

- Lubricated and retarded with
 and against the current of
 air - Strong wind = 1 mil in 10
- Single pulley -
- Continued - 12 ft. second
- Door - Ratchet wheel -
- + All can feel nearly alike -
- Same with regard to light
 - reason of both -
- ~~Reflected~~ Sounds - Echoes
- Board in water - in air
- Echoes = 10²⁷ distinct
- + Cause of an Echo differs
 bodies reflecting sound to
 the same point -
- Sound repeated from bodies
 placed at different distances
 repeated from two parts
 walls - Dr. J. Hunt at
 Greenwich -
- Echo near Ear -

- Echo from the air -
 - sound from a cloud -
 - sounded - focus - Madara -
 - Euler Lambert's. maintain
 that sound moves only in
 straight lines, and adduce
 Echoes as a proof $L \sin = L \cos$
 - But an Echo will happen
 if the sum of the long from
 the surface ^{and} the focal
 point be equal -
 - Ellipse it is the most
 perfect - sound in one
 focus reflected to the other
 circle - end of the diameter
 - exactly in the center -
 + The Diff: between the sums
 of the two lines and the dist
 between must not be less
 than 127 feet -

- St. Paul's -
 - Paisley air - 40, 30, 20
 - Concave mirror - reason
 - Tube - Reason of Augmⁿ
 + Speaking trumpet -
 - figure - Theory -
 - Whisper - Figure -
 + Ear - passage - figure
 Tympanum - Experi-
 ment with lungs -
 - Pitch fork in air
 applied to an elastic
 body - a rod -
 -
 + Guns at Carr -
 - Great bells -
 -

Brown high and Low
acute and grave —

+ No foundation in Nature
Quarts reverse — Lye —
— Two persons singing
— around by certain fixed
steps — Coniords Disiords
— same in all countries —

+ Octave —

+ Natural scale —

— Steps not equal

Tones — Semitones

— Major — Minor 80. 81

$\frac{9}{9}$ Ma. — $\frac{9}{10}$ Min.

$\frac{15}{16}$ Semitone —

— indivisible —

— Things —

3 Superlunaris —
Length — Diam. — Tension —

+ 1 : 2 = Octave

2 : 3 = 5th

3 : 4 = 4th

4 : 5 = 3rd greater

5 : 6 = 3rd less

Coniords

Low (D) German Sped.
= 120 vibrations fo = Secnd

+ Ear only judge of Mus.

+ written music —

— Treble — Bass — Tenor

— High Harps

Changed Instruments —

— Harpsichords — Spinets

— Improvements —

— 30 tw. = Tension —

— Organ action — Heat —

Violin

- most perfect instrument
- strings tuned 5th - coming
- 17 notes without a shift -
- strings unequal in weight
- kept covered with metal -
- Effect of a mute -
- + worn instrument over -
- Eolian Harp -
- Partial vibration -
- Three notes from the same
- thing \pm no difference of pitch
- + Great bell - fundamental
- tone - whistling -
- + Organ the most perfect
- keyed instrument -
- + Musical Glasses -
- more warm deeper tone

Minstrel Museum at

- Sympathetic Tones -
- Harmonic Tones -
- + Throat & Lungs give the
- idea of the flute -
- + Octaves in the flute
- produced by a double
- velocity of wind -
- + Two concords and a dis-
- cord are sounded - Discord
- left behind -
- + Pitch fork applied to
- the tongue -

XL Coats are now
by the m

1547/51
100
50

XL Coats are now numbered
by the million of pounds

$$\begin{array}{r} 12 \overline{) 1142} / 95 \\ \underline{100} \\ 62 \end{array}$$

7

Inflam. of Balloons

This Ball. is filled with inflam.
air, a fluid which does not con-
dense like water vapor: air.

This fluid is produced in great
is called the w. and size of which
depend on the size of the Ball.
Chief objection to the Lead Center
is the expense.

