N.° 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 valuable article?

2. Doctor M^c^Brides new method of tanning leather finishes the process in one third of the time usually 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 bleachers Ley? — Hydrometer

5. In the process of brewing what is the principal use of boiling the worts? Excellent ale is 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 if re-
tained would render the ale too weak
it can only be got rid of by boiling.

6. Is not part of the spirits of beer
~~it~~ lost by boiling the worts?
— 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 — Make
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 pane of
glass will then fall down into

the hollow part of the brick and assume its shape —

Common sea water contains ¾ oz of salt to one Gall. of water if made into salt in the usual way will require, three tons of coals will be requisite for every ton of salt, but if evaporated to a brine of 74 lib to the cubic ~~inch~~ foot 7 Cwt. of coals will produce a ton — Evaporation accelerated by pumping up the water and letting it fall from some height through reeds &c — ~~the~~ brine should not be evaporated to more than 72 lib to the ~~square~~ cubic foot otherwise it will chrystallize before it boils and the ~~salt~~ salt by

by that means be rendered more
firm.—

9. What quality ~~in it~~ is in cotton ~~that~~ 13.
prevents the fixing of colours parti-
cularly red on the cloth? —

10. In Dying may not every colour 14.
be considered as a Christallizatn?

11. A carding machine costs at
Manchester   A woman
can cards   pounds of cotton p 15.
day, 35 Rolls each   inches in
a minute   the receives
& fit for carding — Machines 16.
are lent out at   P. week

12 A good brick Kiln of the com̄
construction requires   of Coals
to every 1000 bricks — A lime Ki:
Coals to every 100 Bushels of
Lime —

Steel is now made in England
equal to any on the continent
and is made use of in almost every
branch of Cutlery at Sheffield
14. In the Cutlery manufacture the
blade is all of Steel and of the same
kind. In edge tools the edge only is
of Steel —
15. In the flatting mill three rollers
are preferable to two the bar
sent back one way and forward through
the other —
16. One side of the blade of a knife
is ground the blade is then thrown
into a basket untill 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 Cutter of a Cotton Lathe
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 qrs
8 Bushels weight from 50 to 64
lbs Bushell at an average 62
lbs Avoirdupois Bushell — This
is done with one Steam Engine

20 Now is the mill put in motion
& the fly moved by any machi-
nery contrived, and made to vi-
brate a little before the Steam
of the Engine —

21 As the stones of both mills
stones ground with any kind of
Corn? —

22.

23.

24.

25.

2. What are the best transparent co-
lours? Specimens of all the colours
dyed silk - square pieces —

3. A lime kiln of the best construction
burns 14 parts lime to 1 part of
fuel. The common as 3 to 2 only

24. A colour may be extracted from
the root of the cotton tree which
will dye Nankin this will stand
the application of acids — No Nankin
dye has been as yet discovered in
this country that will stand —

25. In the soap manufactory a
great part of the expense arises
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 Copperas works at Deptford
27. Brass works at Bristol —
28. If iron be thrown into water im-
pregnated with blue vitt.l the Cop-
per will be precipitated and the
iron disolved — Vast quantities of
copper are obtained in this way
at Paris Mountain in Anglesey
and at Wicklow in Ireland —
29 In the most approved mode
of making vitt. acid no nitre
is used, and the acid is concen-
trated by evaporation in leaden
vessels alone without retorts as
at the works at Vaux hall
30. In the above works it is said
there is a particular contrivance
to make the sulphur burn

without the aid of Nitre
1. The fumes of Brimstone cannot be condensed without the Vapour of hot water. The principal difficulty is to adjust the heat. If too great the acid flies off; if too small the vapour is not condensed
2. A new mode of bleaching is by the dephlogisticated marine acid
3. Method of extracting fossil alkali from sea salt by lead
4. Glass Manufactory Fauxbourg St. 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 foil and retained

on it to some depth prevents from running off by a rim round the table — reflection from the mercury more perfect than from the glass — The glass plate a little warm is then slided edge wise on the mercury over very dry fine paper which is drawn out — The plate brushes off the greatest part of the mercury from the tin foil A cloth is folded several times over the glass and heavy weights are placed on the cloth to press the tin foil and the plate above together The table is now a little inclined to allow the superfluous mercury which is by far the greater part of what was employed to run

