12/64

23d Geo. 2. Chap: 13th

[illegible]

[illegible]

T

London 14th Novr. 1785

Volume 1

Chem: 1287. By distilling Volatile Sal Amm: alkali with Lime makes it caustic, with chalk mild, alone it rises in vapour.

Nat. Hist: 1288. There is a Stone found in the Mines in Derbyshire called Slicken sides, it is black very smooth as if polished is found in the center of the rock when it is touched or scratched with the work-mans pick, a violent com-motion ensues, the mass which after some time is exploded wt. prodigious force

+ This is described in Whitehursts theory of the earth — The appendix is the only [illegible]

Chemistry

1289. In the process of separating the fossil alkali from common sea salt, the calx of lead the marine acid unites itself with the litharge and the alkali remains in the water for the reduction of the lead as the acid is evaporated, but it carries with it part of the lead, this, it is said is prevented by adding lime this forms with the acid fixed ammoniac —

Mines

1290. In Cornwall the strata of all the mines of Tin Copper and iron run east and west Lead north and South — see lead in Cornwall —

Nat: Hist:

1291. Coral is found in Devonshire many miles from the sea, the same as that found on the shore, or fished up —

Ditto

1292. It is remarkable there is no death in Russia

Ditto

1293. Were the current into the Mediterranean as found by Exper.ts or Doctor Halley thought this sea would long ago have been converted into a mass of Salt — Query is the Mediter.n Sea salter than the Atlantic, and is there any difference in the degree of saltness in different parts of the Mediter.n?

1294. If feathers are absolutely necessary in flying how does the bat make it out? he has no wings —

Ditto

~~1295~~ 5. A Duck in swimming strikes with the feet alternately a Swan and frog with both feet at once — a frog often swims — which way is the best?

Ditto

~~1296~~ 6. A swan looks majestic in the water but walks badly on land — the cow swims with one foot striking below her belly —

Ditto

~~1297~~. What circumstance induces the hen to swim the oil bag and afterwards anoint her feathers?

Ditto

~~1298~~. When a feather is put long in water it appears big when taken out — The quills of fowls are filled where? To Mr Hunter with inflated air

(1306-7-8.)

~~1299~~. The patent Shot of Mr Watts of Bristol is prepared in the common way but is poured from a height into the water — water serves as a bed — height greater in summer than in W.

Same height 100 feet —

~~1300~~. Shot lead is made in the common way by pouring the melted lead thro' an iron

seive, a small quantity of orpiment
is thrown into the fused lead to
lessen the cohesion — It is poured
from a small height by which
the grains are seldom round — the
side that enters the water is convex
the upper flattish —

Miscell.

~~1301~~. Mr. B—n offered to lay a
wager that he would carry
a nine pound shot red hot
from Birmingham to London
He was to place it in charcoal
in a wooden box this surrounded
with wool or some other non-
conducting substance —

Exper:

~~1302~~. Ice cream is made by
putting the cream into a
~~wooden~~ tin oblong vessel
this is placed in a mixture
salt and pounded ice this
last in a wooden bucket

Chemistry

~~1303~~. Fermentation cannot
take place in a metal
vessel — In every fermentation
about 2 degrees of heat are
produced, this heat is carried
off by a metal vessel as soon
as produced —

Miscell.

X
~~1304~~. In Turkey pork is forbid
Lard is kept very shortly
in Turkey none so in Tartary

no person in the Crimea during Lent is permitted to take any food from sun rising to sun set: this from four years of age —

1305. The Russians bring their ice to market in match[?] repute[?] in Carts this abound[?]

~~1306.~~ Watts patent shot is so round and smooth that when a small quantity is thrown on a saucer it arranges itself in straight lines — The reason to conclude that any shot approaches it will move with the greater certainty in its direction

~~1307.~~ A particular degree of heat in the melted lead is required for

making shot, this is ascertained by trial —

~~1308.~~ In the ~~old~~ common way of making shot many of the grains are irregular, to separate them from the rest, the shot is poured down an inclined board, the round shot run straight down the others off at the sides —

~~1309.~~ In former times signals by fires were communicated thro' the country, may not this account for the appearance of volcanoes on the tops of many mountains? — Colum[?] —

Mitchell[?]

