



Turon bay Co. C. China 15 June
1793

2361.

A Myzomachus with a
single string or gut in
which cord extending under
the ceiling from one end of
the room to the other with
a weight hung to it and
scale forms perhaps as
good a Myzomachus as any
other —
J. Hooper —

2362 In making Asph

gilted air in quantity
reboils in the shape of flo-
rescent plants with long nearly
straight - tube - but common

is composed of whiting and
Oxyng oil - Cavalls

2363. To try a mixture
of Alkermes and Infamⁿ
oils

2364. In the Orthogra-
phi projection of the
sphere arcs of circles are
represented by their Series
on the primitive

2365. In the Stereographic
projection - arcs are = $\frac{1}{2}$ Tang

2366. The Log $\frac{1}{2}$ Elapsed
time is the Arc Merid
computed out of the

line of the
time reduced to Degrees &c
— The middle line is the
common Loaf of Double
the natural sine of the
corresponding time reduced
to Degrees

— The Log rising is the
Logarithmic versed sine
of the corresponding time

2366. It is extremely improper
to give European Names to
places in foreign countries
— when pilots are wanted it
is impossible to make them
understand what you want
unless the ^{proper} name of the place
is made use of —

2367. The Patient Day is on
whole Day a head of the
Day - This is in convenient -
rith of error - Ephemeris

2368. Agate is preferred for
seals because no wax will
stick to it - Made use
of by Gold wire drawers for
burnishing their Gold -

2369. The Great 100° we were
Day experiment on this coast
China but $36\frac{1}{2}$ long $128\frac{1}{2}$ E
resemble those of Newfoundland
land. There is also some
resemblance between the
Geographical situation
of the two shores - both
extending
longer than to the east -

2370. The Chances not only
bind up the feet of their
infants, but it is said they
apply a corrosive to cut
away the flesh —

2371 A log of mulberry has
been ~~found~~ in England
and eaten fresh and sweet
in Barbadoes — Dipped
in milk sweet —

2372. It is proved that the
planes of the Earth's orbit
pass through the center
of the sun from the Declin
~~at the two solstices being~~
the same, and the Daily
Change what it ought to be on that
supposition

2373. It is proved that the
positions of the orbits of all
the other planets pass thro
the center of the sun from
their greatest latitudes being
the same on both sides
of the Ecliptic, and from
the nodes being 180° distant
from each other —

2374 It is extremely remarkable
and not easy to be accounted
for, that Mercury's Aphelium
has a retrograde, while all
the other planets have a

direct motion —

may be accounted for by the
action of the orbits on each other

2375. This day (17th July 1793

An official paper from
Lord Macartney was received
on board the Hindostan
recommending in the strongest
manner regularity of conduct
and prohibiting every spe-
cies of traffic —

2376. To work on Azimuth
by Gunter's scale
Log. Sines
Sine from $\frac{1}{2}$ Sum: Co. Lat

:: Co. alt: 4th 20th Then

From 4th: $\frac{1}{2}$ Diff: Big^r used

Sines: Arg if Lat: South, but

Supp^r if Lat. north

— N. B. This rule is sufficiently

correct —

2397. If two round balls are
placed in a line passing
through the center of the sun
the following curious phe-
nomenon takes place
before the limbs of the balls
come to contact a small
penumbra or mist ap-
pears on a whole screen pla-
ced behind the farther ball -
When the shadows approach
nearly to contact, that
near the screen prolu-
nged a little from its
circular form, and finally
between the protruding
shadows and the other, at
the point of contact, the penum-

was wholly destroyed, and a
line of strong light was formed
in its place — So that the
instant of contact might be
ascertained to one second
— These put on perpendicular
wires placed in the plane
of the meridian are well
calculated for observing the
transit of the sun, for regulating
a clock, and consequently
for supplying the use of a transit
instrument —

2370. The Difference between
summer and winter heat
in London will produce a
Difference in the going of a
common pendulum clock
equal to from 16 to 18" of Day

2379. Some think that the
obliquity of the ecliptic has
not altered during the last
300 years ————— O — n

2380. By the precession of the
Equinoxes the Declinations
and R. Ascensions of the
fixed stars are continually
changing, the Variation
of the latter always +
of that of the former + in
the first and third quarters
of the Ecliptic and — in
the 2^o and fourth quarters
of the ecliptic —————

