

No. 1

Manufactures

1. Ireland does not produce above $\frac{1}{3}$
the quantity of flax used in the linen
manufacture of that Kingdom. Would
not the cultivation of flax be a va-
luable article?

2. Doctor M'Brider's new method of
tanning leather finishes the pro-
cess in one third of the time usual-
ly employed - Three years -

3. The addition of lime to alkaline
salts renders them powerful in
bleaching - Should be managed
with great care

4. What is the best method of
ascertaining the strength of the
bleaching Lye? - Hydrochloric

5. In the process of brewing, what
is the principal use of boiling
the wort? Excellent use it is
said

and may be made without boiling
— To extract all the matter of ale
from the malt a great quantity
of water must be used this ex-
cess would render the ale too weak
it can only be got rid of by boiling.

6. Is not part of the spirit of beer
~~lost~~ lost by boiling the wort?

— No, for the spirit has as yet
no separate existence, it being
produced by the fermentation —

7. To make a watch glass of
a piece of window glass — Break
a hollow in a brick of the di-
mensions of the glass wanted,
lay a piece of window glass
over it and make them both
red, nearly melted, the piece of
glass will then fall down into

The hollow part of the creek
and a stream in the shape —

Common sea water contains
oz of salt to one Gall. of water.
If made into salt in the usual
way will require, three tons of coal
will be requisite for every ton of
salt, but if evaporated to a brine
of 74 lib to the cubic inch foot
of water will produce a ton
Evaporation accelerated by pump
ing up the water and letting it
fall from some height through
reeds &c — The brine should not
be evaporated to more than
74 lib to the ~~sevens~~ cubic
foot, otherwise it will crystallize
before it boils and the salt by

by that means be rendered more
pure. —

9. What quality ~~is~~ in cotton which
prevents the fixing of colours particu-
larly red on the cloth? —

10. In Dyng may not every colour
be considered as a Christallogal? —

11. A carding machine costs at
Manchester. A woman
can card pounds of Cotton
per day, 35 Rols each. She receives
a minute. The price is

Q. List for carding — Machines
are sent out at Q. worth

2. A good bush full of the same
constructs requires of Coals
to weigh 1000 lbs. — A bush of
Coals to weigh 100 Bushels of
Lime —

Steel is now made in England
equally any on the continent
and is made use of in almost every
branch of cutting at Sheffield
In the cutting manufacture the
blade is all of steel and of the same
kind. In edge tools the edge is
of steel —

5. In the flattening mill three rollers
are preferable to two the bars
sent back and forward through
the other —

6. One side of the blade of a knife
is ground. The blade is then thrown
into a basket until all the rest
are ground in like manner, the
grinder then returns and grinds the
other side — were both sides done
at once the heat would destroy the
temper of the blade

17 The labor of a Cotton Lather
makes 11,160 revolutions in a
minute

18 Good port wine is said to consist
of one sixth part brandy

19 The Albion Mills ground 200 quar-
ters of wheat in 14 hours, each eye
8 bushels weight from 50 to 64
lit of bushel at an average 62
lit available for flour - This
is done with one Steam Engine

20 How is the mill put in motion
Is the fly moved by any mecha-
nical contrivance, and made to vi-
brate a little before the first stroke
of the Engine - Train of the Mill?

21 Are the pieces of buck mill-
stones joined with any kind of
Cement? -

2. What are the best transparent colors? Specimens of all the colors Dyed Silk - square pieces -

3. A fine shell of the best construction Burn 14 parts lime to 1 part of fuel. The common as 3 to 2 only

4. A color may be extracted from the root of the cotton tree which will dye Rankin this will stand the application of acids - No Rankin dye has been as yet discovered in this country that will stand -

5. In the soap manufactory a great part of the vapors arise from the fire made use of in boiling, which must be kept up eight hours. Is it possible to mix the materials by agitation as can be done in small quantities? -