~~1310~~. This Even: Thursday Nov 20th 1755 A Globe with a new quadrant of Altitude was pre-sented to the Royal Society by Mr Smeaton Engineer - The Quadrant is a solid piece moveable on a steel pivot which is fixed on a brass slider this slider is made fast to the meridian by screw pins into holes at small distances, there is a Groove in the sliding piece equal to the distance between the ~~two~~ holes —
The Quadrant cannot come nearer than about five degrees of the meridian on one side
The lower end of the Quadrant touches the horizon, which

is the Globe of nine Inches presented to the Society by Mr S— is a brass circle and has only degrees marked on it —
— The hour circle very large & a Nonius on the Index —
+ of what use this accuracy when the Globes themselves are so inaccurate — papers cannot be laid on equally ——

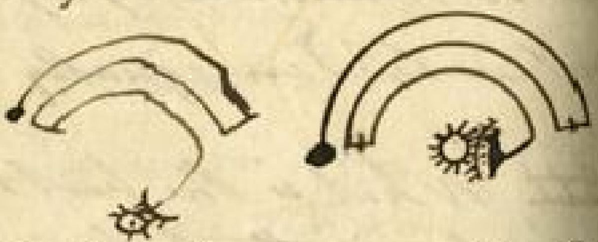
~~1311~~ What is the best method of laying the papers evenly on the Globe?

~~1312~~. A Thermometer in a finger ring, composed of three semicircular pieces of Iron, tin and the inner —

Expt

most of Copper, the iron fixed
at one end to a pin, the
other end of the iron riveted to
the tin the other end of the
tin to the copper, on the other
end of the copper ~~to~~ there is
a rack which moves the center
pinion that carries the Index

Fig:



Invented by Mr. Watch
maker in Paris — It is just
the zinc iron pendulum convin[illegible]
— It is said that he has made
one of this construction so delicate
that, that the heat of the hand

will affect it at a considerable
distance

~~1313~~. The watch maker above
Erhard mentioned has also con-
structed his clock pendulum
and thus —

The inside of
Copper, the outside
of iron —

1314. Mr. Haggren in Sweden
has observed flashes of light
to dart from certain flowers
particularly Marygolds of an
orange or flame colour. this
happened in July and Aug
at sun set and half an
hour after when the air
was serene, but not at
when the Atmosphere was
hazzy or in [illegible]
Mary Gold

[V. Withering]

1315. Gold beaters leaf is ex-
tended not by the stroke
[Exp.ts] of the hammer as such

but by the stretching of
the leaf which after the
stroke shrinks back again
and at next blow takes
hold and pulls it forward

1316. Globes are made by
pasting common brown
paper paper of the wooden
Globe which is greased to make
it come off. It is cut in a
kind of lathe — The paper
is all soaked in paste
the axis is put in after &c.

[Manuf]

1317. In Pensylvania powder
Alabaster is sown by way
of manure on the soil
at the rate of 12 Bushels

[Agricul]

you are. It is said to be an excellent manure. It does not produce the same effect when burnt —

~~1418~~. According to Kirwan Gypsum or Alabaster consists of

Calcareous earth --	32
Vitt: acid --	30
Water -	38

Dr Warton

1419 Gypsum is insoluble in water how then can it contribute to the growth of plants? —

[illegible]

1420. Lime as a manure answers best in cold clayey soil probably on account

Cullen

of the heat produced as the ~~[illegible]~~ farmers commonly say — Some think the effect of lime on the soil is only to destroy the weeds. —

~~1421~~ The soil in the eastern coast of North America is wearing out, the Inhabitants are removing in vast numbers to the back settlements near the Mississippi, have are already settled above 150,000 They have driven the Indians beyond the Mississippi. It is said they have in view the conquest of Spanish America — The Navigation of the Mississippi, and only four

Mr. Monro

Days march over land render the conquest easy from that quarter —

~~1422~~. Sir Thomas Page's manner of Embankments against the sea composed of Fascines sloped 2 to 1 The tide was always kept in by means of a Sluice till the whole was finished — when the tide is allowed to ebb and flow it injures the work — Embankment at Portsmouth —

Engineering

~~1423~~. For horse ferry boats over the Vistula two draw bridges are added to the ends of the boat, by this means when laid down, they afford a safe and easy exit to the horses — This much wanted in G. Britain —

Expedients

~~1424~~. The Rhone is a rapid river about the breadth of the Thames. to prevent the ferry boats being carried down a strong rope is stretched across the river & passes over two stone pillars & beyond which it is stretched and fastened to a windlass. A moveable pulley runs on this cable, to this one end of a rope is attached, the other is fastened to the boat, between the

Bridges

the head and the beam, her position by this means becomes oblique to the stream, the action of which consequently forces her forward, the pulley runs along the rope by starts, sometimes behind, at other times ~~[illegible]~~ considerably a head

~~1425~~. Bad iron is softened by annealing it with charcoal, quere why ~~[illegible]~~ is it not converted into steel? — Metall^y

~~1426~~ Excellent Potatoe Starch may be made by rasping down the potatoes washing several times with water, pouring off, and drying on following prop^s a fine white powder is the result — A small quantity of this in a tea cup — boiling water, stirred rapidly — starch — Quere might not some other ingredients be added to this and an excellent dish made out of these? — Manufacture

~~1427~~. Does not the above process contradict the common opinion that fermentation is absolutely necessary to the making of starch? — Ditto

x
~~1428~~ Travellers are carried from Boston to the back settle^t in North: Am: for four Dolls meat and lodging included — Miscell^s