It is necessary to confine
the inflam. air as no addition
can be made to it in the air.
The weight of the materials
is very ~~of~~ too great.

— Balloons must be well var-
nished — The best Varnish
is the Common oil — Elong
Balloons have been tried but none
endured —

greater distance.
The manner sound -
The reason why sounds
are heard further on a plain
than a hilly country, at sea
than on land &c. —
— Great bell not heard
a "rough" shore, altho' heard
several miles in the country —
Sound moves at the rate of
1125 feet in a second or an
English mile in 4.6 seconds.
All winds move equally fast
the gentlest whisper as fast
as the roar of a cannon —
Sounds are conducted or re-
flected according as they move
with or against the wind.
Single pulses :: 13 ft. sound.
Make continuous sound —
Door grating on its hinges
Machine with a rotating
wheel and fly

It is very remarkable that
all ears feel continued sound
at the same ~~same~~ instant of
time —

There is a similar fact in
vision — touch & heated sound
— Any impression made by
means of the senses on the
brain takes some time to wear
off — &c —

When a wave of air or sound
strikes — a flat surface it
is reflected hence the noise &c
When the reflecting surface is at
a sufficient distance that is
not less than 100 feet then
the reflected sound will not
arrive till the original sound
ceases, in this case the reflected
sound is called an echo —

Several curious circumstances
respecting echoes —

— Sometimes the same sound is
frequently repeated — This happens
when there are several reflecting
surfaces at distances equal on
the same or opposite sides of the
center of sound — There is a
remarkable instance of this
at Sir John Stewart's house
at Greenwich. Two pavilions
front each other at the distance
of about 100 feet. A sound
excited at one is repeated three
or four times from the other
when the sound is sent from
the middle point between the
pavilions then double the no
reflections in the same space
time

There is an echo in the neighbourhood of this city which repeats a line of Virgil —

Some figures such as the circle and oval greatly augment some — Whispering Gallery of St Pauls —

— Hills of Paisley Abbey — more extraordinary than St. Pauls. It consists of one apartment.

about 100 feet long and 10 feet high. The ^{side} walls almost plane the roof an arch, there is a large window in each end one of them built up, the door is immediately below the other. The floor flagged and one end raised about 10 feet above the other — Sound continues 4 or 5 seconds is strong and general at first but ends in a most enchanting shake —

An oval room has this property that any sound excited in one focus is reflected from every part of the surface and concentrates in the other.

The concert hall of this City is an example of this.

A concave mirror will reflect and augment sound,

A tube will convey sound to a great distance. I have heard a whisper distinctly thro' a leather tube 60 feet long. and I judge I say a whisper for the voice would not have been heard thro' an feet of the same tube.

In order to hear thro' a tube the ear must be applied close to the end of the tube, if the sound is to a distance beyond the tube the farther end must

be ordered. The same work
advantage of this and constitutes
the speaking trumpet, the
form of which has been gradually
improved and is now perhaps
as perfect as the simplicity of
the instrument will admit of.
London Crawford Street
Diagonal air is received

Atmospheric air
supports animal life and flame
Phosphorus

Air in which animals have
expired or in flamm^g substance
have burnt out is noxious

Expt of the bottle

Doctor Crawford's Mewy

Stagnant air is noxious

is a succession of various
sounds which excite agreeable
sensations. In the
something in our ears. If
sounds may be compared together
either with respect to pitch
or tone - or with respect to
the strength.
Acute - I have
a boy's voice more acute or
higher than a man's -
The distinction of high and
low has no foundation in
the nature of sound. The
quacks called their greatest
sounds the highest - pro-
bably because the strongest
things of their tone were
apparent. -

Music is a succession of various
sounds which excite agreeable
sensations. In the
something in our ears. If
sounds may be compared together
either with respect to pitch
or tone - or with respect to
the strength.

