condon</sup>  
The machine is lent at <sup>for</sup>  
week

~~577~~ What is the smallest  
sample that the best micro-  
meter can determine? -

~~578~~ Mr. Brydson in a letter  
to Doctor Eason mentions the  
following curious fact, given  
him by a man who was hatched by  
a hen and brought forth, the  
cock met with his hen who  
had been his favorite mistress  
his spurs offering our  
friend and encourage him he  
flies upon the hen and did  
not leave her till she was

put to death. The house keeper  
hearing a noise went out and  
found the hen in her nest  
• upon it with the cock still  
trampling upon her, she  
seized the cock and threw  
him much about. —

§ 23. The attraction of the  
earth does not exist in  
one point or center, but  
is diffused over the whole  
proved by Maskelyne's Exp  
on Schiehallon, and  
• experiment of weight  
a body in a shaft 600  
yards deep. — This test not  
conclusive. —



#24. The surface of the  
earth is its general  
top & the center  
is the bottom.

X  
325. The reservoir at Springfield  
X was let the ground rent for  
200 £ when a reservoir was  
asked, the proprietor thought  
of asking 500 £ but a friend  
told him he should have  
200 and if he would give  
him the management he  
would get it for him, he  
got 500 £!!

Sheffield 6 Sept. 1787

~~226~~. A good buck Net  
of the com: construction  
requires of Coats to  
a thousand bucks

~~227~~. A good Lin: Pick of  
the com: construction  
requires coats for  
every hundred bushels of  
Lime

~~228~~. English Steel is now  
made in greater profusion  
than ever in the world  
and is made use of at  
Sheffield in almost every  
branch of Cutlery &c.

~~528~~. In the iron foundry,  
at Sheffield very long  
Cent iron requires  
In of coals - three rollers are  
preferred to two in the  
plateing machines.

~~529~~. In the cutlery bus:  
The blade is all steel and  
In of the same kind - In edge  
tools part only is steel.

X  
530. A manufacturer in Man.  
X chate<sup>re</sup> who made any  
goods above one penny  
to yards, gave his dau<sup>ghter</sup>:  
Twenty thousand pounds  
W. J. Mack

X  
531. In collecting materials  
for a course of lectures on  
arts and manufactures  
it will be useful to train

M specimens of the Manufacture  
in the different stages of the  
work

~~532.~~ Copper will throw out  
more than eight times its  
weight in Dross, without  
losing any part of its weight

X  
533. New metal for the bolts  
and nuts of the gun, the iron  
is entirely corroded by the  
M copper, was invented at  
Birmingham Patent.

X  
534. Walker's Eucrasium was  
made at Birmingham and  
cost 40 £

535. Good specimen metal  
M is extremely brittle

~~536.~~ It is possible by just  
passing by an Electrical  
M machine to destroy its power  
and without touching it.

537. The hair which came  
lick off from the  
the stomach of a very  
extraordinary nature  
I saw one with Mr. Wil  
son in Sheffield in  
the form of an orange but  
flatter it's greatest diam.  
was above four inches

The outside was protuberant  
The inside consist of hair peep  
quite close together.

~~538~~. The has a tongue  
consisting of three pieces move-  
able on two joints each of them  
the length of the bill. It lays  
itself on the ground, stretches  
out its tongue, when covered  
with earth it immediately  
pulls all in to the mouth.

X M. Webb. No. 539.  
+ In an extensive view of  
the bowels the numerous  
veins which surround the  
intestines are swollen to such  
a size as to contract and shut  
up the bowels entirely, hence  
a passage in this state must

help by vomit, hence the ne-  
cessity of endeavouring to lessen  
the inflammation by bleeding,  
bathing in warm water &c.

540 ~~X~~ Stone in the bladder  
~~X~~ is frequently formed from  
cathartical blood some  
of the vessels of the bladder  
becoming the blood cannot  
be discharged thro' the or-  
dinary passages.