2781. The pole star ^{has} is approach

the pole at the rate of
19.44" p. year for 150 years
past, and it will continue
to approach for about 300
to come after which it will
recede — La Caille makes

the quantity of approach
= 19.64. Other 20" p. ann —

2782. Doctor Halley found

his method was to be
divided into 96 instead of
90° that number being

capable of ^{continual} bisection down
to 3, and bisection is the
best and most accurate
mode of division —

2703. — To divide a straight
line or circle into any ^{odd} No.
of equal parts —

Add such a number as
will produce a sum capable
of subdivision to unity, for
example if the arch is to
be divided into 7 equal
parts add 1, if into 11 add 3
&c. — Divide the arch roughly
into the no of parts required
that is find nearly one
part multiply this by the
no to be added, and make
this addition to the arch
then divide the whole by
triplication to unity —

Example

It is req^d to divide any arch
or straight line into 13 equal
parts -

$13 + 3 = 16$ which respects to 1
part the 13th part of the arch
by trial, nearly, set this 3 times
to the end of the arch and
subdivide the whole 16th
times, this will give a 13th
part of the first arch very
near the truth. Take now
three of these parts and add
them to the first arch instead
of the first 3, and subdivide to 1
If there be any difference now
between the last and the first di-
visions, repeat once more &
the 13th part will be accurate
true

Example 2

Divide an arch of 60° in an
Astronomical quadrant
 $60^\circ = \text{Rad}$. Therefore the whole
arch may be said of accurately
no to be added is $4 = 64$
find 4° of this arch of 60 which
may be had by dividing first
into 5 and then each into 3
by trial, and this last to the arch
and respect to $15'$ — This
will seldom require repetition
— From 50° to 90° is 32
respect this continually and
the quadrant is finished —

2304. Name. The greatest
Elongation of the pole star
either east or west, to find
that angle on the horizon
Co. S. Lat: R :: $\frac{1}{2}$ Dist from pole
: $\frac{1}{2}$ horizontal Dist. from
the pole when the pole star
is at its greatest elongation
— Hence a meridian line may
be drawn by observing the
elongation as well as by the
transit of the star over the merid.

2305. Magnet^{ical} variations has
been very irregular — part
of this perhaps owing to
imperfect instruments

2306. Barⁿ Magnitude -
From 1500^o to 1772 = 32^o
or 10' of annuum at London.
From 1500 - 1772 at Paris
31^o. 25' or 9¹/₈ of ann -

2307. Total eclipses of the moon
are preferable to partial ones
for finding the longitude
because the shadow moves
more directly, contact is there-
fore more certain - The im-
mersions and emersions of the
different spots on the moon's
disk should be registered - moon
- Telescope for lunar eclipses
should not be less than 20 times
20 times - less is better -

2300. On land the longitude may be ascertained by the transit of the moon observed at two different places - The great velocity required for an error of 10" in time may produce an error of one degree of longitude - If the clocks are well regulated and a medium of a series of observations taken, the longitude may be determined to 5' or near -

2309. In a series of observations on the Eclipses of Jupiter's satellites - The first set: took 45", 50", 25" at different immersions observing its height

The second $40''$ of the
H. Sat. = $10'$ which renders the
last unfit for the longitude —
but observers may differ almost
half a minute of time in observing
on an error even of the first Sat
of Jupiter!!

2390 To find the Ascensional
Difference and thereby the
rising and setting of the sun
Tanq' Lat + Tanq' Decl. - Rad
= Sine Ascension Difference —

2391. The echo of the Lion's
Sun continued for 8 or
 $10''$ in the open sea. Not
of a gun on board the ship.
Dustan during a fog was very
strong — were the cause —

2392. The Spherical figure
of the earth changes the
position of ^{the} spherical horizon
the diff is equal to the angle
of the perpendicular distance
from the center

To find this \angle

Theorem

Add together the Logarithm^m
of the sum of Eq: \angle and Polar
axes + Log. Diff + Log. Sine and
+ Log. Cosine of the Lat, and from
the sum ~~subtract~~ the of these
four Logarithms subtract
the Double Log: of the polar
axis the remainder is the
Log. Sine \angle Deviation

Example

What is the Deviation for
 the Lat 20° supposing the
 the Eq^t to the Polar axis as

6562. to 6525 —

6525

13007 Sum — Log. 4.1160401

37 Diff — Log. 1.5667909

Lat. 20° Sin Log. 9.5340517.