Acute - I have
a boy's voice more acute or
higher than a man's -
The distinction of high and
low has no foundation in
the nature of sound. The
quacks called their greatest
sounds the highest - pro-
bably because the strongest
things of their tone were
apparent. -

Pitch represented to the eye
by five horizontal lines -

Degrees of sound shown by
certain characters on these lines
and the spaces - higher sounds
placed uppermost -

A certain number of steps
or degrees of sound constitute
the Natural scale -

Steps not all equal -

Tones - Semitones -

First note indifferent -

all the rest bear a certain
relation to it -

Key note 2 : 3 : 4 : 5 : 6 : 7 : 8
Key and 1 the same -
octave - 7 notes -

To find the semitones Key
very known -

Semitones below the
Key and above the third -
The key must be kept constant
in view - Thoughtman - in
the middle of a tune -
natural Expectation -

To find the Key note -
Last note of the last Key
Key note -

Two tones and a semitone
above the Key - Sharp
one tone and a semitone
flat carrier -

Greater and the few minor
Different effects -

Natural Keys C. Sharp use of flats and sharps
A flat — for transposition —

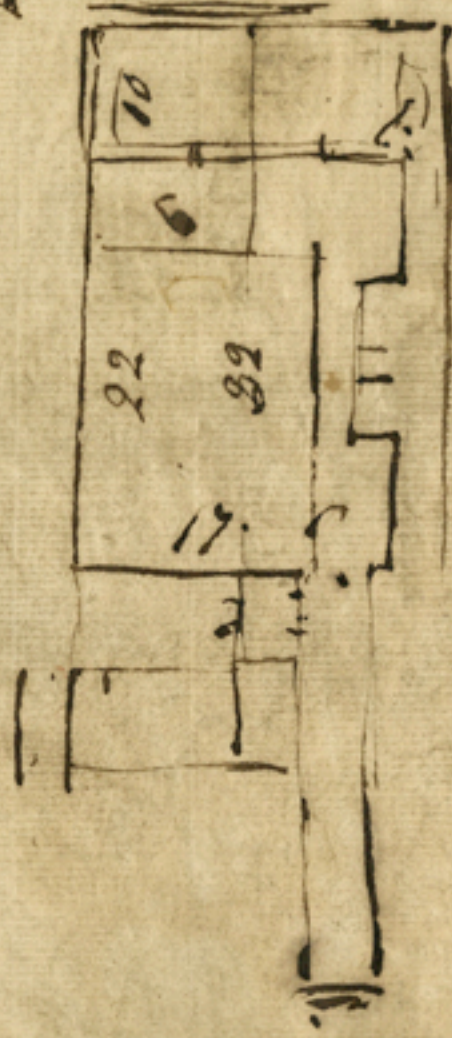
In transposed keys of B
note below the key be sharp
on the fourth above be flat
it is of the sharp series —
chromatic flat —

Three Octaves 11 lines
more than a single voice.

Bass lowest — Treble highest

Staff Bass I on the fourth
line — Tenor C, on its own
line

Treble Clef, I on the the
second line



~~Balloon~~
~~after~~

A balloon may be defined
a large bag or case filled with
a light substance which floats
in the Atmosphere.

A body floats in a fluid
when it is lighter than its
equal bulk of the fluid.

E. G. Cork in water, lead
on Mercury, smoke in air
heated air in cold air.

If the balloon and is equal
in weight to its bulk of
Atmospheric air it will
just float. If lighter it will
take up a weight equal to
the difference.

A ball which will just float
at the surface will not ascend
higher on account of the gas.

about $\frac{1}{3}$ of the Diameter of
neck —

Dried straw cork shavings
or any other fuel that burns
clear and fierce without smoke
will serve to inflate it. —

— To ascend higher the fire is
increased &c —

Inflation: —

Power of Ascension Difficult
to be sustained —

In large ball: it is probable
that the rarified air is not
more than twice as light
as com. air — whereas inflat.
air is ten times lighter —