1429. It is extremely remark-
able that the Black sea
should be ~~fresh~~ salt and
the Baltic fresh, when so
many rivers pour ~~in~~ their
contents into the former;
and a current sets constantly
thro' the sound into the
latter — This contradicts
Doctor Halleys ~~theory~~ account of
the current into the Medi-
terranean —

W. Madison

1430. A Double current seems
the only satisfactory so-
lution of the ~~ob~~ phenomena
of currents, the circumstances
mentioned in the above

V. Madison

evidence

seem to confirm this. It is
also observed that there is
an outward current on the
Africa coast, into the Atlantic
— Under current in the sound —

1431. If froth is blown over the
surface of a fluid the fluid
approaches the side next
the mouth — The double
currents in mines, in the
door of a room where there is
a fire, in the Atmosphere,
All serve to strengthen the
above opinion —

Exp.

1432. Three fowls may be put
on the same spit and exp-
to the same fire, one

Chemis

shall

that be varied the other
shall be boiled and the
third shall be quite raw

~~1433~~. Regular fortifications
are said to have been
N. History discovered on the banks
of the Mississippi built
before the Spaniards
invaded the country —

~~1434~~. For making Ber:
Volatile fulminating
Chemistry powder there is no necessity of exposing the receptacle to the air.
— The Caustic Volatile al[illegible]
dissolves the oxide by

evaporation Chrystals are
formed, these Chrystals will
explode under water —

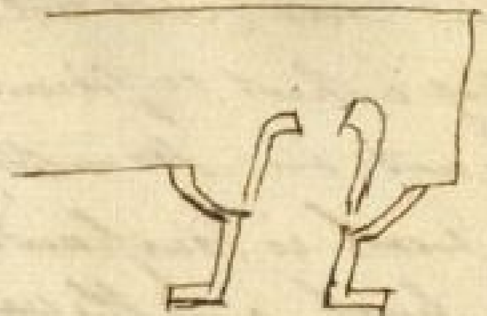
~~1435~~. The cork tree throws
off its bark once in
N. History years, it is a hand[illegible]
The bark is rendered flat
by fire —

~~1436~~. Indigo comes from the
N. Hist west Indies — Plant —
Avagada Pear
~~1437~~. Alligator ~~apple~~ has a
soft stone about 1 to 2
Ditto Inches in Diam: the juice
employed to mark linen
cannot be washed out —

The lime is laid on the
stone and finished with a
pin —

~~f.133.~~ The valve of the lower
nozzle in large Engines
for letting the steam into
the Eduction pipe requires
a prodigious force to move
it, suppose it ten inches it
will require 10 or 12 Cwt.
A small valve is connected
with the large one it is
raised the steam enters
and renders the air of
the large portion of the
same density as the rest.

Engineering



Manufact

~~1439~~. An wax will not ad-
mit of a heat sufficient to
be cast in moulds,
the wick is suspended
on a hook and the wax
poured on it till the can-
dle is of all the proper size,
when cast in moulds
the heat necessary to
melt it dissolves the
wax — heat the mould to
nearly the same degree as the wax —

& Manuf [illegible] —

~~1440~~. Steam rushes into a va-
with the velocity of 1200
feet pr. second —
the same as the velocity as
sound —

Pneumat —

~~1441~~. In Bolton and Watts
Engine the quantity of
cold water necessary for the
injection, and cooling the
condensing apparatus —

Engine s.

~~1442~~. An Alarm may be
made by filling air vine
or tin tube with tallow
on which rests a piston
connected with the ~~[illegible]~~
detent of the alarm —

~~1443~~ An Engine of 72 Inch
Cylinder works pumps
900 yards distance great part
of which lays horizontally

The friction is almost entirely removed by suspending the horizontal rods towards placed in such a degree of obliquity as to aid the Eng: in lifting the col: of water

1444 The detonation may be made by balancing a thermometer on an axis at a given temperature when heat is applied the end opposite to the bulb preponderates and disengages the detent — instead of the ~~[illegible]~~ tube filled in this manner it may be placed nearly perpendicular filled with merc.^y [illegible]

with a small [illegible] on a bit [illegible] the other end [illegible] the detent —

~~1443~~5. Different methods of suspending the pump rods of a Steam Engine by balance beams placed at different depths in the shaft

L 9 3.5 46
2 44 10
9 4
2 37 13 41
2 23 19 9 19 48
9 56
9 15 52
9 4
9 21 36
2 23 19
= 105 24 9 1 37

1446. During a very hard frost in G. Brit. it seldom snows The thermometer always rises to 31 or 32 before it snows query the cause?

