

Wants

Calcutta

20 May 1797

1797

Lunies
ad

Prints

Vol. 2

New Series

20th Old Series

th
Calcutta 20th May 1797

100. In Discharge taken in the
Purkin's and in some cases 9th
of air is discharged - the tube at
ways rises to the top - given what
part of air is discharged?

101. The following object deeply
frequently taken place on
first presenting the Telescope
to the moon, namely that
all the elevated spots on
the surface appear to be
cavities; and all cavities of
some the shape of prominent
- This fallacious apperision can be

102. The spots on the Sun
are supposed by Dr. Herschel
to be parts of the solid body
of the Sun seen through a
transparent portions of this
~~Sun's~~
Atmosphere.

103. It is supposed by the
workmen in Edge tools to
be impossible to weld
cast steel on iron, for if
they are brought to the same
welding heat the steel will
run. It has however been
discovered lately that cast

steel at a white heat and
run at a welding heat
unite completely.

104. In the art of soldering
care must be taken to
prevent the metals from being
oxidized; this is effected by
Sal: am: borax resin and
some other substances—
n. b. These also occur as
a flux—quartz what effect
has a flux in the calcining
of a metal?

105 The weight of the Great
 mine of S. Iron. About 40
 foot thickness from the core
 was 2110. It must have lost
 a small quantity in Ox-
 idizing - Its present thickness
 which is equal in every part,
 is $3\frac{1}{2}$ inches

106

107. Freezing Point

Sat. am 5, Nit. 5 water 16 = +10

Sat. am: 5, Nit. 5

Glauber Salt 0 - 16 = +4

Nitrous Am. 1 - 1 = +4

Nit. am: 1 Sat. Soda 1 - 1 = -7

Glauber S. 3 Del. Nit. a. 2 = -3

Cyt. S. 6 Sat. am. 4

Nitru 2 } - 4 = -10

Gla. Salt 6 Nit. am 5 - 4 = -14

Phosp. Soda 9 - 4 = -12

Nitru 9 } - 4 = -21
 Am. 6

Cyt. S. 8 Proc. acid 5 = -0

Cyt. S. 5 Del. Nitru. 4 = +3

In the table the temp: is
50 a temp: which may in
Britain be had at all times
by means of well water -

The numbers denote the proportion
by Troy weight - one ounce of
water by wine measure correspond
with one ounce by Troy weight.
- del: nat: acid is red summing
and 2 Parts and rain or distilled
water one part - N. B. The Salts
must be mixed in the order of
the table, stirring one well before
the addition of the next -

- A mixture consisting of Diluted
Nitrous Acid through Soda and

Nitrous Acid is the most power
of all those compounded of Salts
with acids, this however is not
quite equal to a mixture of Snow
and Nitrous acid each at $+30^{\circ}$
- Strength of the summing acid used
was 1.510 - Detractor 1.040

This Det. acid with ~~6 parts of~~
half its weight of water to six
parts of snow sunk the Therm
from $+30$ to -24 that is about
eight degrees less than Nitrous acid
would have produced

- Snow & powdered ice 2 parts
Common Salt = - 5
- Snow and powdered 12, Common Salt

5 and a powder consisting ^{equal parts} of Sal.
am: and Nitre mixed 5 = -10

- Snow is powdered in 12 parts
Common Salt 5 parts and
Sublimed Am. in powder 5 = -25

- In all the mixtures with Salts
and Acids, the Materials must
be cooled lower than when snow
is used in use -

+ The freezing point of Mercury
= -39 as accurately ascertained
as that of water

- Equal parts of diluted Vit: acid
and Nitrous acid with snow or
powdered ice, materials previously
cooled to ¹⁰ - ~~10~~ = -56

- Diluted Vit: acid with snow
or powdered ice - cooled to -20
will produce a still greater degree
of cold

- The latter must retain all
the water of Crystall: and
fresh Crystallized

- Glass vessels best in
Ice vessels cooled with melted
white wax - to resist the acid

- Iron vessel may hold
about 2 parts, and the
Tubs 5 ounces -



100. The Bow line mea-
sured by General Roy
on Romney March with
Glass rods, differed from
measurement of the same
by the steel chain only
3 inches, tho' the Bow
measures 5 miles — The
latter measurement was
made under the Direction
of the Duke of Richmond

109. It is said that
Lime mixed with G-
Powder increases its
strength — It can be of
use in a short space
of time —
If the powder be moist
the newly burned lime
will attract the moisture
from ^{the Road} ~~it~~, this advantage
will soon be over balanced
by the moisture which it
will afterwards attract from
the air — Lime is in-
combustible —

110. The Rajah Jayasimha
succeded to the Intendants
of the Ancient Rajahs of
Amboine in 1693

— was shown by Mahomed
Shah to reform the Calendar.