A. a bar of Iron ≈ 40 lbs

B. The current of air round a candle upwards prevents the sound of a Drum of safety it —

C. Suppose Magnets to be a fluid and to move in any one direction then the attraction and repulsion may be all for —

D. If the weight of a body is less than the cohesion of the particles of a fluid then the body will move on the fluid tho' specifically heavier —

C. The Bishop of London
said in his Sermon on preb-
trise. The person said
that he had read somewhere
where that a body had
remained under water
and I am not mistaken
under this is for C.
weeks and was recovered
and I believe it possible
I think a cock is running
and in fighting the owner
cuts up a bit of turf
and puts the cock back
into the earth and he
revives - happen from

the principles. For any person
the man who first ventured out
to sea as having a boat and a
triple plate of brass about his
breast, but what would he
have said of the man who
first ventured up into the
air in the air column 800
times lighter than that of
water and consequently pro-
portionally less fit to sup-
port him.

The air is that fine transparent
fluid body which surrounds
the globe of the earth. It contains
both of its animal and Mineral
motion and extends from every
point of its surface to the height
of about fifty miles, with this
fluid we are perpetually
surrounded we are every mo-
ment drawing it into our
lungs and its variation in
spring and press are greatly
affect our health and spirit.
To become acquainted with its
principal properties is therefore
an object well deserving our
attention.

1. Air perfectly transparent
though invisible, seldom
found pure, water darts
and a variety of other matters
combined with it, these can be
separated by both artificial
and natural processes.

2. Heights of the Atmosphere
varies - Ascertained by the
Bar? & the light -

3. Air is a compressible
fluid. - piece of wood
just three inches equal to
all above - proved by the
Bar?

4. Condensed - rarified & our
syring - Air pump -

5. Pressure of the Atmosphere
seen in the pump plate

2. Bladder - contains -

3. Hemispheres - contains the
pressure in quantity - 12 Lb.
on any circle - with 15
on any square inch. -

on a man's body 22,000 Lb.
Why does not this pressure
crush him to death? Because
the spring of the air within
is a counterbalance to the pressure
without.

6. Air Extracted from wood
- From Bee - not pure air
- particles of the bees of resin
film (as we) along with
the air hence the head

When the experiment is
tried with water the air is
retained in Globules but no
heat is formed because the pas-
sule of water than but little
attracted to each other —

— Air Extracted from an
egg — bulk increased. Shell
porous — hence the cause of
eggs spoiling so soon. To
preserve them rub them over
with butter. Jewels, Glass &c.

7. Spring of the Air. —

Isaador — Air Gun —

Heat enlarges the bulk of
air — but a body burning
in air till it is extinguished

Diminishes the bulk of air
— burnt paper in a tea cup —

J. Bell in Vacuo —

Air is the medium of sound
where there is either no air or
no free circulation of air there
can be no sound —

Sounds are propagated in
~~water~~ air like waves in
water — Velocity of sound
1142 feet per second — All
sounds move equally fast
sounds retarded by an
opposing and accelerated by
a concurring wind —

— Sounds Diminished on the tops
of mountains increased in
the diving bell. A Gun

Discharge on mount Etna gave
a report like a shock in
the sea — French horn at —

in an Eng. shell in A. 6

trumped to be similar with the di-
ring bell had almost rent the
drums of the ears.

Echos are sounds reflected from
some surface at a proper distance
- Every sound makes an impression
on the ear. which requires some
time to wear off. & therefore the
reflected sound arrives at the ear
before the original impression is
worn off there is no echo. To
produce an echo the reflecting
surface must be at least 60
feet distant.

A good ear cannot distinguish
single pulses of sound which
sound each other at the rate
of 12 or more in one second
and it is remarkable that

how different men people can
may be with respect to music
they all agree nearly in this
point in finding continuous
sound at the same instant
- A door grating on its hinge
a quill moved over a comb
are examples - There is some-
times fast in vision - A torch
whirled round with a certain
velocity appears single,
increase the velocity and
instead of a single torch
you have a imperfect
circle of fire. The circle
becomes complete at the
same instant to a number
of spectators. From this many
curious consequences.