~~Lat~~ Co. Sin Log 9.9729050

~~Sum~~ 6525 ~~Prod~~ Sum 25.1906605

6525 ~~As~~ Double Log 7.6292400

Devⁿ 12' 30" Sum = 7.5614277

2393. Another Theorem
for the angle of Deviation

In this theorem assuming
the two diameters of the earth
as in the last Example, their
squares are nearly as 1 to 1.007
whose Log^s 0.0040952 + 10. for
an index is a constant Log^s

Hence

To the Log sine Lat. add the
constant Log 10.0040952, from
the sum subtract the Log.
Co-sine Lat. the remainder
is the Tangent of an Arch which
exceeds the Lat by the L Deviat

Ex^o

20. sine	9.5320517
const. Log	10.0040952
	<hr/>
Co-s. 20	19.5309469
	<hr/>
20.12 Tang ^t	9.9729050
	<hr/>
20	12.2 Deviat

If Newton's proportions of the
Diameters are taken viz 229, to 230
then the constant Log: will be
10.0037046

2394. The Mathematicians who
measured an arc of the meridian
did not take this Deviation
to account in their calculation
hence the true measure of any
portion of the meridian has
not as yet been ascertained

If the \angle of Deviation differs
at the two extremities of the
arc of the meridian this
will affect the calculation

— Deviation not much in
the French measurements
~~which~~ were near 45

2395 The theorem
no 2393 was drawn from the
following analogies

as the square of the polar axis
: Square of the Equatorial
so is the sine of the Lat to
a fourth no. and
as the Co. sine Lat is to this
fourth number: so is the
Radius to the Tangent of
an angle which angle
exceeds the Lat. by the $\frac{1}{2}$ diam

2396. The spheroidal figure
of the earth affects ~~most~~ all
observations where the
horizon is concerned
viz. Amplitude Azimuth

Examples

Required Sun's true ampli-
tude at rising in Lat 51.31
North the longest day? -

$$\begin{array}{r}
 \text{Lat} \quad 51^{\circ} 31' \\
 \text{Declin} \quad \quad 19 \\
 \hline
 51 \quad 12
 \end{array}$$

$$\begin{array}{r}
 \text{Sun Dec. } 23^{\circ} 28' 9.6001101 \\
 \text{Radus} \quad \quad \quad 10 \\
 \hline
 19.6001101
 \end{array}$$

$$\begin{array}{r}
 \text{Cosine true Lat } 51.12 \quad 9.7969930 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{true Ampt: } 39^{\circ} 27' \text{ true} = 9.0031251 \\
 \text{without Cor} \quad 39^{\circ} 47' \\
 \hline
 \text{Difference} \quad 20 \text{ North Easterly}
 \end{array}$$

Shortest Day gives also 20
N. Easterly -

2 Given

Co. Lat	30° 29'
Co. Alt	30. 25
Co. Decl	66. 52

Required the \angle angle
 correct as in the last Ex.
 then the true from \angle well

\angle	1° 1' 6"	after Common
	1 4 30	after Common
	3 24	Differen = 51' long

Common on Calc: too soon

This observation was made
 between the East or West &
 North in North Lat and N.
 Declin

3 Example

Same as last except
the alt. which now is

60° 9'

L	True	7	16	13"	True
L	Com	7	16	5"	Com
<hr/>					8" Diff

Com. too late

This observation was made
nearly east ~~or~~ west hence
the little Diff: between the
Com. and the true

— H alt 55° 15'

L	True	7	33	9"	True
	Com	7	34	30"	Com

<hr/>					Com: Late
		1	29		less Com

Ex-

3	24
---	----

<hr/>		
whole Diff	4	53

4 Example

Given Lat by Obsⁿ $51^{\circ} 31'$
 Obsⁿ. North ——— $21. 9$
 Altitude ————— $5^{\circ} 15'$

Req^d from L

L $7^{\circ} 14' 56''$ True —

$7^{\circ} 16' 56''$ Com

————— $2. 00$ Com. late

here the sum bearing was
 between the East or West and
 the North, in North Lat. and
 N. Declination.