The new Tables he published
for this purpose were called
Zej Mahomedshahy in
honour of the reigning prince
By these Almanacs are con-
structed at Delha and all
Astronomical computations
made at the present time
" from the Preface to these
" Tables —

— " from inability to compre-
" hend the all encompassing
" beneficence of his power, this
" protest is an ignorant clown
" who wrings the hands of
" vexation; and in the contem-
" ptation of his exalted majesty
" Molomay is a Bat who even
" never arrives at the sense of
" truth: & The demonstrations
" of Euclid are an imperfect
" sketch of the forms of his
" countenance; and thousands
" of Jemshid Cashy, or Noosar
" & Zosseu in this attempt would
" labour in vain
" — Jayasimha found that

"all the Tables both of Mosul
"sun, Hindus and European
" gave results which did not
" agree with observations

— The represented it to be
" Majesty of dignity and Power
" the Sun of the Firmament
" of felicity and Dominion, the
" Splendor of the forehead of mu-
" jidat magnificence, the un-
" rivaled Great of the Sun of Sov-
" ereignty, the incomparably
" brightest star of the Heaven
" of Empire, whose Standard is
" the Sun, whose retinue the
" moon, whose Name is Mars

" and his Sun like Mercury
" with attendants like Venus;
" whose North pole is the Sky
" whose Signet is Jupiter,
" whose Center is Saturn
" The Emperor descended from
" a long race of Kings: An
" Alexander in Dignity, the
" Shadow of God, the bestower
" King Mohammed Shah
" may he ever be triumph
" in battle

— Nothing of this kind had
" been done either by the power-
" full Rajahs nor among the
" tribes of Islam, since the
" time of the Martyr Jimi whose

" since our former Moirya, Ulugay,
" Beg to the present, a space of
" 300 years
" — Jayasinha found the ^{the} ~~fact~~
" of evolution about his ~~time~~
" time of his soul, and constructed
" him at Delhi several of the
" instruments of an Observatory
" such as had been used at
" Samarcand, agreeably to the
" Mussulman books
" But finding these instruments
" of brass did not come up to
" his expectation of accuracy
" on acct. of ^{the} ~~their~~ smallness
" of their size, the want of division

" into minutes, the shaking
" and wearing of the axes, the
" displacement of the centers of
" the circles and the shifting
" ~~and~~ of the planes of the instru-
" ments; he concluded that
" the reason why the determina-
" tions of the Ancients such
" as Ptolemy and Ptolemy
" proved inaccurate must have
" been of this kind; he therefore
" constructed in Dar-ul-Khata-
" fet Shah-Jehanabad (Delhi)
" which is the seat of Empire
" and prosperity, instruments
" of his own invention of
" Stone and Iron —

— "Also instruments of the
" same kind at Secwai Jey-
" poor, Mata, Benares and
" Sujain —
— After seven years had
been spent in this Employment
he heard that about this
time Observatories had
also been constructed in
Europe — He sent to that
country several skillful
persons along with Padre
Francis, and having
procured the new tables
which had been constructed
there thirty years before and

published under the name
of Luyzer (La Hire) as
well as all the European
tables anterior to them, and
comparing them with obser-
vations found in the Atlas an
error in the Moon's place
of half a Degree, that of the
Planet was not so great
— Eclipses ~~half a~~ ^{fourth of} ~~fourth~~
(6 minutes of time) — Attributed
them to the inaccuracy of
the instruments —

N. B. An error of 3' in the
Moon's place would produce
6' error of time, there must
be a mistake respecting half

a Degree in De La Hire
to great accuracy and probably
in his letter

— Instruments

Large Equatorial Dial
at Delhi of the form of A
in the Roman Ob.

Length of the gnomon
is ————— 118.7

Elv? = Lat. — 28° 37'

Base ————— 104, 1/2 feet

Perp: Height 56.9

(Several hundred in Royal
Dist Prince of Oudh)

— Don Pedro de Solor
son of one of Jayasinha
Astronomer in Still alive
and his father had not
been dead more than five
or six years —

Euclid's Elements, Almagest
Trigonometry, construction
of Logarithms — These & some
Arithmetics, were all translated
in Sanscrit by order of
Jayasinha —

— All the Observations
described by Wittell in
his work are of modern

Date and more probably
of Europe than Hindoo
Constructions. —

— Jay a omka furnished the
title in 1720 - P. La Harpe
published the first Edition
of his 1609 and the 2 in 1702
— It was probably the 2^d Edit
which Jayasinha translated
as published 30 years since

N.B. Jayasinha
was Rajah of
Amber, or Jayana
gar —

111. The Barrene is the same with the Plantain only smaller. The Distinct obtain in the East, but not that I have heard in the East Indies.