The low D of a German flute
concert flute is unison with
a string which performs 120
vib. in a second—

In the Aeolian harp sound
sounds from the same string—
all unisons. — Octave, fifth
and third — —

Diving Bell.

Indians know a tub over
their shoulder with proper
weights hung to it to make
it sink and descended to a
considerable depth in water
but as air which has once
passed through the lungs
of an animal is unfit for
respiration they found from
it necessary to come up for
a fresh supply. — Quene
Nelly first contrived a method
of sending down fresh air
to the diver, he also enlarged
the vessel and gave it a more
convenient form — called it the
Diving Bell —

Description of the
Diving Bell

The Bell has been ^{made} of ~~Refined~~
Materials Lead is the best
it is composed of staves
like a cask, strongly bound
with iron hoops. To the lower
ends of the bell are hung
a number of weights to make
it sink in water. The weight
of the whole must be greater
than the weight of its bulk
of water in order to sink.
The weights must be so distri-
buted as to make the Bell
sink in a perpendicular
direction, and the mouth
consequently close with the

water all at the same time
to prevent the escape of the
air, as is proved by this
experiment, received in a
in the water, air escapes —
glass windows are placed
in the side and top of the
bell to give light, Diver sits
on a cross bench or rope
most convenient situation
is with half the body in
the water, by this means he
breathes the cool air near
the surface of the water
and also Displaces his
air ~~from~~ from the bell, and
consequently the Diver can
remain longer without a
fresh supply. —

One great inconvenience
attending Doctor Hally's
bell is that the ascent and
descent of the bell depends
^{entirely} on the people above. A
yard arm or some other
projecting part of the wall
may intercept and cover
the bell in its descent,
before notice would be given
to the people above. Doctor
Hally having no other sig-
nals than writing a few
words on ^{plates} ~~boards~~ or ~~boards~~ of lead.
To remedy these inconveniences
the late Mr. Spalding contrived
two methods by either of which

he would raise or lower the
bell at pleasure independent
of the people above. One
of these is so easy and sim-
ple that it is surprising it
should not have occurred
to Hally or any other per-
son who had made the
bell the subject of his in-
vestigation. - It was this.
The weights hung round the
mouth of the bell would nearly
balance the bell, an additional
weight was appended to the
center of the bell which
with the ^{weights on the} outside of the bell
would readily sink it - When

This balance weight was
either put on or taken off
the Bell would sink or swim
alternately — The other method
was by making a division
in the upper part of the bell
which would hold two Cwt.
of water, by means of two stop
cocks the Chamber could be
filled either with water or air
and consequently the Bell
rendered near two Cwt. heavier
or lighter —

There are two things requisite
for the case of the Diver To let
out the heated air and receive
a supply of fresh air from
above — The corrupted air
is let out by a stopcock
placed in the crown of the
Bell which the Diver opens
occasionally when the air
rises with violence to
the surface, the water will
no longer become it finds
an easier passage in to the
Bell below —

Air Barrel Description
of it - Simple construction

Signals

M. Spalding continued
to make signals by lines
reaching from the lower
part of the bell to the Deck
of the vessel from which the
bell is suspended - add:
signal for all well -
- cork balls -

- Process of Diving -
The bell is hung from the
hoisting gear, or any
other part ^{of the ship} properly secured, the
Diver gets into the bell, and
when the bell comes near the
surface of the water he takes
his rest. The first thing re-
markable to the great increase
of sound in the bell, the Diver
startles at his own voice -
- A gentle tap equal to the
blow of a mallet - The
bell should be let down slow
a barrel of air at 2 or 10
feet, The Diver now begins to
feel a pain in the ear & the

increases as he descends
at 25 or 30 feet the pain
is excessive and sometimes
occasions a discharge of blood
from the ears — At about 33
feet the Diver feels a sudden
shock or crack in the ears
which is alarming at the
first sight, but instead of
the Tympanum of the ear
being broken off the Diver
suspects, he finds the pain
instantly removed, and is
perfectly at his ease. The
pressure of the condensed air
in the bell against the Drum