11

5 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 brick stone found only at fountain bleau and water — Afterwards polish with Emery red ochre and aqua fortis — This part done mostly by women —

— One Mirror finished 9. 10 long
broad 5 3 —
and 12 - by 9 —
they make some

36. The French ^glass^ plates cheaper and
better polished than the English
High duty on Glass in Britain
the cause — At Prevost Manu-
factory a plate was cast 12 feet by
7 It was polished and silvered
at Vaux hall — purchased by the
King — Three of the same dimen-
sions were broken before they succeed
ed —

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

which
38 One objection to the bent tim
is that the fibres on one side
are too much extended on the
other too much contracted —

Method of making Solid Steel
of Varn Nail — Bullet is drawn
in the form of a Cylinder, and
cut off — Bit then cut longi-
tudinally along the surface through
to the axis — Both down in the form
of Parallelogram —

A Barrel Plate of steel is made
in this way The metal is brought
from the Furnace in a fluid, it
is then poured on a brass plate
or table, and rolled with a brass
roller — The plate was made by
Mr Williamson 11 ft 11 feet long
7 feet broad and 3 Inches Bricks
weighs 5 Tons This plate was
turned in a Lathe by a water wheel
cost 1800 £

41 In the Eastern parts of Poland
and in some parts of Austria
where the soil is fat, and the
weather frequently warm and dry
Salt petre is produced — The same
parts of the old forts afford great
quantities — Earth is mixed in
Tubs and stirred and filtered. It
is then boiled to a certain con-
sistence, and precipitated with
a vegetable alkali produced
from the ashes of a certain
reed — They frequently find
from 3 to 4 ⅌ Cent —

— Queere — Since a vegetable
alkali is added to the soluti:
and since a veg: alk: is a compound
neutral salt &c. Does not the first afford

No. 2

Manufactures

42. Mr Keir of Birmingham has a
patent for making fossil alkali
by means of the Litharge of Lead —
It has been long known that when
Litharge and sea Salt are rubbed to-
gether, the Litharge attracts and unites
with the marine Acid leaving the
Alkali pure — Instead of recovering
the lead in its metallic form
Mr K. converts it into white lead
which is extremely fine, much more
so than the common white lead

43. Pitch, Tar, Rosin and Turpentine
are all produced from the pine
tree Thus — By paring

off the bark, the sap runs down
into a reservoir, this is afterwards
strained through a kind of basket what
passes through is turpentine what re-
mains in the basket is ~~fr~~ lumped
with water and distilled what comes
over is oil of turpent: and what re-
mains in the retort is rosin.
— The tree is sliced into large
chips and burnt in a cave covered
with tyles, 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 — Dissolves — Liquid
runs into cisterns — pieces of iron
are thrown in to give a sufficiently
quantity of this metal — The Liquor
is then pumped into a leaden
boiler and evaporated to a cer-
tain pitch, then left to Chrystal-
lize

45. To make Brass — The Lapis
Calaminaris in powder is mixed
with the Copper in grains, Cala-
mine mostly below. Its fumes
pass thro' the copper and unite
penetrate it. It is afterwards ex-
posed to a strong heat when the
calx of the Calamine revives.
The result is Brass —

46 Bath Metal, Princes Metal or Pinchbeck is made by melting Copper with Zink — The leaves of Princes Metal are only exposed to the fumes of Calamine

47 The patent shot of Mr Watts of Bristol is prepared in the common way, but is poured from a great height through the air, this renders the grains more globular. The height is greater in summer than in winter —

In making shot a small quantity of orpiment is ~~[illegible]~~ added to the lead to lessen the cohesion — It is then poured thro' an iron sieve into water — In the old way the sieve is rubbed a

very little distance from the water — In the patent move than 100 feet distant — In the old shot the grains are seldom round. The side next the water convex, the upper side flattish. The new shot is so round that a few grains on a saucer arrange themselves in straight lines — A particular degree of heat in the lead is necessary. this is learned from experience — query might not a thermometer be applied?