26 Copper works at Deptford

27 Brass works at Bristol

28 If iron be thrown into water ⁱⁿ prepared with blue vit. the copper will be precipitated and the iron dissolved - vast quantities of copper are obtained in this way at Paris Montmartre in England and at Woblow in Ireland

29 In the most approved mode of making vit. acid no water is used, and the acid is condensed by wafers in lead vessels alone without retorts as at the works at Vauxhall

30 In the above works it is seen there is a particular contrivance to make the sulphur burn

without the aid of Air

1. The manner of Printing cannot
be conducted without the vapour
of hot water. The principal difficulty
is to adjust the heat. If too great
the air flies off; if too small
the vapour is not condensed

2. A new mode of bleaching is by
the dephlogisticated marine acid

33. Method of extracting fossil al-
kali from sea salt by Lead

34. Glass Manufactory Fava being
P. Antoine - Silvering - A
Tin plate is spread on a smooth
table a little mercury sprinkled
on the tin and brushed over it,
then a quantity of mercury
poured on the tin foot and returned

on it to some depth prevented from
running off by a run round the
table - reflection from the tin
very more perfect than from the
glass - The glass plate a little
warm is then slid edge wise
on the mercury over very dry
paper which is drawn out - The
plate brushes off the greatest part
of the mercury from the tin foil
A cloth is placed several times
over the glass and heavy weight
is placed on the cloth to press
the tin foil and the plate close
together. The table is now a little
inclined to allow the superfluous
mercury which is by far the greatest
part of what was employed to run

3

Off. The Plates mentioned in the last article are ground in the same manufactory

— First two rough plates are ground on each other with the sand of a white brittle stone found only at Fontenay Bleue and water — After wards polished with Emery and ochre and ager a folis — This part done mostly by women —

— One Mirror finished	4 10' long
and	5 3
They make some	12 by 9

26.

The French plates ^{glass} cheaper and
better protected than the English.
High duty on glass in Britain
the cause - At present man-
factory a plate was cast 12 feet by
7 It was protected and silvered
at Vauxhall - purchased by the
King - Three of the same dimen-
sions were broken before they sur-
vived -

37.

Process for rendering common lead
sufficiently soft for pencils - Com-
mon lead cannot be wiped out by
Elastic Rubber -

38

one objection to the best
is that the fibres on one side
are too much extended on the
other too much contracted -

Method of making plate glass
at Vaux Hall - Matter is blown
in the form of a cylinder, and
is cut off - This then cut longi-
tudinally along the surface parallel
to the axis - falls down in the form
of Parallelogram -

At present Plate glass is made
in this way the metal is brought
from the furnace in a pot, it
is then poured on a brass plate
or table, and rolled with a brass
roller - The ^{best} plate was made by
Mr. Wilkinson it is 11 feet long
7 feet broad and 3 inches thick
weighs 5 Tons This plate was
turned in a lathe by a water wheel
cost 1000 £

In the Eastern parts of Aolone
 and in some parts of Justice
 where the soil is fat, and the
 weather frequently warm and dry
 salt fish is produced - The same
 parts of the Old York afford great
 quantities - (with is mixed in
 fish and flounders and yellow. It
 is then cooked to a certain con-
 sistence, and precipitated with
 a vegetable alkali produced
 from the ashes of a certain
 weed - They frequently found
 from 3 to 4 $\frac{1}{2}$ Cans -
 - Quere - Some a vegetable
 alkali is added to the fish.
 and some a Veg. alk. is a compound
 buty salt &c. How is the first of these

No. 2

MANUFACTURES

42. Mr. Hiss of Birmingham has a patent for making Joppil alkali by means of the Litharge of Lead — It has been long known that when Litharge and sea salt are subbed together, the Litharge attracts and unites with the marine acid leaving the alkali pure — Instead of recovering the lead in its metallic form Mr. H. converts it into white lead which is extremely pure, much more so than the common white lead.
43. Pitch, Tar, Rosin and Turpentine are all produced from the pine tree thus — By burning

of the bark, the sap runs down
into a reservoir, this is afterwards
sham'd through a kind of basket what
passes through is turpentine, what re-
mains in the basket is for lamp
with water and distilled what comes
over is oil of turpentine: and what re-
mains in the retort is rosin.