1447. Platina dissolved in aquaregia tinges the marmoreum black – The cause

1448. Caoutchouc from a very white vegetable the mushroom, is black.–

1449. In what part of America does the Caoutchouc grow what is its size and figure how is the gum procured and the bottles formed? most parts of Spanish America

V. Mr Kirby & Mr Hist.

V. Mr Kirby

Ditto

It is an aquatic plant, has broad leaves and not very tall

~~1450~~. This Even. 13 Decr 1785 at the Royal Society read of a paper on the genera and species of animals – Serpents – poisonous Harmless – proportion of each

– Description of a particular water spout seen by in the Straits of Malacca the 9th June 1787 – transparent with in a larger and black one, truncated cone with the base in the cloud – after the whole had disappeared a small

V. Mr Kirby

small wt. [illegible] from the sea to the stand and remained suspended for some time —

\+ A particular trade [illegible] in England —

\+ New method of converting a circular into a reciprocating motion —

\+ Method of supporting a horizontal shaft on friction rollers —

\+ Improv.t on the barom.r to make it useful at sea — How to boil the mercury in any part of the tube without risk of breaking

but those exhibited at the preceding meeting

1451. A quantity of red lead and salt were melted together in a crucible, and poured into an ingot mould when cold and broken the fossil alkali of the sea salt ~~was for~~ formed the upper stratum, the lead revived the lower — Quere has the acid or only the Phlogiston of the marine acid united itself with the coals? —

Chemistry

1452 Mr Stoddart tempers his razor and knive blades by the thermometer in mercury tempering heat from about 410 to 520 —

[illegible]

Invention

~~1452~~. A globular bulb for a Thermometer is preferable to a ~~x~~ flat one, as the latter cannot be made so thin as the former — L—H—

Engines?

~~1454~~. To determine the best proportions of the float boards of a water wheel? —

Manufactures

~~1455~~. New still constructed at Bristol - still enclosed in the copper part of a large copper vessel in which water is boiled, the water condensed round the

Body of the still produces heat sufficient for distillation. The advantage is that the spirits are not burnt —

Art of War Anc.

~~1456~~. The ancients made the cordage for their great engines of the tendons of animals — Quere how were they formed? were they spliced? — converted into fibres and then spun? Gen. M—

Ditto

~~1457~~. Gen. M— has discovered the construction of the Engine called by the Ancients the Onager. It is like my former model of Catapulta, with a sling added

~~1455~~ fitted to the end of the Style instead of the spoon —

~~1455~~. Weight of the spoon the stroke on the cross beam with the want of Elasticity in the sides were great inconveniences in the Catapult. It is probable the ancients constructed their Engines in a different manner from what the moderns suppose —

— It is probable the Styles struck on an Ogger without the Machine covered with a bag of hair cloth stuffed with chopped straw —

Ditto

~~1457~~. Roman Camps were first discovered in Scotland by Genl. Melville —

— From the reasons of which he traced the March of Agricola along the ~~[illegible]~~ across about Perth and down Strathmore, to where the battle was fought with

Genl. Melville in consequence of this Idea searched for and at length discovered several Roman Camps of the Rectangular form and large size — General Roy has prosecuted this subject

Ditto

~~1440~~ Ancient bow strings were made sometimes of womens hair, under 22 years of age

Ditto

~~1461~~ Genl. Melvill thinks the banks of oars of the Roman Ships were placed on the side forward out wards at an angle of at least ~~40~~ 45°, and has constructed a model of a Quinquiremes accordingly

Ditto

~~1462~~. The sinews of a Deer was said by the ancients to be the best, those of a hog were only

Ditto

Ammianus Marcelinus
— Veteres Mathematicis —

~~1463~~. The track of a Whale can easily be perceived at sea, like ~~the~~ the wake of a ship bubbles of air as also oil are seen ~~to~~ on the surface

Mr. Minto

~~1464~~. The Dolphin is said to be a fish weighing only about ten or 12 pounds.

Ditto

~~1465~~. B—i: one wheel clock

~~1466~~. A Thermometer may
be made of two bars with
an axis, like the beam of a
balance, let the one arm
be made of a Metal which
is most affected by heat, the
other of a substance, the least
Let the Equilibrium be made
at the medium temperature
In all other degrees the Equil
will be disturbed, this by a
proper scale will point out
the degrees of heat

Pyrometer

~~1467~~ A general Theorem for
ascertaining the vibrations
of Pendulums when the point
of suspension is not exactly
at the end, by in the pendu-
lum or A second pendulum
in this way perform 20 vib. &c

X
1468 An alarm may be
construed on the same prin-
ciple as the Thermometer
Art. 1466

~~1469~~. What effect in time will
the Parallax of Merc.y occasion
between the Royal Observ.y of
Greenwich and Fort Willm
in Bengal whose Lat. is
22°.32'.10" N. & Long. 88°.28'.30" E
Alt of Mer.y at the
at Greenwich 38°.56'
at F. Will. - - 56.18
The Transit on the 3. May 1786

Astronomy

Geog.