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

48. Excellent potatoe starch may be made as follows — Rasp 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 — Gum 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

249 As 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 thickness — It is then rolled on a smooth hard board or marble slab — If cast in moulds the heat necessary to melt it discolours the wax — Gum must not thus be remedied by heating the mould to nearly the same degree as the wax? —

250. A Bill on a new plan is conducted at Bristol — The books of the Bill is entered in condensed form in the usual hand of a Copying books — advantage of words not counted —

31. I have seen two wax candles
cast in moulds by M. 21 — 22 —

52 Russian wax contains a great
quantity of rosin this known if
from being detected in white or
the English wax — Gum may not
the rosin be extracted from the wax
and the colour consequently much
improved

53. Small Stills common more for
than large ones in proportion
Thus 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 Malt in Great Britain
about 15 p Cent —

56. The Melasses ferment in 5 or 6
days, great Attention necessary to the time —
as the transition from the Vinous
to the Acetous fermentation is very
rapid —

57. Plugs preferable to cocks for the
boilers of Stills, better twist &c

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

59. Flues should not rise to the sur-
face of the boiler — burnt taste —

60. Heads of Nails are sometimes
blown off. — Guns — would not a
safety Valve as in Steam Engine
Lid to the Head of a Nail? —

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

62. The wedges in the Nail improve
oil mill are more powerfull than
any other known mode of pressing
the bag is disengaged by a single
Shock on a reverse wedge

63. A Thermometer applied to the melted tallow in Candle making useful —

64. Salt petre 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 nitre — Query what is the process of preparing it?

65. In Spain the mud walls of old houses made with dung urine and other Animal ~~sub~~ substances are all publisised together, made to make Salt petre —

66. A paper is made of the interior bark of the willow scraped off by the basket —

makers — Specimens have been exhibited at the Society of arts —

67. It is said that bark will fix the colour on Cotton Nankeen —

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 Allum and Calcined flints —

70. White Earthen ware is glazed with Borax and calx 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 dredging box, or thin bag, it is then put into the Kiln and burnt, — Borax & Tin —

— The dark coloured earthen ware is glazed with Lead or a Mixture of lead and tin —

71. The English Bankcan dye is a solution of green Vitt: The juice is prepared in Lime water. —

72. English ropes are manufactured with three Strands. French and Spanish with four —

73 Mr. Falcon bridge always found in his process of making the Vitriol: lic acid that when the acid be came by distillation quite clear it was then 18.7 which is the standard of the acid in Commerce in general —

34

Best English Flint Glass —

Sand	Cwt	4 . 0 . 14
Lead		3 , 0 00
Potashes refined	—	1 . 2
Salt Petre ~~refined~~ pounded		0 . 0 10 —
Manganese		12 Oz
Arsenic		8 Oz
Antimony		3/4 Oz

No 2

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 — cylindri-
cal conical &c figure

2 Will not a boat move slower in
a shallow or narrow stream in a
broad and deep canal in proportion
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 velocity of the water?

5 A cylinder of 6 Inches - N.B. - in effects will give a circular motion equal in effect to 4 horses -

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 M. Watts the :: is as 1 to 1800.

8 A good steam engine will make about 10 strokes 5 foot 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 gives 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 greater, too much

12. Bolton and Watt's Engine will raise 500,000 cubic feet of water to the height of 1 foot for every Cwt of Coals, the old Engine only ¼ of that quantity

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

14 Engine loaded as above will produce easily ten strokes ℘ Minute each stroke nine foot

15. B and W— Engine will work
a pump of the Diam.r of the Cy-
linder & the height of 24 feet
Calculation of a Steam Engine
A pump 5 1/2 Inches bore
with a six feet stroke will
raise 7 3/4 Gall.s water
Given the Diam.r of the pump
& the same add 1/4 of the square
of the Diam.r and multiply by
the yards in depth, the product
will give the weight of the Coll.n in
pounds

$$\begin{array}{r} 5.5 \\ 5.5 \\ \hline 30.25 = D.^2 \\ .60 = \frac{1}{4} D^2 \\ \hline 30.93 \end{array}$$