The tree is shud into large
chips and burnt in a case covered
with lyles, a black liquor runs
down through a small hole in
the bottom, this is tar which
when purified by boiling becomes
pitch.

44 Copperas manufactured from
the Pyrites — The Pyrites
laid on heaps with deep furrows

like those between potato beds
bedded with clay - Exposed to the
rain and air - Decays - Liquor
run into cisterns - pieces of iron
are thrown in to give a sufficiently
quantity of this metal - The liquor
is then furnished into a leaden
boiler and evaporated to a cer-
tain pitch, then left to crystal-
lize

45. To make Brass - The Lapis
Calamensis in powder is mixed
with the Copper in grains, Calu-
mine mostly below. It is
pass thro' the copper and made
penetrate it. It is afterwards ex-
posed to a strong heat when the
case of the Calamens reverses.
The result is Brass -

46 Both Metals, Prussia's Metal
or Birch Metal is made by mix-
ing Copper with Zinc. The
leaves of Prussia's Metal are only
exposed to the fumes of Columine

47 The Patent shot of Mr Watts
of Bristol is prepared in the
common way, but is found from
a great height through the air, than
under the same more of tolu-
len. The height is greater in
Summer than in Winter.

In making shot a small
quantity of sulphur is ~~added~~^{added}
to the lead to lessen the co-
hesion. It is then poured thro'
our iron sieve into water. In
the old way the sieve is still a

very little distance from the
water - In the patent more
than 100 feet distant - In the
old shot the grains are set down
round. The side next the water
convex, the upper side flattened
The new shot is so round that
a few grains on a same course
themselves in straight lines
- A particular degree of heat in
the lead is necessary. This is
learned from experience - Glass
might not a thermometer
be applied?

In the old shot the regular
shaped grains are separated
from the others by rolling down
in inclined board, the round
go straight, the rest go off at the side

40.

Excellent potatoe starch may
be made as follows - Wash
down the pot; and wash several
times with clear water - Dry on
filtering paper, a fine white
powder is the result - A small
quantity of this in a tea cup
with boiling water, stirred quickly
good starch - You might not
some other ingredients be added
to this and an excellent dish
be made out of it. - and
Does not the above described
process contradict the common
opinion that fermentation is
necessary to the making of starch

49 Its wax will not admit of a heat
sufficient to be cast in moulds
the wick is suspended on a hook
and the melted wax poured on it
till the candle is of a proper thick-
ness. It is then rolled on a smooth
hard board or marble slab. If
cast in moulds the heat necessary
to melt it discolors the wax
— gunn might not this be remedied
by heating the mould to nearly
the same degree as the wax? —

50. A still on a new plan is con-
structed at Bristol. The boiler
of the still is inclosed in condensed
steam in the upper part of a large
Copper boiler — advantage: seeds
not burnt —

31. I have seen two wax candles
cast in moulds by M. H. —
52. Resin wax contains a great
quantity of resin this kind is
from being bleached so white as
the English was — Grease may not
the resin be extracted from the wax
and the colour consequently much
improved
53. Small Stills consume more fire
than large ones in proportion
There is a certain necessary loss
of fire in every Still —
54. In Distilling water 50 Gallons in
the Refrigeratory, condensing 5 Gall
of water from the Steam will in 10
minutes be raised to the same heat
i.e. boiling point

55 In Distilling rum from Sugar in
the West Indies the Spirit is about
10 P. Cent of the quantity put into the
Still - In Malta in Great Britain
about 15 P. Cent -

56. The Metapher ferment in 5 or 6
days, great attention ^{to the time} necessary -
as the transition from the various
to the acuous fermentation is very
rapid -