541 Two bells ten or twelve  
feet diameter were said  
to be filled with inflamm'd  
air at Paris. They were  
in the atmosphere of a  
cist of eight. one of the them  
fell at the distance of four  
leagues — !!!

~~542~~. A pin may be bent on  
the point of a needle either  
in a vertical, head, circular  
M or horizontal, by means of  
a cork and two forks -

~~543~~. Cox's pin is supported  
by two pieces of glass  
made by Cox and Parker  
M at their glass work ~~shop~~  
south side of <sup>the bridge</sup> ~~the~~  
bridge:

X  
544. The Iron Earth and planets  
X in Walker's Endomania  
M was made of pins and horns  
Zinc, were they globular  
or flat? globular



545 In charging an air  
gun one should be taken  
not to work the condenser  
too fast for if this is done  
a quantity of inflammable  
air is produced which one  
must one of Mr. Wilson's  
magazine it is owing  
to this that sometimes a  
single stroke of the piston  
will charge a ball that  
was not half full —  
Mr. Wilson makes his  
condenser of cast steel and  
bores them out of the solid  
He makes also the maga-  
zine better of steel —

~~title~~ In grinding the blade  
of a knife they grind but  
one side at a time, if  
both the knife would heat  
so much that it would lose  
In the temper. They make  
use of two stones called  
a polisher. Good hand  
will grind *W. J. Day*  
and has *J. Deane* —

~~517~~ In the light covering  
from the discharge of an  
air gun. Electrical is  
it inflammable air from the  
air.

X  
548. The love of novelty is a  
X most useful ingredient in  
the human composition, to  
this we are chiefly indebted  
for all our Discoveries, our  
admiration of the Universe  
is soon transfus'd to those  
objects which it contemplates

~~549.~~ Telescopes tho' drawn  
out to their full length  
will seldom show the object  
distinct except in one position  
turn <sup>round</sup> some of the pieces the  
object will not be distinct

~~550.~~ The wind that blows over  
fired with two wads a  
wet wad next the powder with  
a dry one above, holds  
in a better form when  
drawn thro' a Magazine - E

357. The Spanish batteries were  
some of them 14 feet high  
made of masonry with a glacis  
but the ditch, in the fort  
the cannon were heated so  
much by the fire which rained  
on them that they were partly  
melted. The sortie was composed  
of about 2000 men they  
marched <sup>one division</sup> along the Causeway,  
only two or three only 4  
were killed, and one Capt.  
an old man who lay  
down thro' fatigue. This  
was commanded by Gen. Proff,  
Had the Spaniards in the  
night had done their  
duty they might with ease

shot have made was not  
among the English

552. The Bull: she is extended  
but to a small distance  
below the King, reaching  
The Admiral even a year  
the back, the Garrison  
thought she had found  
and the sailor gave her  
cheers, she righted with  
the tide.

553. Besides the Anchors at  
head and stern she had  
two great anchors which  
could not be used by  
any of our Shot. —

5.64 Capt. Curtis Gun boat  
was Down near Europa  
he was awake? about  
mid night and told the  
Boatmen, Skiff was on  
fire. he then went up  
above the Gun Bat:  
and kept at a Distance till  
he was told by a trumpet  
from the Kings Boat that  
the firing from our boat  
would cease. he then ad-  
vanced but did nothing  
to Discover the high End.  
he received Major - E -

555. The soldiers being in  
ground was formerly a  
low part, the last man  
who was buried there was  
during the siege, his spade  
fell upon them all the  
time, they soldiers swore  
that they would enter the  
conscience of the O-D  
Dons should point at  
the guns at them.  
The true ground is now  
near the south end of the  
red sands

556. There is little or no  
dear on Gile. in the same  
man or harvest, great  
in the present.

555 The soldiers  
ground was for  
land post,  
who was  
during  
Friday  
time  
the

557. General Elliot was  
in the Kings boat during  
the Engagement.

558 On the Causeway only  
3 men can walk abreast  
at high water at low  
low or twelve - The tid.  
runs 3 or 4 feet - The sluice  
is near the foot of land post  
Glavin - Cover post is a  
work on the Causeway  
beside land post.