30. yards in depth
2165. 10 pounds w.ch is raised
305 cubical Inches
17.4 = Diam.r Cylinder —

7.1
in the
Cub.c Inch

The Diameter of the surface of the
water in the Boiler should be
four times that of the Cylinder
or 17.4 × 4 = 69.6 Inches
For the quantity of Steam a Cylin
der 17.5 Inch in Diameter and 6 foot
Stroke contains 10.1 Cubic feet of
Steam — Hence the above Cylinder
will contain Cubic feet
— Cubic Inch of water produces
a cubic foot of Steam hence the
quantity to supply the boiler
may be easily calculated —
The boiler should be filled
about $\frac{2}{3}$ full — Quantity
of coals calculated from the
following fact
In B. and W's Engine 1 Cwt. of Coals
will raise 500,000 Cubic feet of water
1 foot in height

— In B. and W. Engine 1 Cwt. of
Coals will work to 13 Cubic feet of
water.
— In W. Bennets 1 Cwt. = 14 Cubic feet
— Cylinder of the Albion Mills 32 Inch
a double engine — requires 60 Bushels
of Coals in 24 hours = 3 ℔ — Diameter of the
Millstones 4.4 — Revol: 130 P. Minute
When Millstone 1 foot Work —
Each pair of Stones makes 144 Bushels
of Flour in 24 hours —
— Steam engine of Watts' construct
24 Inch Cylinder will work a Cotton
Mill of 1000 Threads — will cost 800 £

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

18. In Bolton and Watts Engine there
is a contrivance for regulating the
quantity of Steam aqueable to the
weight to be raised. In one of these
Engines in Cornwall the pump rods
fell into the pit, yet the Engine con-
tinued to go on for some time —
Mr. K —

19. Suppose a

20 Cameron's patent Engine is said
to be as powerful as that of Watt
and of a simply construct.
it is two pistons with a partition
in the Cylinder one piston above
the other below this partition
both fixed on the same rod which
moves in a Collared 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.r of the Cylinder in
some of Mr. Watts not more than
2½
22 In Watts Engine there is a steam
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.r and two inches thick and
two feet long placed perpendicular
and almost touching each other

The Middle roller is put in mo-
tion either by a wind mill — water
or horses — oxen — The corn as
first between two of the rollers
and last between the other two
the juice is squeezed out it runs
into a conduit with a filter
which conveys it to the vats

24 The Steam Engine at the Albion
Mills consumes 7½ Bushels of coals
per hour — at 1/ Shilling p. The Engine
works night and Day, Sundays
excepted = 262 1 ₩ 16 p. Annum —

25 Does a Steam Engine on the
most powerfully the most Steam
then 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 Pr. is Annihilated

27. A Steam Engine or Watts Steam
of 24 Inches Cylinder will work a
Cotton Mill of 1000 Spindles the
work of 12 Horses and may be
continued for 800 £

28. An Engine has lately been in
vented at Birmingham for coining
Every piece is precisely alike. The
Engine forges and removes the piece
it self

29. It moulds it performs both
this Engine by means of two
convex horizontal motion —

30 In the Albion Mills in Lam
beth is 18 feet — Beneath the
the Shafts of the Steam Wheel
about 4 feet ÷ The Bevel Wheel
on the same axis with the Steam
Wheel is about Double the Diam

of the wheel which turns it

The Wallowers move seven times faster than the spur wheel

— Engine gives from 18 to 22 Stroke pr minute The Stroke 7 feet 4 inch

— All the motions are taken from the shaft of the spur wheel which extends to the upper Story of the building

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31 A very Simple fire Engine made use of at the new mast pond at Woolwich —

2 In Watts ~~Steam~~ Engine ~~the~~ proportions of the parl motion are thus determined

Let a.c be = half the beam c the centre 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 fixed point d. a f is consequently made less than $\frac{1}{4}$ c. for so much that f is shifted make b d three inches longer