of the ear occasions the pain.
There is a communication between
the mouth and the cavity behind
the Tympanum by means
of what Anatomists call the
Eustachian tube, when the
air in the bell and condensed
in the mouth of the Diver arrives
at a certain degree of condensation
it forces open this tube rushes
in behind the Tympanum and becomes
a counterbalance for the pressure
on the out side, the Tympanum is
by this means reduced to
its natural state and
the pain consequently
removed. Whether lengths
of time the Diver remains

at this depth he feels no
more of the pain. But if
he descends deeper the pain
is renewed and at about
40 feet a second shock takes
place. There is generally light
enough for the Diver to do any
work — The cold at the bottom
is very great. This may be remedied
by slipping several folds of
stained warm flannel round the
body immersed — Caution —

It is prudent never to turn
the stopcock, except when the
barrel of fresh air is at hand
to supply the place of that
let out.

Uses of the Diving Bell
to lift a wreck either in whole
or in part — Fishing for coral
— Examining the bottoms of men
of war. — Bottoms of rivers
for laying the foundations of bridges
— The Diving cannot with any
degree of safety leave the Bell

M

Mr. Spalding's death
being to a fatal concurrence
of circumstances — Current
when around the bell — signal
would not be perceived — Why
did not he drop the balance
weight? the bell would have
over set — Much owing to the
condition of the people above
the weight they saw air bubble
up when the air honest was not
down should not they then have
drawn up the bell? — I never
regretted any thing so much
as my not having been
present at this Experiment
I feared to go with Mr. Spalding
to the wreck which was
about 18 miles from Oubla

Lectures on At: air -
Resistance

1. Bladder - 2 Syringe
3. Pump bell - 2 Chapselles -
Weights
5. Flask (contents ascertained)
— $14\frac{1}{2}$ grains = 2 lb or 1 quart
of water —
Bar: and Therm: must be
attended to

§. Presure —

6. Reason in the Pump & plate
— reasoning —
— Why does not the air break
the vacuum? These —
7. Bladder broken —

— report of a Gun —
— Glass windows — Cotton —

8. Numinphores — Magdeburg
— quantity of pressure —

— Body = 30,000 lbs —
— Fish in water — on Land

9. Willow — Capillary tube —
— Microscope —

10. Mercury cup —

— Elasticity — Definition

11. Bladder — Vingle —

12. Bladder — Lead weights —

13. Wood 14. Water 15. Beer —

16. Egg 17. Egg membrane —

18. Fountain by pressure ?

19. Fountain by Spring —

20. No Auction — +

21. Baubus — +

22. Ballon —

23. Guinea and feather +

24. Light and heavy body +

25. Barometer + — 28

26. Air Gun. + —

27. Mill — +

28. Pumped air +

29. Smoke Descends in Vacuum +

30. Fish cannot sink —

31. Animal in Vacuum —

32. Pumped air Exp. Church

33. Wood rejected with Pump

Observations

- + Height of the Atmosphere
contained two wings -
Twilight - Barometer -
+ The air extends to a
great height - Friction -
1783. very high - Sparks
noise - No burn in air -
+ 45 miles may be the height
to which vapours ascend -
vapour probably causes the
refraction -

Exp 13. Why wood is lighter than
water - Why the lightest woods
often being sometimes in water
sink in it -

- Method of injecting wood
with mercury -

- If the Membranes be put into
the condenser and one atmosphere
be thrown in, same force to support
them as when exhausted: If the
Membranes be first exhausted
it will require double weight &c.