5 Same as before but ~~&~~ altitud

$= 27^{\circ} 15'$ — N^d from L

H
L $4^{\circ} 49' 36''$ True

$4^{\circ} 49' 20''$ Com

————— 01 Com. too soon

Bearing nearly East or West
 causes little difference —

6. Same as before but the

alt $49^{\circ} 14'$ nearly

L $2^{\text{h}} 36' 20''$ True

2 35 20 Com

1 Com too soon

7. Byimuth

Green Co. Lat = $30^{\circ} 29'$

Co alt 30.25

Co. Dist $66 32$

Req^d the byimuth? —

$\frac{1}{2}$ L $74 53 \frac{1}{2}$ True

$\frac{1}{2}$ L $75 14$ — Comⁿ

7. Altimuth 149.47 from North

altⁿ — 150 20

41 Com too great

8. Given same as before
but Co. alt 60.09
req^d the Azimuth?

$$\begin{array}{r} 00^{\circ} 56' \text{ J. from North} \\ 09. 4 \text{ C.} \\ \hline 10 \text{ C. too great} \end{array}$$

Let Mean Alt over because
the sun was near east or
west.

9 Given as before but
Co alt 55^o 15
57. 44 J. north
57. 20 C.

16 C. too small

By the here method in the above
examples is meant that when
the observed Lat. is less than
the declination, the horizon then
to be applied is at right L^s
to a line to the Earth's center

2397. What is the best
method of ascertaining
the velocity of a bird?

2398. The wind is sometimes
so strong that a bird
cannot fly against it.
Does not this prove that
the velocity of the ^{wind} ~~bird~~
at that time is equal
to the utmost velocity
of the bird in a calm?

2399. The Chinese pulley
(block) is flat, ~~the~~ it
has no sheaf, the rope
passes through the block
below the sheave.

2400. Whether are the Chinese
Cannons of Cast or wrought
iron - more probably wrought

2401. Some think a balloon
might be made of horn
but the difficulty of getting
can not easily be got over
- Two ways of getting full the
balloon with water, 1 fill the
a 2nd balloon within the
other and blow it full
with common air which
will displace all the air
in the Horn Balloon; when
done the vessel is full
the two balloons and open
the comm. between the in-
side and the atmosphere -
- gas can now be raised

fastened so as to be sufficiently
flexible to be folded or pressed
the sides close together?

† Pokin 23 August 1793

2402

Proposals for lessening the
weight of artillery - smaller
calibre for the field 3 p.
mounted like the Ammunition
will travel 10 miles an hour
and carry the men and 100
rounds of Ammunⁿ - 6 horses
- long six p. for demolishing
field works and Howitzers what
one saw to be the best piece
of Artillery in the Service
- piece may be much lightened
by reducing the moulders &
about the Carriage, the angle
above the Carriage except.

— Light field pieces well calcu-
lated for case shot very effective
against a Col. or line —

— Shells from howitzers against
horns — Perhaps the most
useful sort would be that
of an 10 lb shot — All mortar

and howitzers within the com-
pass of Cannon should be
fitted to the usual calibre

— It would perhaps be better
to arm one half of the troops
with pikes only — The Muskets

is becoming daily less use-
ful — The Horse carry Muskets

but are always told to de-
pend on their Swords —

— Long Guns preferable to short
ones for Case shot, and at
small elevations —

— Golden Buckets Right
— Cloth Caps Expensive and
cases kept clean — Trousers
better than breeches — Show
who are accustomed to wear
only trousers, more agile than
those who wear breeches —
— The number of Officers ought
to be reduced and the No. of
Sergeants increased — Every
Company 100 = 1 Cap. 1 Lieut
and 10 Sergeants — great encou-
ragement to enter the Service —
Sergeant may do the Subalterns
Duty — Corporals do the Duty of
privates in the field —
— These changes all tend to
lessen the expense, which at
present is enormous —