112. Roots are the substance of food a greater variety of soils than grain or fruits - *quere*, why -

113. Dr. Periwat alledges that the ancient Romans were acquainted with the mode of conveying water in Leadon pipes; but that

They profound aqueducts, because they supposed the water to receive a noxious quality from Lead and want of air -
The gaster Palladius
Vitruvius book 8 ch: 7
Pliny - - - 31. - 6 -

114. Is it possible for the scent communicated by the must rat, to penetrate a corked and sealed bottle of wine? Has not the smell ^{rather} been given previously to the cork or empty bottle?

115 Jurin in a quotation
from an English Lawyer
says that tho' the opening
of the vein is felony, yet the
foraging the indorcement is
not —

116. Stone henges and
other remains of Antiquity
would be more striking in
models than in Drawings

117. A celebrated Mathematician
asserts that if a vessel formed
by the rotation of a Hyperbola
round one of its asymptotes,
be filled with water, it and

a hole be made in the
bottom of it, let the hole be
ever so large and the depth
of the liquid
ever so small, it will take
an infinite time to be exhausted

Solution —

Since the velocity of the fluid
thro' the aperture is always
as in the subduplicate ratios
of the perpendicular heights
of its surface above the hole
it is evident that when that
height is infinitely small, the
velocity must be so too,
that is in effect nothing,
consequently the water can
never be exhausted
— ^{can} can any approximation
to this be made in practice? —

118. The Geographical Para-
 doxes given in Gouans
 St. Gramme, concerning
 Gr. were first published in
 the Ladies Diary which was
 commenced in 1705 by
 Mr. Tiffin

119. Septa Dan and for
 inventory the same of
 Chops —

$$\frac{2^{64} - 1}{2 - 1} \times 1 = 1044674407370$$

9551615 Grains of Wheat,
 This divided by 640000. the n^o. of
 grain in a Bushel given

200230376151711743904375
 the n^o. of bushels which at
 3 M. $\phi = 7205759403792796$
 the Double of which is the
 W. is low! Then the value
 divided by 1000 and the weight
 by 2000 given each
 7205759403794 for the
 number of hours in ship loads
 required

120. Quere ^{is} ~~how~~ the variation
 of the rate of a Chronomet
 owing to alteration of the
 pend. Spring, or bat. or both, if
 this last be true, in what
 proportions —

121. — In clocks made for
 astronomical purposes it
 will be necessary to observe
 the arc of vibⁿ, which is of
 frequent from that described
 by the pendulum when the
 clock keeps time, it must
 be corrected as follows ..

If the corⁿ be expressed in
 seconds and the arcs in
 degrees the the Corⁿ will
 be equal to one half
 of three times the ~~square~~
 diff. of the square of the given
 arc and the true time —
 Ex: If a clock keeps time

when the pendulum vibrates
 in an arc of 3°, how many
 seconds will it lose daily by
 vibrating 4°

$$4^2 - 3^2 \times \frac{3}{2} = 7 \times \frac{3}{2} = 10\frac{1}{2}$$

122. A brass rod equal in length
 to a second pendulum is found
 by experiment to expand by
 contract the $\frac{1000}{1000}$ part of an inch
 for one degree of Fahrenheit
 and since the time as in
 a Subduplicate ratio of the
 lengths of the pendulum
 hence $\frac{1000}{1000}$ part of an inch
 will correspond nearly to one
 second = 1° of Fabrⁿ. If
 55° = Standard in England

Then from 30° to 90° =
60th Note daily —

— Give according to what
proportion is the balance
of a watch affected by heat
and cold —

123. The finer pendulums
can never be accurate —
The expansion of metals varies
so much even in the same
year ~~acted~~, by different hours of
cooling &c. that it can seldom
be accurately ascertained —

124. The expansion and con-
traction of straight grained
fir by heat and cold is so
little, that it may be used

in pendulum rods. It should
not be taken, Cornish &c.
but simply rubbed over
with wax. In the wooden pendulums
the error is much diminished,
but not annihilated —

125. Paste is rendered more
tenacious by mixing a
fourth, fifth or sixth part of
the weight of the powder of fine
dried resin, such as that used
by bookbinders, paper hangings
&c. It may be rendered still stronger
by adding Gum Arabic in
any kind of size —

126 In the Grove called
The Cave of St. Paul in
Malta a magnificent church
is erected. The altar piece is
ornamented with the story
of the Viper, over the painting
is the following inscription

Viperæ ignis acta calore fracturæ
Pauli
Manum incidit; is insulæ
benedictus
Stinguibus et herbis admittit om-
ne virus

MDCV

The Church built over St Paul's
grave near room is said to be in
existence at this day - Calmet's Dict.