57. Rums preferable to coals for the
boilers of Stills, rather twist &c

58. The Boilers of Stills would be
probably improved by making
them broader and shallower
than they usually are -

59. Stills should not rise to the own
jaws of the boiler - cannot take -

60. Heads of Shells are sometimes
blown off. — Gun — would not a
softy ball as in the balls of
a Steam Engine be a useful ad-
diti- to the head of a Shell? —

61. Tea Urns are painted brown and
finished with the hammer. This
is the only colour yet known that
will stand the Hammer. It would
be a great improvement in this
manufacture to find other colours
which would stand —

62. The wedges in the late improve-
oil mill are more powerful than
any other known mode of pressure
The bag is disengaged by a single
thrust on a reverse wedge

63. A Thermometer applied to the
melted tallow in candle making
useful -

64. Salt pits is made in many
parts of the East Indies by burning
a long kind of grass on rising ground
the ashes of which are during the
rainy season washed down into
the low ground and then mixed with
a particular kind of soil produce the
salt - Give what is the process
of preparing it?

65. In Spain the mud walls of
old houses mixed with dung urine
and other animal ~~and~~ substances
are all purified together, mixed
to make salt pits.

66. A paper is made of the bark of the
willow scraped off by the basket ^{interior.}

67. makers - Specimens have been exhibited at the Society of Arts - It is said that bark will fix the colour on Cotton Hankens

68. Sugar of Lead is made much better in Holland than in England altho' the materials in England are both better and cheaper -

69. English China is made of Earth of Alum and Calcareous flints -

70. White Sulphur was is glazed with Borax and calc of tin ground together when the ware is of that degree of dryness so as just to hold the powder. The powder is shaken over it thro' a Dutchman box, or this being it is then put into the kiln and burnt - Borax a few -

The Dark coloured carbon wax
is glazed with lead or a mixture
of lead and tin —

71. The English Bankers Dye is a
solution of Green Vitriol. The price is
prepared in Lewis water. —

72. English waxes are manufactured
with three strands. French and
Spanish with four —

73. Mr. Faber lately always found
in his process of making the Velsic
lic acid that when the acid be-
came by Distillation quite clear
it was then 10.7 which is the
standard of the acid in commerce
in general —

34

Best English Flint Glass

Sand	_____	Aw	4	0	14
Lead	_____		3	0	00
Potash refined	_____		1	2	
Salt Petre refined powdered	_____		0	0	10
Manganese	_____		12	Oz	
Arsenic	_____		0	Oz	
Antimony	_____		3/4	Oz	

No 1

Engineering



1. What is the best form for the bottom of a boiler to produce the greatest quantity of steam with the least fuel? - Flat, convex or concave? - How is the quantity of steam affected by the dimensions of the boiler - Shallow - Deep - cylindrical - conical &c figures

2. Will not a boat move slower in a shallow narrow stream than in a broad and deep canal - friction of the water in the contrary direction

3. What quantity of coals will raise a given quantity of water in the common steam engine?

4. Would not jetties built on both sides of a river tend to

Deepen it, by contracting and
consequently accelerating the ve-
locity of the water?

5 A cylinder of 4 inches N.B. - is
applied will give a circular motion
equal in effect to 4 hours -

6 In the steam Engine forcing pumps
are never used - Common sucking
pumps - pump rods of Deal
- Balance beams to support the
great weight - Water from the
mine corrodes the boiler -

7 An inch of water produces a
cubic foot of steam. According to
W. Wallis the :: is as 1 to 1000.

8 A good steam engine will make
about 10 strokes 9 feet each in
a minute

9. In the Steam Engine the strokes
of the great valves make the whole
engine shake.

10. Method of clearing a water pipe of
its air



Let AC be a vessel fixed on the
upper bend of the pipe at C, A
a valve opening downwards, but
kept shut by a weight D, B a
piece of wood suspended by a chain
from the valve, when the vessel
is filled with water the wood floats
and the weight D shuts the valve
when the vessel is filled with air
the wood descends and opens the
valve when the air escapes.