- Breathing - Sucking -

- History of the Barometer - Numbers
at Florence wanted to rise water
by a sucking pump to 50 or 60
feet - Galileo - of the Nature ab-
sence of a Vac: why one might
more or less be said: said that
the Torricelli was limited to 33 feet -

- Gal: had discovered the weight of
the air, remarkable why not
the pressure - Doctrines of
Torricelli prevailed -

- Torricelli put 60 then 40 feet

- at length Mercury - $29\frac{1}{2}$
 cause pressure of the air -
 + one set aside - felt lower! -
 Pascal's letter in 1647
 to his brother - saw M. Perier
 recommended him to try the
 Experiment at different altitudes
 - reasoning - predicted the con-
 sequence -

+ Different barometers -
 + by the air pump the pressure
 of the atmosphere is diminished
 with much ^{less} trouble than ascending
 a mountain -

+ In determining the height
 of the atmosphere by leveling
 the barometer must be taken
 to account $\angle = 17^{\circ} 30'$

- Air pump - cannot produce
 a perfect vacuum - reason
 - Torricelli's pressure on the
 upper water removed -
 - Torricelli's lower valve removed
 - Haas - near the connection
 left the lower valve by a
 mechanical contrivance -

- Analogy -

$S, 91^{\circ} 15' : \text{Semi } D :: R : \text{Hypo}$
 from which Deduct Radii then
 remain this height of the
 atmosphere - or

$\text{Rad} :: \text{Semi } D :: \text{Sub } D, 45^{\circ} : \text{Hypo}$

- Meter Described by Dr. Hally 1719. ≈ 70 miles
Explosion heard over all
great Britain - vivid
light -
- Rawlins - both bladder
and tube may act -
- Ellet's Does not remove
the difficulty - pale light
this rarefied air -
- Queen Elizabeth - Motion
to prohibit the use of
pist coat - noxious, parti-
cularly to persons from
the country -
- New Gauge - Short - long
tube -

- Vapor of oil for water
oil Leather - when the pres-
sure is lessened - hence the
disagreement between the
poes, and other Gauges -
- New most accurate -
- Suggested for the Air pump
- Small pist. at Calcutta

— Sounds — Echo 127 feet
= $\frac{1142}{9}$ some say $\frac{1142}{12} = 95$ feet

— Elipsis — figure —
— Seminal St. Pauli —
—

Chem: Scraps

M. Deet & P. P. P.

London at 1799 - Nov 1

Observation on Dr. Priestley's
expt: —

— Atmosphere composed of two
permanently mixed fluids of
very different and opposite
qualities the one &c —

— These two gases are not che-
mically united, but exist merely
in a state of intimate mixture
or combination. They are con-
sequently easily separated by a
substance which possesses an af-
finity for either — Ex: Gravel
Pure ment: is also kept: but
something before boiling — undissolved

Substance has gained an additional weight, equal to a quantity of air which has disappeared. The air is changed from oxygen gas - carbonic acid - ammonia - and powder exposed to a red heat = air lost.

The red powder becomes running mass? and the air produced is from air Exp. &c. —

— Manganese has therefore the power of decomposing At: air and emitting to the oxygen over. By this the proportions are not accurately on account of the att. of O₂:g. to the principle of heat (caloric) and partly on account of the attraction which

subsists between the compound parts of At: air.

— A Solⁿ of Liver of Sulphur in a jar of At: air impregnated with water, will continue for two or three days to diminish the air in the jar. When the absorption ceases, the remaining air is pure oxygen, and is about 27 parts of a 100 or 27.73 the proportion between the oxygen gas and Azote of our At: air. If this oxygen be mixed with the air from the red precipitate in the above experiment, At: air will be produced. This is both Analyt^l and Synth^l.

Duch Priestley - In all cases
of what is called the Phlogogation
of air there is an emission of
something from the substance
which the antiphotogenic test
suffices to act by simple ab-
sorption - There is phlogiston
which uniting with oxygen
gas forms with it part of the
azote found after the process.

Experiments on the same were
heated by a burning glass in
at. a. in a vessel - The
results of the whole gave two
small proportions of $Ox: G.$

Exp. with published results
gave also two parts $ox: the$
more than the bones.