1470. A new Island is said
to have been lately discovered
in Lat 7° 40' N. Long 56.30 E

Chemistry

1471. A solution of Glauber
salt in hot water is
a fluid cooked up and
set by the salts will not
precipitate, agitate the
bottle and take out the
cork, there is an instant
arrives they settle together
a considerable quantity
is produced — The latter
should be new Perhaps
corroborative of the theory of
Latent heat heat —

Ditto

1472. Ditto: and acid in
some others produce heat
when converted to a sol-
-vent heat —

Ditto

1473. When a fluid passes to
a solid state heat is
given out — applied to
— snow — hail — sleet —

Ditto

1474. To prove that ice con-
tains more heat than
water — melt ice in a pot
with a great fire the
thermometer stands at
the freezing point all the
time, the water must keep
absorb the heat —

Ditto

1475. A pound of ice and a
pound of water at diff.
temperatures when mixed
does not give the mean,
but a much less degree

#

Mr. Walker

1476. The Orrery is (?)
felt perpendicular. It is
at its height about the
day of April

Annal[?]

1477. Improv.^d of the Pother
of stove grate

Edin^h

1478. A piece of writing paper
rubbed with Indian rubber
produces Elect. M. K.

Ditto

1479. The Turkish and Per
sian coins are all dated in
the year in which the current
reign commenced — This
continues till the end of the
reign —

Mr. Walker

1480. Rain after frost is
generally preceded by sleet
— a proof of the doctrine of
the absorption of heat

1481. How does salt act as
a manure?

Agricult.

1482. Mr. Salmon at Lawton
in Cheshire sold salt from
his immense works for
manure, but no body ever
came there —

Repository Mi

~~1453~~. In examining sea sand it was found to contain many shells 77 – 23 of quantity —— Du: n: ac–

Miscell

~~1454~~. In the Crimea the revenue arise mostly from Salt collected from the Salt lakes which are quite dry in the Summer – These are above the level of the sea ——

N. History

~~1455~~. In the Crimea on the first of Jan. 1757 the thermometer stood 21 below the freezing point – it was frequent. 5 below 0 ——

Miscell

~~1456~~. Greek dress is almost the same as that of the Tartars except that the former do not wear a Veil.

N. History

~~1457~~. It is affirmed that there is no coal found farther south than that near Glym: in Warwickshire – query does this parallel of Lat. bound the coal countries?

N. History

~~1458~~. In the verdigris is composition of Copper Iron and Zinc, for when it is analyzed it produces green, blue and white vitriols: The green vitriol with Charcoal produces from the blue vitr.

with Vol. Am: produces a
blue — the whole with: with
copper produces a yellow —
— As a proof take 2 parts
pure Nitrous Acid in it
dissolve 1 part Antimony
add six parts water —
evaporate to a pellicle
blue Crystals will shoot.
Decant the liquor off — add
a fresh portion of water
wash: to a pellicle set
this to Chrystalize it will
shoot into Green Vitr:
Decant again — add fresh

portion of water wash: to
Dryness the residuum is
white Vitr: ——
— To prove this add to the
blue Vitr 3 to 1 of black
flux — melt in a Crucible
a bead of pure Copper, Take
the Green Chrystals, 2 Wash
and Equal quantity of
Charcoal dust put it in
the bole of a Tobac: pipe
give it a red heat for a few
minutes, throw it on any
cool place, the Magnet will
then attract it ——

– To the white and the
grown head of Copper add a
fresh quantity of Zinc put
it into a Crucible melt it
and then with results a fine
gold coloured Metal –
– Quere will the union of the
Three Metals produce with
Phlogiston tutenag? ...

~~1489~~. Copper is a better
conductor of heat than iron
Copper tongs sooner hot
~~1490~~. Cast iron tacks are
15 11/12 made and sold by W. N—
work of Burmingham at
15 pence for 16 Gross.
– 16 Gross = 1 lot
~~1491~~. Tacks are also made
of ~~tin~~ -cast iron tinned at
17 pence for 16 Gross. —
~~1492~~. If equall quantities
of hot water are put
into two dishes one of
wood, the other of Metal
the water in the metal
cup will soonest cool, and
if both vessels be filled

Metal
Ditto
Ditto
Chemistry

in two ~~[illegible]~~ vessels of water the water in which the Metal vessel is placed will be most heated —

Manuf

1493. The Elastic Gum is sometimes to be had in thick solid pieces - a piece of the size of a small cork put into a little strong box is very convenient for rubbing out black lead pencil lines

Elect y

~~1494~~ White paper rubbed with elastic Gum produces Electricity whether suspended on a conductor or nonconductor - M. H.