11. The expense of erecting a Steam Engine may be calculated in this way square the Diameter of the Cylinder in inches give the Value in pounds - This will answer for Engines of the middle size i.e. from 40 to 50 Inches, but in smaller the estimate will be too little in value, to much

12. Bolton and Watt's Engine will raise 500,000 cubic feet of water to the height of 1 foot for every lb of coal, the old Engine only $\frac{1}{4}$ of that quantity

13. B and W. Engine will work loaded with 11 lb, the old Engine seldom with 7 on the square inch -

14. Engine loaded as above will produce easily ten strokes of Piston each, nine feet

15. B and W Engine will work a pump of the Diam. of the Cylinder to the height of 24 feet

C Calculation of a Steam Engine

A pump $5\frac{1}{2}$ inches bore with a six foot stroke will raise $7\frac{3}{4}$ Gall. of water Square the Diam. of the pump to the sum add $\frac{1}{4}$ of the square of the Diam. and multiply by the yards in depth, the product will give the weight of the Coll: in pounds

$$\begin{array}{r}
 5.5 \text{ Diam. of the pump} \\
 5.5 \\
 \hline
 30.25 = 0.7^2 \\
 .60 = \frac{1}{4} 9^2 \\
 \hline
 30.93
 \end{array}$$

70. yards in depth
 2165.10 pounds to be raised

7.1 on the Cyl: Inch

$$\begin{array}{r}
 \sqrt{305} \text{ inches} \\
 \hline
 17.4 = \text{Diam. Cylinder}
 \end{array}$$

The Diameter of the surface of the
water in the boiler should be
four times that of the cylinder
or $17.4 \times 4 = 69.6$ inches

For the quantity of steam a cylinder
of 17.3 inch in diameter and 6 foot
stroke contains 10.1 cubic feet of
steam - Hence the above cylinder
will contain 101 cubic feet

- 1 cubic inch of water produces
a cubic foot of steam hence the
quantity to supply the work
may be easily calculated -

The boiler should be kept at
about $\frac{2}{3}$ full - Quantity
of coals calculated for the
following fact

In B. and W.'s engine 1 ton of coals
will raise 500,000 cubic feet of water
1 foot in height

In B. and W. Engine 1 Cub. of
coals will evaporate 13 Cubic feet of
water.

- In W. Ramsley's 1 Cub. = 14 Cubic feet

- Cylinder of the Albion Mills 32 inches
a double engine - requires 60 Bushels

of coals in 24 hours = 32 - 8 of the
millstones ^{4.4} - Revol: 130 p. Minute
upper millstone 1 foot thick -

Each pair of stones makes 144 bushels
of flour in 24 hours

- Steam engine of Watt's construction

24 inch Cylinder will work a cotton
mill of 1000 spindles - will cost 8000

17. In Bolton and Watt's Engine there is a machine for counting the No. of strokes the Engine makes in a year

18. In Bolton and Watt's Engine there is a contrivance for regulating the quantity of Steam agreeable to the weight to be raised. In one of these Engines in Cornwall the pump rods fell into the pit, yet the Engine continued to go on for some time -

19. Suppose a

20. Cameron's Patent Engine is said to be as powerful as the best of Watt and of a simpler construction. It is two pistons with a partition in the cylinder, one piston above the other below this partition both joined on the same rod which moves in a covered hole in the partition, the steam is condensed in the lower part which is much

smaller than the other and
serves the purpose as the con-
densing vessel of Mr. Watt —

21. The boiler of the old Engine is
usually made from three to four
times the diam. of the cylinder. In
some of Mr. Watt's not more than

$2\frac{1}{2}$

22. In Watt's Engine there is a
Gauge for ascertaining the strength
of the steam in the cylinder and
a barometer for discovering the
degree of vacuum in the condenser

23. A Sugar mill consists of three
cylinders of cast iron 20 inches in
diam. and two inches thick and
two feet long placed perpendicular
and almost touching each other.