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

33. Saw at Mr Braithwaite's Engineer several excellent water pumps

Different kinds of parallel motions, one way is by a wheel rolling in the inside of a fixed piece ———

Engineering

No 2

34. The Coining Engine at Birmingham makes the impression not by the falling of a weight as in the press Engine, but by the pressure of a kind of volute fixed on the center of the beam of a steam engine, on a perpendicular beam ~~on~~ at the lower end of which is the (Dye ——

35. The Engine for milling the Coin at Birmingham is the same with that made use of in Tartary from time immemorial

36 Sir Thomas Page's manner of
Embankment against the sea
— composed of Fascines Sloped
4 to 1. — Tide always kept out
by a Sluice till the work was
finished — When the tide is al-
lowed to Ebb and flow it in-
jures — Embankment at Ports-
mouth —

37. The Valve of the Lower Nozzle
in Large Steam Engines which
lets the Steam into the Eduction
pipe, requires a prodigious force
to move it. Suppose it ten Inches
it will require 10 or 12 lb. to open
it. To render this easier a small

valve is connected with the large
one. This 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 Watts
steam Engine?

39. A steam Engine of 72 Inches
cylinder works pumps at the
distance of 900 yards great part
of which is horizontal. The fric
tion is almost entirely annihilated
by suspending the horizontal 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 off 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 boiler of Watts Steam Engine there is a flue which surrounds the boiler from the fire place to the top —

43. Mr. Watts Engine counter consists of seven wheels and pinions ratio = 10. A crown wheel is put into motion by a pendulum

and moves one tooth for every
stroke of the Engine — Consequently
the Engine must make 10,000000
strokes for one revolution of the
seventh which — Engine is enclo-
-sed in a small box fixed on one
side the walking beam about
15 Inches long and 5 Deep. The
pendulum is first in Motion
by a weight ball rolling in the box —
At the rate of ten strokes p
minute the Counter will registe[r]
almost two years strokes

Thus

60) 10,000000
22) 166666 . . 40
365) 694 — — 10
1y. 329 d. 10 h 40'

44 The Albion mills are said to grind 100 quarters of wheat in 24 hours, each quarter consists of eight bushells weighing from 58 to 64 lib pr Bushell medium 62. consequently 1 Qu.r = 62×8 = 49[illegible]

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

46. A Steam Engine in Snow hill Birmingham bores and grinds Gun barrells, flattens, Metals — rolls Buckles &c —

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

applying tinfoil with a plaster of white lead wrought up with oil

48. In Watts 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 exhausted alternately - The boiler must be double

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

50 In the Albion mills the steam Engine a double one Cylinder 32 Inch Stroke about 9 foot consumes in 24

hours 60 Bushels value £ 3/7 of coal

Diameter of the Millstones 4. 4

revolution 130 p^r 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

watch glasses so as to present

a great surface to the water

— Also of pipes like an organ

— Also where by means of a

bent tube the flame may pass

immediately into the water —

52. In the distillation of spirits in

great might not the steam be employed to work an engine and after

~~52~~ wards be converted into Spirits?

53. A Rotative motion may be produced by a tube coiled ~~rou~~ a wheel — Steam admitted — 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 boilers 1 Cwt. of Coals will evaporate 13 cubic feet of water. In the Albion Mills not 1/4 of this is done

— Mr. Rumsey says his boiler evaporates 1½ 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. R—y

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

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

Isthmus of Suez. But the Engineers
of Darius King of Persia were afraid
of the ~~mediterranean~~ red sea overflowing the lower Egypt
— The land is extremely favorable
for such an attempt and the distan[ce]
not more than 12 Leagues ——
61. The quantity of coals consumed by
Nom blowing engines is said to be
to that of Bolton and Watts as
10 to 16½.
62 At Aleppo the fountains or basins
not lined with Marble are plastered
with a compn. of quick lime and Chalk
cotton and oil. This plaster is durable
and effectually prevents the oozing
of the water — Russ. Aleppo 13 Aug. 96