127 A ready Crater
it is said pronounced
English at the rate of
about two words of Ten

128. The action of the Edipal
in blowing a fire
depends solely on the at-
mosphere air which it
drives before it into the fuel;
for when steam alone is
employed, the mixture will pro-
duce no effect in increasing
the fire - (Doubtful)

129. The Greeks were equally
unacquainted with the use
and abuse of Chemistry -

— Pliny and Seneca are both silent respecting the transformation of the base metals into Gold. Had ~~the~~ Alchemy been known at that time, the former writer would undoubtedly have mentioned it —

— The persistence of Decadence in the Century, has ordered the books of the Alchemists to be burned, is the first authentic warrant in the history of Alchemy —

130. It is a leading principle in Buffon's System to reduce to as much as possible the

number of Species, by sup-
posing perpetual variation
generated by climate, domesti-
cation, and other incidental
causes — His reasoning in
this way is almost always
devisory, his principles gra-
tuitous —

131. In all countries except
Britain, verse is always
read with a particular chant
between singing and speaking
— it is certain that the Greeks
and Romans recited their
verse in the same manner
— The Romans read both prose
and verse in this way —

132. Mr. Lonsdale's first intro.
owed on the English stage
the method of reading blank
verse like prose without
modulation or cadence —
— when the subject is
pathetic, and the sentences
short, this mode is perhaps
the best

133. We may describe the
Character, but we can never
paint the manner of foreigners

134. Unwisdom of belief
is a presumption, but not
a sufficient proof of the truth
of an opinion — E. G.

The Earth rest — Heaven above
and Hell below — Thunder the
voice of God's J. G. —

135. A proverb since has been
frequently annexed to express
i. ancient authors which the
writer perhaps never thought
of — Story of Ulysses the Embark-
ment in the Odyssey — *Quod
medio luteo sumus ibis* &c.

136. To purify ether —
Fill about a quarter of
a strong bottle with com-
mon ether, pour on it about
double the quantity of water;
then stop the bottle and
shake it in order to mix

The ether and water. Invert
the bottle and keep it motionless
in that position for three or
four minutes, when the Ether
will be found swimming on
the water, from the water nearly
all out, very gently, and expect
this process three or four times.
The Ether will be found exceeding
pure, and will dissolve charcoal
from which it would not do
at first. The ^{ether} quantity is reduced
by this process to a third or
fourth part of the quantity —
Cavetto

137. When one metal
is precipitated from its
solution in an acid by a
another metal, the precipitate
is always in a metallic state
130. It appears ^{extremely} at first
view, that an article
of so low price as salt
should yet furnish one
of the most lucrative
employments under most
States — China — India
Turkey afford proof of
this, the managers of
the salt business have

139 To discover in a solution of salt, whether it is Gypsum or Epsom salt. Fixed Alkali occasions a copious precipitate with the latter, but produces no change on the former —

140. Metaphor should be confined solely to Eloquence and Poetry, ~~but~~ ^{and} should never be made use of in Philosophy

141. Paper dipped in an aqueous infusion of Turmeric root is the best

test for Alkalies —

142. Different kinds of air which have no affinity to each other ^{when any fire} will not separate, notwithstanding any difference of specific gravity. Such is the case with inflamm^t. and azotic air and even of inflamm^t. and fixed air — Without this property our Atmosphere would soon be decomposed

143. Inflamm^t. air will not mix with ~~and~~ ^{or} alkalin air. —

144. The gases receive different degrees of Expansion from the

same degree of heat; oxygen gas the least, and alkaline air the most —

145 The marine acid air proceeds in making the acid is heavier than At. air extinguishes a candle with a blue flame, and water absorbs 360 times its bulk of this air, and thereby forms the strongest spirit of salt. It absorbs one sixth more than its bulk of alkaline air, and with it forms ^{the} common sal. ammoniac —