Pekin 24th Sep 93

2403. The missionaries account of the
Chinese is very unfavorable. Many
of the Mandarins who make a figure
abroad in their habits which they seem
very proud, leave their families almost
starving at home. - Population is a
great evil in this country, there seems
not to be sustenance for the multitude
- The great population of China
is owing principally to circumstance
there having been no wars of any
magnitude for a century past and
the Mandarins being permitted
to keep as many concubines as they
please -

2404. The method of exhaustion of
the ancients consisted in in-
scribing and circumscribing poly-
gons until they approached so
near the circle that the difference
was less than any assignable
quantity -

9405. Archimedes in squaring
the circle supposed ^{one} polygon
of 96 sides to be inscribed and
another of the same number
to be described about the circle
— he found the ~~exact~~ dimensions
of both polygons and sup-
posing the circle a mean
arithmetical proportion between
them, he found that the pro-
portion of the radius to the
side of the inscribed polygon to be some-
what more than 1 to $3\frac{10}{71}$ and
to that of the circumscribed poly-
gon to be somewhat less than
1 to $3\frac{1}{7}$. He took therefore 1 to
 $3\frac{1}{7}$ as sufficiently near the truth
for practice —

— The proportion of the radius
of the seventeenth century
is as 113.355 which is within
1 ten millionth part of the truth

2406. The squaring of the pa-
rabola by Archimedes is
the first instance of reducing
a curve surface to a plane
— Query what is the problem
respecting squaring the lu-
minal said to have been ef-
fected by Hippocrates of Chios
not the Physician? —

2407. Aristotle first proposed the
problem respecting the round-
ness of the image of the sun
formed by his rays passing
through a small hole tho'
it be triangular or rectan-
gular — This problem was
first solved by Proclus
in the 5th Century, who de-
monstrated that this small
hole is the vertex of two cones
of light, one of which has the
same for its base, the other the
reversed image —

— Query is this demonstration
to be found? —

2400. Pyroho — 10 August

— Cullen's Essay on whooping
Cough by H. Swaffer — I repeated —
Lectures on Epizootics, Vol. 2 —

— A pupil of the Doctors having
observed that the Ther. when
taken out of spirit of wine at
ways sunk two or three degrees
an effect which had been some
time before taken notice of by
M^r Marrian Doctor Cullen
found that the cold was the effect
of evaporation — He tried the
effect on various substances
and found a considerable degree
of cold produced in all, tho' dif-
ferent in different substances
— effect increased by agitating the
Ther. briskly in the air, or blow-
ing on it by a pair of bellows —
— An exper. produced an ~~exact~~
apparent exception to the con-
clusion — The mineral acids
raised the Ther. — But it im-

immediately occurred to D.C. that these
accidents collect moisture from the air
and that the mixture of the acid and
water always produces - That
- Exp. - Mixture of water and oil
of vit. would ~~be~~ to the temper-
ature of the atmosphere - cold was
produced by the evap. of this water
which justifies the former account
- Probably the cold may be the
consequence of the mixture of the
fluids with the air - Exp.
in vacuo proves the contrary and
confirms this Doct's first Hypoth-
is - There being in an exhausted
R. always under two or three de-
grees on the air being exhausted
after a little time it returns to
the temp. of the atmosphere
- On letting in the air the R. always
rises two or three degrees above the
temp. at: -
- Repeat with sper. v. and the
on it is placed in ~~vacuo~~ the
Receiver - On Exhausting - the
rises several degrees, and the

more air the spirit of wine goes
out the greater the cold produced
long before the air is exhausted
the sp: v. therefore long before the
ther: returns to the At: Temp:
If when stationary the ther: be
drawn up out of the sp: v. the
mer: sinks suddenly eight or
nine degrees - much farther than
in the same circumstances, in
open air -

- Sinks lower by repeated dipping
- Drop which hangs to the bulb
- should be brushed off
- In one Exp: Mercury sunk
from 50° to 20°