The middle roller is put in motion either by a hand mill - water or horse - oxen - The canvas are put between two of the rollers and bent between the other two the juice is squeezed out it runs into a conduit with a gutter which conveys it to the vats

4 The Steam Engine at the Albion Mills consumes $7\frac{1}{2}$ bushels of coals per hour - at 1 Shilling per bushel works night and day, Sundays excepted = 2621 $\frac{1}{2}$ of 16 of 100 -

25 Does a Steam Engine act the more powerfully the more steam there is thrown into the Cylinder?

26. The Cylinder is just filled with steam, the engine exerts its greatest power, if the steam be condensed the P. is diminished

27. A Steam Engine on Watts's plan
of 24 inches Cylinder will work a
Cotton Mill of 1000 Spindles the
work of 12 Horses, and may be
constructed for 000 £

28. An Engine has lately been in-
vented at Birmingham for cleaning
Every piece is precisely alike. The
Engine serves and removes the piece
itself

29. The mulling is performed with
this Engine by means of two
cranks, horizontal motion —

30. In the Albion Mills the Spindle
wheel is 18 feet — Bevel wheel on
the Shafts of the ^{Spindle} Flans wheel
about 4 feet — The bevel wheel
on the same axis with the Spindle
wheel is about Double the Diameter

of the wheel which turns it
The wallower more seems
less faster than the open wheel

— Engine gives from 10 to 22 strokes
per minute. The stroke 7 feet high

— All the motions are taken from
the shaft of the open wheel
which extends to the upper story
of the building

1. A very simple flat Engine
made one of at the new mill
found at Wolwich —

2. In Watt's Steam Engine the
proportions of the parts are
as thus (Dimensions)



Let a, c be = half the beam c the
center of the beam. If $f a = \frac{1}{4}$ the beam
then b, d must be = $\frac{3}{5}$ of $f a$. But in this
case the end a would approach too
near to the saw point d & f is con-
sequently made less than $f c$ for con-
sistency that f is preferred make b, d three
inches longer

(N.B. in the above there are two
proportions put down — $b, d = \frac{4}{5}$ of $f a$)

33. Saw at Mr. Beathwells Engine
works excellent water pumps
Different kinds of parallel
motions, one way is by a
wheel rolling in the inside of
a fixed piece —

ENGINEERING

34. The Cornish Engine at Birmingham
 has made the impression not
 by the falling of a weight as in
 the pile Engine, but by the pressure
 of a head of water fixed on the
 center of the beam of a steam
 engine, on a perpendicular
 beam ^{at} the lower end of which
 is the eye —

35. The Engine for melting the
 iron at Birmingham has the
 same with that made use of
 in Tataria from time immemorial



36

Sir Thomas Pagnis manner of
 Embankment against the sea
 — composed of Fascines Sloped
 4 to 1. — The always kept out
 by a sluice till the work was
 finished — When the tide is at
 lowed to let on flow it is
 just — Embankment at Port-
 mouth —

37

The valve of the Lower Nozzle
 in Large Steam Engines which
 lets the Steam into the Cylinders
 pipe, requires a prodigious force
 to move it: Suppose it ten inches
 it will require 10 or 12 Cwt. to open
 it. To render this easier a small

valve is connected with the large
one. It is first raised the and renders
the air &c of the same density above
and below

38. What is the proper quantity of
injection water necessary in Watt's
Steam Engine?

39. A Steam Engine of 72 inches
cylinder works pumps at the
distance of 900 yards, great part
of which is horzontal. The injec-
tion is almost entirely exhibited
by suspending the horzontal rod
on cords placed in such a degree
of obliquity as to aid the Engine
in lifting the Coll. of water —

40. The weight of the pump rods
is taken of by connecting them
with balance beams at different
depths in the shaft. - Different
forms and modes of suspending
these beams