Elect y

~~1495~~. Ethereal air perhaps the most convenient for charging the Electric Cannon - Made thus? 3 June

~~1496~~. Two wax candles made in a mould by M. H. -

Manufact

~~1497~~ Russian wax cannot be bleached so white as English, owing to a quantity of Rosin contained in it. This may be separated and the wax consequently much improved —

Elect y

~~1498~~. Isinglass the best for fixing tin foil on Glass - M. H.

1499. To find three numbers in Arith. proportion whose difference shall be two and their product 2 — *(margin: Mathem.)*

~~1500~~. In the Arabic Lang: there are ~~500~~ 1000 words for a sword, 500 for a lion, and 200 for a Serpent — *(margin: Literature)*

~~1501~~. Small Stills require more fire than large ones there is a certain necessary loss of fire in every Still — *(margin: Manuf.)*

~~1502~~. In Distilling water 50 Gall. of water in the refrigeratory condensing 5 Gallons of water from the ~~still in~~ 10 minutes raise the water to the same degree of heat. *(margin: Ditto)*

~~1503~~ In Distilling rum from Sugar in the West Indies the spirit is about two p Cent of the whole quantity *(margin: ~~Distill~~ Ditto)*

~~1504~~ In Malt in this country about 15 p. Cent *(margin: Ditto)*

~~1505~~ In 5 or 6 Days the molasses ferment, great attention must be paid to the time as the transition from the vinous to the acetous ferment. is very rapid *(margin: Ditto)*

~~1506~~. Pluggs instead of Cocks for Stills — Touching of the cocks frequently loosen and *(margin: Ditto)*

1507. Their and Blaine boiler flue surrounds to the top —

Ditto

1508. The boilers of Stills should be broader and shallower —

Mem

1509. The flues of Stills should not rise to the surface of the liquor in the boiler —— better taste ——

Ditto

1510. A safety valve necessary to the boiler of the still

Ditto

1511. In the Cart now tak[illegible] 6912 on cast iron from workmanship &c —

Wheels

×

1512. Tiles are made of [illegible] at 22/ per 16 gross = 1 [illegible]

1513. Improved worm of a Still composed of thin plates placed near each other — Copper perhaps the best, being the best conductor —

Memory

1514. Enamelled seal is made by smoking a common seal over the candle or a lamp, wipe off the smoke from the cavity of the seal letting it remain in the letters, then seal the letter in the ordinary way

Miscellaneous

after which hold a hot iron suf-
ficiently near to melt the wax
it will be rendered smooth
on the surface and the black
impression will remain below
this was the invention of Archd.
Duke of Argyle ——

~~1515~~. A new alarm made
by Allatinia. query how?

1516. ~~A new improvement
in Artillery in Scotland.~~

1517. The Catapulta and
Balista were Engines
the description of which are
confounded, ~~they were~~ the
power in both was twisted

cordage, the one threw a dart
the other a stone — There
was a kind of Net work in
the middle of a broad string
in the other the string was
fitted to the arrow, some-
thing like the cross bow.
The cross bow is the ancient
Balista ~~and~~ on a smaller
and somewhat different scale

1518. ~~At the London Royal
Society Notoriety at Gravern
— press a Attrol by Cap-
— Lord Dumfries~~

~~1519~~. A contriver to turn the leaves in musick two Cylinders, moved by two pedals —

Mechanics

~~1520~~. Is lime produced from Lime stone and from Chalk the same? It is said that the latter cannot be made use of in building

Fine Arts

X

1621 Is alkahol the same from whatever matter it is distilled? —

Chemistry

~~1622~~. Method of cutting a strong bar glass in a spiral form so as to draw out by a great length thread by boiling in Salt Pe.

Mechanics

X

1623. If a rose is watered with soot dissolved in W. it will grow black — if it is engrafted on a currant tree it will also be black

!!

~~1624~~. If the mouth of a cannon be wetted in a little grain of the charge will make a louder explosion from the whole in the usual way — smaller an ounce of little

Artillery

~~1625~~. Circular plates of the same thickness are equally strong whatever be their diam.

Mathemat.

1625. To prevent lead pipes
Exp. from bursting by frost —

X

1626.

Received this evening the 30th of Jan. 1709 from Mr. Follet, four Roman Coins of the Emperours Constantinus, Maximianus, Diocletianus, and Constantius ——

These Coins were found inclosed in a round mouthed Pitcher, which crumbled to Dust as soon as exposed to the Air — They had an encrusting thick Rust on them; which near totally obliterated every impression, untill that was removed by immersion in spirits of Salt —

They were discovered by in the Autumn of 1708 by two Men, whose Names were William Ball and —— Labourers: as they were clearing away a Hill to get at a Quarry) for Lime Stone, in the parish of Thorn St. Margaret, about 3 Miles from Wellington in Somersetshire ——