* In another Exp: with nitrous
Ether, the vessel containing
the Ether was placed in another
a little larger containing water
on the receiver being exhausted
and the vessel remaining for
a few minutes in vacuo, the
most part of the water was frozen
and the vessel coat: with Ether sur-
rounded with a thick and firm crust of

2409. In both Temple
observes that the most sig-
nal victories have been gained
by the army of inferior num-
ber — gain the cause —

2410. If by using a balance
with unequal arms the sel-
ler gains 1 lib in 16, by changing
the weights, the buyer will gain
 $1\frac{1}{15}$ lib. If 1 in 20 is the seller
gain, $1\frac{1}{19}$ will be by changing
be the buyers gain — Answer-
ably. The seller's gain is
expressed by a vulgar fraction
the ~~numerator~~ ^{Denom} of which is
the longest arm and the
the diff between the arms
— The seller's gain by changing
will be ^a third proportional
to the arms ~~longest arm~~ —

2411. A pendulum vibrating in a Cycloid is isochronous but the matter of the pendulum is supposed concentrated in one point as this is impossible hence the Cycloid is of no use in practice. If used the errors are greater than those of a common pendulum.

2412. The Chinese Candles are composed of tallow incensed with wax - when kept perpendicular the wax forms a kind of parasol round the tallow.

2413. Whether does the power of a capillary tube lay in the upper or lower annulus of the glass? -

2414. Whether is it the prevention of evaporation, or simply the sealing the atmosphere of air which prevents the putrefaction in an egg? - Give what is the degree of evap. in the interior of an egg?

Grand Canal - China 23 Oct 1793

2415. In a balance with unequal weights the true weight is a geometrical mean between the false weights — x or Arth: m.

2416. To find the Dip of the Horizon as the Semi: D. of the Earth + the height of the eye — is to the Radius so is the Semi: D. to the Co-sine of the Dip —

2417. The velocity of Light is to the Vel.^y of the Earth, as the semi-circ. orbit as Radius is to Tang.^t of $20''$ or as 10313:1 deduced from Bradley's Theory of Aberrations — From Jupiter's Sat: it is as 10465:1 the near agreement of these proportions is a confirmation of the principle assumed for the explanation of the Phenomena by Bradley.

2418. When each pulley has
a separate rope and one
end of every rope is fixed to
the weight, the combination
is more powerful than
the same no. in any other
form. Three movable
pulleys will in this way
produce a purchase of
15. In the Geometrical
Series, three pulleys will
produce a purchase only
of eight —

2419. Despotism it has been
said is an enemy to prosper-
ity. Free states are always
prosperous, but China is an
exception, the most prosper-
ous and at the same time the
most despotic earth —

2020 — weight of a cubic
foot in Sweden's stone

Items	lbs	Oz
Of Gold —	1227	0
Mercury —	060	2
Lead —	707	1
Silver —	540	1
Copper —	490	10
Steel —	405	4
Block tin —	452	6
Cast iron —	445	15
Marble —	169	6
Dorset stone —	160	10
Free stone —	127	0
Bricks —	125	0
Clay —	107	0
Chalk —	67	7
Soft water —	64	6
Hard water —	62	0
Tallow —	43	12
Manufactory —	66	7
Oak —	57	8
Bush —	53	6

Wh	50.00
Yellow pine	41.1
Walnut	39.7
Elm	37.0
White oak	35.9
Pine	50.0
Beams	50.7
Wheat	40.2
Barley	41.2
Malt	30.5
Oak	29.0

2421. Kepler discovered the
Elliptic form of the orbits —
— That the areas are proportion
to the times, and that the
 $p^2 \propto Q^3$ —

— Kepler's problem is to
Draw a right line through
the foci of the ellipse cutting
forming with the line of the
Apocides a sector to which
the area of the ellipse shall
have a given ratio —

Kepler first gave to show
the terms, Mean, Excentric
and true Anomaly —

— To find the true Anomaly
from the mean, or the mean
from the true — The former
is Kepler's problem, and
cannot be solved exactly
because the proportion
can be to the sun is not
determined — De La Hire —

2422. The Difference between the
mean and true longitude
is the Equation of the Center.

2423. The Chinese comment
with which they caulk
their ships has unconvi-
sionable advantage over our
pitch in not being in-
flammable