559. There never were any  
guns either at Fortes  
on the bay side -

560. The old gun battery  
threw bolts into the K. boats  
on the day of the assault.



561. The Spaniards called  
Zet. Brown Oil Suez  
the old name the Devils  
tongue Is. —

562 The bettering shops  
had canals of water in  
their sides to prevent the  
effects of fire — It was  
supposed that the sinking  
of their own cannon  
would in time have  
sunk their ships as the  
Mumps were alleged to  
be kept continually  
going. — They are  
called by the Spaniards  
juntas de agua —

563. The new work  
cutting out in the rock  
with a gun finished by  
the most extraordinary  
in the world. The gun  
was pointed thro' <sup>entrance</sup> Embarassment  
of solid rock. which it  
is impossible to destroy  
It will mount when fired  
Guns - The rock was  
blown with gun powder  
sometimes only 3 feet in  
a day. it is feet per  
Kendrick's above the  
Isthmus.

~~564~~ The mountain feet  
in the north are down  
more always southward

~~565~~ The Double currents in  
the Straights of Gibraltar  
N. N. is owing to the difference  
in spec. G<sup>m</sup> between the sea  
Mediterranean and Atlantic.  
One pound of water of the  
Mediterranean contains  
about ~~half~~ an ounce of  
Salt, but of the Atlantic  
up an ounce. Dr. E.

London Oct  
~~566~~ I am moving a plate of  
brass makes it more porous  
breaks down the porosity  
N. M. C. —  
M. S. —

~~56~~ Optical paradox of the  
Globe is held before it the  
object is seen as distinctly as  
as when removed —

~~57~~ Air pump barrel should  
be screwed down, the plate  
In should be ground thin so  
it unnecessary to use water

~~58~~ Glass with a bladder  
on each end shows the spring  
and pressure of the air — The  
barrel with a deep web and  
cup — M. M. C. — to —

~~59~~ In the optical deception  
the middle figure is not seen  
unnecessary!

571 Steel nuts much more  
readily in warm climates  
than in cold -

572. A new cement composition  
of

~~573.~~ M. Cullach's new method  
for taking a right angle  
it will also serve for level

~~574.~~ A new Glass Vessel added  
to the Whorling table  
cook better, sharp, used both.

~~575.~~ <sup>x</sup> Oe la hines' furnace  
Frank's long rope furnace  
This is not Frank's furnace

~~577.~~ Dutch Smoker -

~~578.~~ Side table added to the  
Whorling table -

From article 531 to 579  
564 Vol. 3 revised  
Suburban - 579,

579. The only accident that  
happened during the ascent  
of the Battersea shaft at  
Zabulka was the following,  
viz. a few cartridges being  
which some ~~was~~ man  
was wounded and Gen.  
Elliot narrowly escaped.

580. Flints are only found  
in Chalk, commonly in  
round pieces from two  
to ten pounds.

581. Martin's App. for  
showing the transit  
of Venus. M. C. S.

582. Eudaphyion, a new  
M. one getting forward in  
M. D. from Denmark

353. Is the pulse quickened  
in the Curving bell?

354. In what depth are sounds  
heard in water? & V. V. a

~~355~~ If a bell is rung in w.  
what is the difference in  
the sound?