It is very remarkable, that on the Morning they found this Treasure, — related to Ball a Dream, which he had in the prior Night: (viz) That as they were at Work on the same Spot, he —— thought they struck in on what in that Neighbourhood is called a Crock of Money; Ball had but just expressed a wish to have the Dream realized, when —— picked up a single piece, and after that another or two, which so elated them that they continued working but a little while in full expectation confidence of a more valuable Treasure, when —— Struck his Pickat into the midst of the Pitcher, pieces of which were attempted to be preserved; but its having lain buried there so many Centuries, it was reduced to common Earth ——

There were in the Pitcher between 3 and 4 Hundred pieces, a considerable part of which were sold to the Wares Company of Wellington. They consisted of the Emperors

Diocletianus, who began his reign Anno Domini	284
Maximianus ——	286
Constantius who died ——	333
Constantinus ——	306

~~1627~~. A plan is now in agitation to construct light houses with patent lamps - lenses 22 Inches in Diam. and ten inches focus placed in the sides of an Octagon, a patent lamp of a large size behind each - The principal objection is that the light is confined to eight spots, the intervals dark. This may in some measure be remedied by placing the lamp near the focus, but in this case the intensity of the light will be diminished

In this as in every other case where an attempt is made to violate the laws of nature want of success must be the consequence ——

1628. Marygold seed in a pipe produced a fine white a lemon peel a blue bead with white in the middle - Cinnamon flower a white then very small melon seeds to blue -

- Nuts a very bright white in great quantity -
- Mustard a White and in considerable quantity — burnt a long time
- Rape and Canary seed - White

~~No 49~~ 49. Fill a bottle with liquid plaster of Paris when it sets it expands and the bottle bursts —

Expansion

~~No 50~~ 50 The Engine Counter of Messrs Bolton and Watt consists of seven wheels and pinions the velocity increasing by ten [in a ratio of] a Crow wheel is sent in motion by a pendulum moves one teeth for every stroke of the Engine — consequently the Engine must make 10,000000 of Strokes for one revolution of the seventh wheel. This

counting Engine is ~~fix~~ confined within a small box placed on one end of the beam the pendulum is sent in mot by a weight rolling in the box, the box about 15 inches long and 5 deep

at the rate of ten Strokes pr minute

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6 ÷ ) 10000000 minutes
                           365
24 ) 1666666 ( 694 ( 1
     144        365
     226        329
     216
     106
      96
      10
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~~No 31~~. Butter is frequently sold in penny worths, a machine to draw it into cylindrical pieces and afterwards to cut it off at once in any proportion might be constructed

~~No 32~~. Could not the dirt carts be so constructed as to take up the dirt as they go along the street.—

~~No 33~~. Had the earth moved perpendicular to the Ecl: would there have been sufficient heat ~~in~~ for vegetation in high lat:?

~~No 34~~. Eight bushels of wheat make 1 quarter weighing from 55 to 64 lbs

medium . 62

8

Wt of Qr. — 496

The Albion Mills are said to grind with one Engine 100 Quarters in the hour —

~~No 35~~. Lime made of Oyster Shells would perhaps answer many purposes better than from Stone —

— Argentum fulminans

~~No 36~~. A large retort filled with straw or other vegetable matter placed in the fire with

a tube rising and projecting ~~[illegible]~~
thro' above the fire filter a
might burn a whole week
and light a whole Coffee ...

~~1687~~. The Chinese are said
to have all or most of their
colours from ~~England~~ (Europe) Why
are they more brilliant
there in Europe? — examine

~~1688~~. Chaos first and then
the name of the almighty
in the triangle appearing
Chaos retires and the So-
lar system appears, this
would be beautifull in
fire works by inflamed air

~~1689~~. Two arguments for the
moon's not having seas as
one, no difference in colour
from the reflection of the sun's
rays. the other from the
jagged boundary of light &
darkness, some parts of which
would be a perfect circle
that part which passes
over a sea. ———

1690. The strata of air in
the Chinese seem very thin
for the tops of the trees
are sometimes violently
agitated when not a breath
is felt below ———

~~169~~1. A new Silk reel was proposed to be sent out to the East Indies. A Mr Rae made one in brass and charged five Guineas, which he declared was the ~~fair~~ lowest price he could make them at. Messrs Bolton & Watt executed the order at Birmingham at 30£. the workmanship and materials did not exceed 7£ ——

~~169~~2. Gullett took a patent wheel for a water machine for raising ore from mines which is described by Agricola on mines above two hundred years since

~~1693~~ 1 The mercury in the Gauge of an air pump should be boiled, quere (does boiled mercury reimbibe the air again

1694. An air pump made by Mr Sharp Surgeon Norton Falgate Bishopsgate brings the mercury in the Gauge below that in the Cistern — The Pear Gauge can to ~~three~~ two thousand. ——

~~1695~~. New mahogany is made to look like old by rubbing it over with lime water thick Soap ashes – Alkali –

×
1696 Isinglass manufactured by Jackson

~~1697~~. Telescopes with Silvered Sliders on Superfine cloth – The Vellum or paper slides always produce dust on the Glasses –