2424. The Chinese have a great
aversion to burying their
friends in a wet soil they
build little houses over the
coffin which is placed on
the surface of the ground.
When poor they leave the
coffin bare on the surface
rather than plunge it in
water, as is say the Chinese;
but coffins are frequently
seen on the surface (exposed)

on high rocky ground -
It was for work done
found

24.25. The Chinese arches
that I have hitherto seen
(15 Nov 1993) are composed
of stones long and thin they
are curved to answer the
general figure of the arch
In masonry work only 2 on
each side besides the center
or key stone which the Chinese
do not distinguish except if
it is the least of all. The lower
stone is about 7 or 8 feet high
in an arch of 25 feet they
decrease gradually, till the
crown be a rectangle whose
long to the breadth is as 5 to 4
The cross stones are in
general about one foot broad
and 10 or 12 in run the whole

breadth of the arch — There
are two stones projecting on
each side of the arch which
pass quite through, they
are to bind the two walls
and prevent the Earth from
sliding by the wall outwards
— The bridge over the canal are
very lofty — the passage over
them, by steps of a stair. The
parapets have now some iron
ornamented with grotesque
figures — From the water

2426. Writing with a black
lead pencil may be readily
faded by wetting it with clear
water +

2427. Chinese second their ships
with their head, the English
with their stern foremost -

2428. - Chinese have their re-
cessaries before, the English
behind their houses -
- Large Earthen Jar - paper

2429. If one agent performs a piece
of work in a ^{the same} another in b
days, both together will per-
form it in $\frac{ab}{a+b}$ days -

2430. ^{Who} ~~How~~ was the inventor of
canal locks?

2431. Every ship belonging to the India
Company is obliged to carry 24
guns, the Calcutta is not mentioned

2432. It is matter of surprise
that in the poems of Ovid
no mention is made either
of wolven or bears both of
which infested the country
at least as late as the
time to which those poems
are generally referred —

2433. The Chinese place the
Noodles or wunchee of the
water pump at right
angles to each other.
Theory pronounces this
the best position though
not adopted in England

2434. Some the rays of light
begin to be refracted on
their entrance into the

Atmosphere, I should not be
nervous of the refraction to the
same whether the atmosphere
is high or low? — It is found
from observation that the refraction
is increased in cold weather when
the atmosphere is condensed —

2435 — In surveying coasts and
land banks &c. Distances
are measured by sound, where
bar lines cannot be conveniently
by measurement, the above method
will answer — It will be suffici-
ently near the truth —

2436. Some describe the New
Moon as seen in a very im-
perfect manner — They say that
an observation taken both
on the east and west side of
the moon, comes very near
— a Mistake; only in the light?

2437. Copied in exactly direct
by first melting the Gum
and then pouring oil
on it, taking care not to
proceed too far in melting
for in this case the Vernice
will be blackened - must
be perfectly red oil as
the purpose being very
clear - give whether some
such process would not
succeed in Distilling Cambric

2438. Thin paper or a Conger
of rice the best size for
laying Vernice on paper

2439. A mitt with which the
brandy water is rendered
clear - give its name

2440. A new way of engraving
like chalk, lay the paper

on the bench and trace the
drawing, it will take up the
colour like the other red
and look like drawing on
Chalk —

2441. A green substance remem-
bered by a Jesuit is used by the
Chinamen for both oil and
water. it is said to be found
in copper mines — and
is far much better green
than verdigris —

2442. The Chinamen make use
of white lead, they take
much more pains in le-
vegating it, by which they
make it whiter, than
in England — green is it
prepared with vegetable
and? —

2443. The Bankin colour
is original - Cotton plants
of that colour may be
had at Manilla -
There is also an indigo
plant of a richer dye
at Manilla -

2444. In what manner is
trade affected by the rate
of interest of money? -

2445. Is not the high interest
of money in China an
obstacle to trade? -

2446. The Chinese Canals
their ships with Chi-
nam, a cement composed
of lime and oil, has one
great advantage - does not burn
Lime made of oyster-shells -

2447. It resembles Cannon
Coal so much that there is
perhaps only one Distinguishing
property, viz. That yet on being
rubbed is lubrical, cannot be
rot —