356. French air balloons

~~357~~ Made of oiled silk, first time  
I got in France. was sent

up at five in the afternoon  
was heard of next day, it fell  
at four leagues from

Paris, it fell in a field  
where a number of rapiers  
were at work it bounced  
a good while. They people  
was frightened, sent for

6  
The priest, they supposed it  
was an animal, at length  
he attacked it with stones  
and ~~base~~ Clubs, how great  
was their surprise when  
they found only an empty  
ball with a direction to re-  
turn it to the proprietor  
at Paris —

Another Aerostatic Ball  
was made twelve feet diam.  
a Cock, Ratchet & Shear &c  
was sent up, it was Eleven  
hours in the air This was  
made of linen and paper prepared  
in a certain way. This was the  
invention of L. M. Montgolfier



388. Hans Slaw left upon a  
certain catalogue to make  
the British M<sup>useum</sup> purchase his  
museum. In this will he  
left his whole collection of  
at thirty thousand pounds  
if not purchased by Britain  
it was to be offered to the  
Empress of Russia, after that  
to France. A Guinea  
Society was instituted for  
purchasing the whole. This  
raised a sum almost sufficient  
to purchase the bones alone.  
In Hans's house was buried at  
London where a neat  
small monument is  
erected to his memory.

~~589.~~ It is said that the expansion  
of metals is directly as their  
M (density) — M: what — 7

~~590.~~ Hæden's that it is said does  
not expand by heat, & that  
was proved in made use of  
M by M. Whithurst for the  
pendulum of a clock

~~591.~~ In England twenty tons  
of steel is converted into needles  
every week — I am now  
M many needles can be made  
from that quantity? and  
how much waste wire is  
converted into pins? —

~~592.~~ The length of a button taken  
M makes 11,160 revolutions in

a minute.

593 To find the center of a convex lens, hold it such a position before an object, till the spectrum both reflection coincide? That point is the center. —

594. Expt to read in the Quin's bell — 1. Emission of sound whether in proportion to the condensation 2. Temperature 3. Light. 4. State of the pulse. 5. Puffing out called air C. Electricity.

7.

~~175~~ A sheet of air thro' a  
bowed pipe <sup>with an angle</sup> is much dimi-  
nished also thro' a square  
hole.

~~176~~ A piece of oil painting  
on oiled silk will dry in  
a close room, but will not  
if exposed to a stream of  
gold air let into the room,  
it will also dry better in  
the cellar than in the garret.  
W. Middleton

~~177~~ A pump to raise the  
water by the force inde-  
pendent of the spring of the  
air. W. Argart

~~598~~ One cubic inch of iron  
will produce a cubic foot  
of inflammable air, to this  
should be added twice the  
weight of Vit. and add  $2\frac{1}{2}$   
the Vit. in water. —

M. Bryant

599. M. Montgolfier. The inven-  
tor of the air Balloon has  
a great paper manufactory  
nearer the best paper in  
France. The last ball  
sent up in France was  
70 feet diam in form  
of a bucket's head, open  
below, and filled with  
inflammable air &  
burning charcoal. —

X  
600. With the rest of metals pro  
X due inflame "air".

~~Let~~ That smoke is about  $\frac{1}{2}$  vol.  
of Atmospheric air is proved  
by the smoke beginning to  
descend in the receiver of the  
air pump when it is  $\frac{1}{2}$  vac.  
and on the top of the Andes  
the bar. at 15 fath. —

~~Let~~ The freezing point on  
the thermometer is not  
affected by the presence of the  
Atmosphere <sup>where</sup> the boiling point  
The Thermomet. was plunged  
into snow on a mountain  
where the bar. stood at 24  $\frac{1}{2}$   
fell precisely to 32° —

~~603.~~ Chemical affinities  
X may be illustrated by  
magnetic attraction and  
repulsion —

~~604.~~ Might not an air Bell  
X be made of copper? —

~~605.~~ Will Plat.<sup>n</sup> or any  
other power stop ferment  
instantly?

~~606.~~ Will spirits or acid  
X or paper soaked in spirit  
prevent putr.

~~607.~~ Will the flowers of zinc  
produce as much infla-  
g. as the zinc itself

~~44~~ 45. There are principally  
three kinds of Marble  
wholly yellowish & black  
in the yellow there is  
some iron, In the black  
there is either the sulphur  
principle or the iron  
In the former case if the  
marble is reduced some  
it is white, in the latter  
it is black or gray.