– Enamelled tubes, black yellow green with Silver very handsome –

– Milling machine for the Silver tubes a little cylinder of steel about 3/4 Inch Diam^r

held on the Silver a little oblique like a turning tool

~~1698~~. Best wrench for fixing chucks on the Lathe is a circle with a small projecting edge cor- responding to a groove in the Chuck

×
1699. The Shagreen cases for telescopes spoil the pockets of handkerchiefs &c –
– red leather case the best

~~1700~~. In soldering tubes of plated metal the pieces of Solder which stick [illegible] of the Silver query what is the best method of preventing this –

– Covers for the object glass are of no use where a case is made use of it

~~1707~~ What is the best method of dividing the pears Gauge. The gauge is filled with mercury and weighed, then certain proportions are weighed by which the divisions are ascertained

~~1705~~. Linseed oil boiled up to a considerable consistence is the best substance for a collar of leathers or any junction in the air pump.

~~1705~~ Marsh Glosier near Tamworth has taken out a patent for weaving nets.

~~1704~~. The wheels of turning lathes should be made of cast iron and turn on a cylindrical axis not on conical points which act as wedges augmenting the friction

~~1708~~ Boiled oil will preserve and increase the elasticity of tendons of animals, which the ancients made use of as cordage for their Engines.

~~1710~~ Woollen rags are made use of as a manure in some parts of England. Does not their effect depend on the capillary attraction of the wool

1707. A course of Lectures on farming Nr. 13 – I think would take

~~1708~~. Lime acts as a manure best on ~~with~~ heavy soil — some — perhaps in fermentation ensues and the calcareous part of the lime neutralizes the acid of the soil

×
1709. If a bar of silver ~~lead~~ and copper be melted ~~with~~ lead into an ingot, this ingot afterwards exposed to a moderate heat the lead leaves the ingot and carries all the silver along with it —

~~1710~~ When polished metal has no more silver than in the proportion of 10 a 12 grains of silver to one pound of copper, the mode of stripping the copper of the silver by a compound of ~~[illegible]~~ ~~and~~ vitriolic acid and nitre is the best mode; but if 20 grains to one pound of copper then the mode of fusing the two with lead is preferable —

~~1711~~ An alarum composed
\# of a piece of lead and
twine, with a noose put
on a small pin, this
string is on opening the
door pushed off the pin, the
weight consequently falls

~~1712~~ A Steam Engine in
snow hill in Birmingham
bores and grinds Gun barrels
rolls metal — buckles &c

~~1713~~ Mr Forsyth Gardener
at Kensington has dis-
covered a plaister which
cures wounds and cuts
in vegetables similar to

salve when applied to animals
it produces new bark on wood
new pith — It heals the
stump of a tree when cut
and causes new fresh sprouts
on each side the fracture —

~~1714~~ If one leg of a Syphon
be immersed in a glass
of water and the glass filled
to the brim it may be
made to run without
exhausting the air —
apply the finger to the
external leg before the
other leg is immersed
in the water, then suddenly
remove the finger, when
the Syphon will run:

1715. Strong fuming Nit: acid diluted with rain or distilled water in the [illegible]: 2:1 well mixed and cooled to the temperature of the air three parts Glauber's Salt 2 parts Nit: ammoniac 3 1/2 reduced separately to fine powder. First add the powdered Glauber stirring it well then the powdered ammoniac —

1716. The common mode of comparing together the momentum of a Balloon's [illegible] with that of a common is not just —

—

1716. A crack in the steam pipe of the steam engine mended by wrapping round it with a plaister of white lead in oil

1717. The rust of iron is owing to the acid air of the atmosphere, therefore if the iron is immersed in lime water it will not rust —

1718. Oil of Vitr: to water in the proportion of 1 to 100,000 gives it sensible acidity.

1719. A solution of Litmus has been the usual test to discover which liquids have acids or alkalies

But this is found imperfect
Mr Watt therefore employs
red cabbage leaves with the
ribs cut out, which he di-
gests for some hours in
water at the heat of 120°
This produces a liquor
which turns green with
alkali and red with acid
but must be very fresh and
— it [illegible] to keep
Mix red cabbage and
add boil.g water about the
acidity of vinegar then
it is to be used adding ~~chalk~~
shaking which with a little
degree and ~~colour~~ reduces it
to its blue colour, ...

[illegible] It has been sometimes
proven that atmo-
spheric air is composed
of 1/4 Dephlog: and three
fourths Phlog: and fixed air
Mr Kirw has discovered that
these proportions hold
invariably in different parts
of the Atmosphere and while
this is the case, the compound
rejects all union with any
other air

[illegible] A Thunder Cloud
suspended over a house
from one end of a bat-
-tters the house, a boy
is blown to pieces
the [illegible] is saved

weighting the [illegible]
the great –