41. To determine the best proportion
of float boards for a water wheel
- number form position -

42. In the books of Watts Steam
Engine there is a plan which
surrounds the boiler from the
fire place to the top -

43. Mr. Watts' Engine water con-
sists of seven wheels and pinions
 $240 = 10$. A crown wheel is put
into motion by a pendulum

and makes one tooth for every
 stroke of the Engine - Consequently
 the Engine must make 10,000,000
 strokes for one revolution of the
 screw which Engine is enclosed
 in a small box fixed on one
 side the walking beam about
 15 inches long and 5 deep. The
 pendulum is put in motion
 by a weight rolling on the box
 At the rate of ten strokes per
 minute the Counter will register
 almost two years strokes

Thus

60	10,000,000	
24	166666	40
365	694	10
	1,329	10 40'

44. The Albion Mills are said to
grind 100 quarters of wheat in
24 hours each quarter consists
of eight bushells weighing from
50 to 64 lbs of Bushell Measure
62, consequently 1 q^{rs} = 62 x 8 = 496

45. Mr. Fulton took out a patent for
a water wheel machine for raising
~~water~~ one from Prince, which is
described by Agricola on mines
200 years ago —

46. A Steam Engine in Snow hills
Burrington works and grinds
Iron Carrells, Hammers, Metals —
rolls Buckles &c —

47. A crack in the Steam pipe of the
Steam Engine is best mended by

applying turpentine with a plaster
of white lead wrought up with oil
48. In Watt's Double Engine the
beam is loaded with a weight
on the cylinder end equal to the
power of the engine. The cylinder
is filled with steam alternately
at top and bottom and both
expanded alternately. The boiler
is a double

49. What reason is assigned by
the millwrights for placing
the axis of the sails not parallel
to the horizon but a little inclined to the
horizon?

50 In the Allison mill the steam
engine a double one cylinder 37 inch
stroke about 9 foot consumes in 24

hours 60 Bushels & value $\frac{1}{3}$ of coal
Diameter of the Millstones 4.4
revolutions 130 of Minute - upper
millstone 1 foot thick - Each pair
makes in 24 hours 144 Bushels
of Flour

51. A boiler may be constructed
with concave plates within like
water flaps so as to present
a great surface to the water
- Also of paper like an organ
- The steam by means of a
vent tube the steam may pass
immediately into the water -

52. In the Distillation of Spirits in
great might, not the steam be
sufficient to work our engine and

~~52~~ words be converted into spirits?

53. A Rotative motion may be produced by a tube cooled round a wheel - Steam condensed - Valve

54. A water machine put in motion by the pressure of water on the alternate sides of a piston similar to a Steam Engine.

55. Rotative motion produced by a shaft and weight

56. May not a wind mill have its sails of tin?

57. Mr. Watt says that in his boiler 1 Cwt. of coals will evaporate 13 cubic feet of water. In the Albion Mills not $\frac{1}{4}$ of this is done

— Mr. Rumsey says his boiler can
pouche 14 Cubic feet of water with
1 Cwt. of coals —

58. The common doctrine that to produce
a maximum, the velocity of a water
wheel to that of the water should be as
1 to 3 is said not to be true but that
it should be 1 to 2. Mr. P. — 9

59. Instead of valves, Mr. Rumsey has
introduced two tubes at the stern
of his boat opening into the external
water at the stern. — But like a
pendulum influenced by two
springs and consequently but for the
friction motion should be perpendicular

60. Diodesius Siculus informs us that
a canal was actually cut thro' the

Innocent of Sicily. But the Engineers
of Carinus King of Persia were afraid
of the ~~sea~~ ^{the flow} overflowing Egypt

The sand is extremely favorable
for such an attempt and the distance
not more than 12 Leagues

61. The quantity of water consumed by
Rome blown up in is now to be
to that of Babylon and wells or

10 to 16 $\frac{1}{2}$

62 At Aleppo the fountain or Casus
not lined with Marble one plastered
with a composition of quick lime and Chalk
bottom and all. This plaster is durable
and effectually prevents the seeping
of the water — Aleppo 13 Aug 96