~~46~~ 46. In the production of  
influenza of Deftology, as  
as long as the common  
air comes over it is  
clear but when the  
Deftology comes



It appears a whitish ap-  
pearance.

Q10. When air is pro-  
duced as well from phos-  
phorus and the nitrous  
acid as any other, this  
air must be thrown away.

Q11. In preparation, the  
magnesium principle some-  
times escapes and the calca-  
reous matter in turn the  
pores, sometimes the whole  
matter is dissolved and there  
is left a mould which  
is filled with the calc. matter.  
In this case it is only a  
cast. The former soft

may easily be distinguished  
from the latter by the former  
appearing white.

~~12~~ Quantity of materials  
and their value for the  
the production of 100 lbs  
of

Copper plates of 32	£
of 28	154-
of 22	36
Total	232 lbs.

Wax -	40 Cwt.
Paper -	49 Cwt.
Crags, balls &c &c.	56 Cwt.
Yellow, White lead Pozz. Powder &c	5 Cwt.
Tin oil -	98 Gall.
Tin -	22 Bant.
Expenses of materials	£1942-2-10

613. Dimensions of Vessels <sup>9.</sup>  
 Length of the Gun Deck 165 <sup>Ft. 2</sup> --  
 Breadth at extremities - - 51.10  
 Depth in the hold - - 21.6  
 Length of keel - - 151.3  
 Head to stern - 222.6  
 Breadth in Tons 2165

Heights {  
 Lower G. Deck to beam 5.11  
 Middle G. Deck to beam 6.1<sup>1</sup>/<sub>2</sub>  
 Deck to Bulkhead - 213.6  
 Ditto to surf. of water 196.6  
 Gunnet to Ditto 20.3  
Tuffant to Ditto 34.4

Swallowing 8' of water { Fore 22.10  
 as given for the aft { aft 23.8

Depth & draught of water { 16.3  
 when up beam - - { aft 18.3

Sheet 91 1. Space 57.1.14  
 Mast Power 57 0. 21 small 8.14  
 57.0.14. stream 21 0. 14 <sup>bridge</sup>  
 11.1. <sup>21</sup> small 3 3. Total 19 11 1 <sup>Tonks 2.</sup>

Vegetary continued

	March	yards	Pract
Main	38.32.39	33.5	24
Top	22.34.20 $\frac{5}{8}$	23.33	15 $\frac{1}{2}$
Top Gal: 11.17	11.5	16.9	10
Fore	36.15.36 $\frac{1}{2}$	29.16	20 $\frac{7}{8}$
Top	20.34.20 $\frac{5}{8}$	20.23	13 $\frac{1}{4}$
Top Gal: 10.12	10 $\frac{5}{8}$	14.5	5 $\frac{5}{8}$
Main	33.25.23	27.6	15 $\frac{5}{8}$
Top	16.19.13 $\frac{3}{4}$	15.24	10 $\frac{1}{2}$
Row	24.15.36 $\frac{2}{3}$	21.15	13 $\frac{1}{4}$
Spit	mit top	14.5	5 $\frac{5}{8}$
Top Jacks		21.15	13 $\frac{3}{4}$
Yellow	17.15.15 $\frac{1}{4}$		

Gems

Lower G. Dicks 30, 32 pms from 54  
 to 57 cut. each. Middle Gem Dicks  
 21, 22 pms from 49 to 52 cut. Main  
 Gem Dicks 50 12 pms from 32 to 34  
 Quartz Dicks and Dicks 12 pms  
 from 22 to 39 Total wt. 222 6.2 2.

W. James St. Agnes  
near Turo Cornwall

The Rev. Nath. Thornbury  
residing near Minchinhampton  
Gloucestershire

I find the books are up  
to back end of same sea wall  
on N. of 30th. West corner  
at right. Let to the center of  
square west of end of corner  
to the box —

14