146 Nitrous acid dissolves all metallic substances except Gold and Platinum,

and in the solution Nitrous air is produced

147. All the Nitrates are deliquescent

148 All the Sulphates Crystallize and do not Deliquesce —

149. The marine acid, tho' usually denominated a weaker acid than the Nitrous, yet it will take Silver, Lead or Mercury from their union with the Nitrous — Hence ~~it~~ a solution of these metals in the Nitrous acid becomes a list of the existence of the marine acid in water and other fluids —

150. Every kind of wood when distilled or burned yields a peculiar acid; and it is the vapour of this acid that is so offensive to the eyes in the smoke of wood —

151. If a substance emitting heat without light be placed in the focus of a concave mirror it will raise a thermometer placed in the focus of another concave mirror parallel to the first; if ice be used the thermometer will fall —

152. Sir Isaac Newton first predicted not only the incombustibility of the Diamond, but also the existence of a combustible principle in water.

153. Besides oxygen and azotic gas, Atmosphere air contains several other substances foreign to it; but these all together do not amount to the one hundredth part of the whole —

154. Phosphorus is more
used ~~for~~ for the purpose
of Eudonachy; by burning
it in a Cylinder & fast
till it is extinguished
the decomposition of the
air points out the
quantity of vital air
absorbed -

155 The colder the air
the more does it pro-
mote combustion, because
a greater quantity enters
into the fire -

156. Cast iron becomes
malleable by being ex-
posed to a blast of air
when nearly melting.
The consequence is a dis-
charge of inflammable air,
and the separation of a
liquid substance, which
when condensed is called
fuming cinder. The iron
generally loses one fourth
of its weight in this process
- Crude iron contains
much phlogiston -

157. Iron acquires some little
weight when by being con-
verted into steel, and when

Dissolved in acid yields
more plumbago —

— Steel has some what
less specific gravity than
iron — when heated in
contact with earthy matter
is reduced to iron again —

150. The Ancients had a
method of giving copper
a considerable degree
of hardness, so that horse
swords with it and
swords with a tolerable
edge made before the dis-
covery of iron — Shakes
before the dis^y of making steel:
iron from cast^l art. 277 —
+ see vol. 21

159. ^{Nitric} Nitrous acid is
made to pass thro' a
red hot earthen tube, it
will be decomposed and
the greatest part of it
be converted into oxygen
gas

160. The acid of Borax or
Boracic salt is obtained
by putting Sul. acid to
a solution of borax in
water — in form of white
flakes which require
fully twice their wt.
of water to dissolve them.

161. The acid of Tartar
may be obtained by
boiling cream of tartar in
five or six times its weight
of water and then putting
sulphuric acid to it. This
water with ^{the} pot ash
and forms Sulphate of Potash
and the pure acid of tartar
may be procured in
Crystals by evap.ⁿ and
filtration, equal to half
the cream of tartar used

162. The rays of light
are differently reflected
towards or from the
intervening body. Hence

coloured

streaks of light appear both
within the shadow and on
the outside of it, the rays
being refracted at the greatest
distance from the body

163. Heat of the light. When
waters bodies is retained
within them and proceeds
no further; but so loosely
in some kinds of bodies, that
a small degree of heat is
sufficient to expel it again,
so as to make the body
visible in the dark. This
is a strong argument for
the materiality of light
— Bolognian Stone — Cantons
Compositions

164. Light imparts color
to the human skin by
means of the fluid under
-fermenting - copper colour of
the North American -
black colour of the negroes

165. Ice at 32° absorbs
 712° of heat in melting
or such a quantity of
caloric as would raise
a body of water of equal
bulk with itself to 144° ,
or 144 -

166. The Phosphoric acid
may be obtained either
by dissolving phosphorus

in the Oil of Nitric, and
the last is best; or by simple
slow combustion in atmosphere
or better in pure air -

167. Green Copper ~~oxide~~
becomes red by calcina-
tion, it is then called
Cochin, used in painting
my glass -

168. Mercury tritreated
with Sulphur forms Ethiops
Mineral - A more inti-
mate combination by
means of heat produces
Cinnabar; this reduced
to powder is vermilion -
Sulphur constitutes about
one third of the Cinnabar

169. The purest Potash
is got by the defla-
gation of Nitre by
Charcoal -

170. The new process
for making Sal
am: - To the liquor
from distilling borax
Vit: acid is added then
Com: Sult. A double
affinity takes place
Vit: a: and purest alk:
of the salt from Glauber's
Marine acid with Vit:
alk: forms Sal am: -

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