2448. Amber green is said to
be found in the Sperm whale
whale, Civet, Musk and
Castor in the inland re-
gions of the Civet cat, Kaban
Oa and Beaver —

2449. The Diminution of weight
in green timber after it
is felled, is so great that
in countries where saw
mills are in use by sawing
the timber into planks
the weight would be lessened
at least one ton in 6 —

2430. Charcoal is the most
incombustible body known
The beams of the houses in
Amenarium the outside
of which were charred by
the burning have never
found no change, and will
probably remain so forever
The Temple of Ephesus
was built of tiles which
were charred on the outside
It is a modern and com-
mon custom to char the
points of vessels drawn into
the earth, —

2451. All wood becomes heavier
than water by having the
air exhausted by an air-
pump, or by boiling the
wood in water —

2452. The Persians at Bombay
never bury their dead. They
aspire as a reason for this
that a man is composed
of all the Elements, it is
proper that when he dies
every Element should get
back its share — The bodies
are exposed in a place
on a high rock enclosed
within a circular wall
and infer the air must
before them would be expelled

2453. In Bombay and now
all the east, a few days
after the rains set in, all
the pools of water are
full of fish some 6 inches
long, in places that were
previously to the rains, dry.

2454. The mole on Cassin's
made to prevent the sailing
of the Island of Bombay
is too informed in a canoe
but the Engineer has com-
mitted this mistake, he
has opposed to the sea
a re-entrant instead of
a salient angle —

2455. Dancing practiced
by all nations - Secretly
when, old was taught
Dancing ~~and~~ by the
Parisian Mistris to Paris
from probably the near
by Malw and Zanzibar
make such horrid
murder of it - The most
ancient tracks on dancing
by the Mⁿ on an Lucca

I found part of the religious
ceremonies of the Jews (David
danced before the Lord ~~at~~ on the
return of the Ark to ~~Jerusalem~~
Sion) The daughters of Shiloh
are said to have danced at a
yearly feast before the Lord. —
— across the Lord with musi-
cians the dance — Dancing
made part of the religious
ceremonies of the Egyptians
Greeks and Romans — And in
certain Asiatic countries the
Christians celebrate the Sacra-
ment and Passover of Jesus Christ
with dancing — ^{Pompeii}
+ ^{Cune} ~~reproach~~ ~~of~~ ~~the~~ ~~ancients~~
for his dancing. Tibullus
expressed the same for, ^{Shoon}
Pompeii excluded several
members from the fence for
having danced.

- These last rather than the suggest
of caprice and folly than the
dictates of wisdom and virtue

- whether dancing owed its ori-
gin to military or religious
ceremonies is a question which
might admit of much dispute
and in which much erudition
might be displayed and
nothing very remarkable.

It seems to be a natural
consequence of the invention
of music - The nation of
all nations feel them selves
inclined to motion quick or
slow agreeable to the music
- War songs and war dance
of the Indian Nation - Victory
songs of the Pelicans over the
bodies of the roasting prisoners
dancing at funerals - water -

Youngs poem on Dancing -
Describes it in a moral point
of view -

2456. Nest of bees

18 June 10 a.m. wind north west

Ther in o.c. - - - 54°

in the press in both therm } 04
from minutes at 200 to }

I remain in the house all

night - at 5 a.m. - 79

at 9 a.m. - 03

at 10 a.m. - 04

at 9 a.m. - 70

Eggs of bees require Ther heat
also - maggots or even the

Chrysalis of bees will not live

in 60° or 70° -

1 Small sheet 12 bottles
 each 5 1/2 lb. each

2 Small box 7 bottles
 and 3 other cases

100

$ \begin{array}{r} 1000 \\ \hline 250 \\ 1210 \\ 50 \\ \hline 3710 \\ 6 \\ 22 \\ \hline 120 \\ 15 \\ \hline 1440 \\ \hline 400 \end{array} $	$ \begin{array}{r} 10 \\ 5 \\ \hline 90 \\ 122 \\ \hline 3780 \\ \hline 945 \\ 495 \\ 11 \\ \hline 109 \\ 475 \\ \hline 14115 \end{array} $
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