- When the needles were heated
over time water a thick crust
was found on it, but there
was not such a precipitation
of the air as with the bones.
Reply

In all the cases of denudation
of the air by the black bones,
a quantity of carbonic acid was
produced by the union of the (or-
ben contained in them with the
air of at. a. The loss in the wt.
of the bones and the precipitation
which took place over time
water prove this fully, and it
is probable that D. O. was
not capable to separate them
gas from the phlogiston absorbed air
which remained, which would

consequently escape detection
if the employed the distance an
was a test of its purity. The
spring is strengthened by hair
and is made - in width 15
inches on 100 15.75 in a 100
and 19.4 in a 100. —

As to the coal, with the
nuclei — Carbon is a constituent
part of the — hence the Carb: a.
found when they are heated.
Thus while one portion of the
Ox: of the Al: a. united with
the Carbon of the coal to form
Carb: a. which was in part
absorbed by the water, another
portion united with the iron to
form which was by that means
partially oxidized and received
a small addition of weight

The phlogisticated air —
formed after the process
is that wanted very exactly
in the Al: a. employed
— The addition of 9" of Phlo.
air & P. this is found by
the union of part of the Ox: of
the Al: a. with the Phlo:
combined for the purpose. —

Referred by the following

Expt. A piece of charcoal
which had been charred in an
extreme heat, to the focus of a
burning lens in a receiver
placed over a glass tube
both end half filled with
lime Carb: Gas expelled by
gentle heat from Ox: of Iron:
of Red ash. The Vol: of the air

The apt of

was increased by heat and after
it had been suffered to cool
it appeared somewhat augmented
Having withdrawn the lens
that was unconsumed a set
of Camille Lethbridge was introduced
under the receiver, which absorbed
nearly nine tenths of the whole
gas which therefore consisted of
carbonic acid. The remainder,
on examination, was found
O₂ gas.

After such
unquestioned proof that O₂
O₂ is not unemployed
none is produced, it is cer-
tainly presumptive that it
is not ~~unemployed~~ in ~~production~~
in the other instances; and

indeed it appears strange to
us that the union of what
is termed phlogiston with
O₂ should at one time
generate fixed air, and at
another O₂, without any
apparent cause for such a
capricious result.

Doct. Priestly alleges that
the Phlogiston of Nitrous
acid is owing to some cause
to its uniting something,
and not to its parting with
something according to Ant.
This is what he thinks
from its becoming phlogisti-
cated by uniting Nitrous ac.

Amos

Let us examine more into the
constituent principles of ni-
trum and see if we cannot
prove this strange paradox
true that Nitrum acid by
uniting Nitrous air loses
oxygen.

Azote combined with oxy-
gen in the prop: of one to two
forms Nitrous Gas, which
not being saturated with Ox:
seizes it with avidity from
the Atmosphere. The further
addition of Oxygen converts
it (the azote) into a power-
ful acid. When the prop.
of azote to ~~ox~~ oxygen is

Azote, says Lavoisier is
below 3 parts & the former to
1 of the latter, the Nitrous Acid
when 4 of Ox to 1 azote
the product is Nitric Acid
this pure is colourless & has odour
more powerful than Nitric
acid is the acid of Nitric
saturated with Oxⁿ;
and Nitrous acid is the acid
of Nitric saturated with Azote,
or what is the same thing,
Nitrous Gas, and this latter is
azote, not sufficiently satu-
rated with oxygen to possess
the properties of an acid.
Nothing can be more
carefully explained according
to these principles, than the

Philosophy of nature and
by substituting Nations can
its proportion of azote be-
come as much increased
which is equivalent to the
subtraction of a portion of
the other constituent part or
Oxygen. This confirms the
accuracy of M. Lavoisier in
stating that the weight of
Hydrogen and is always con-
stant by its combining with
Oxygen — A mixture
of Oxygen Gas and Hydrogen
kept 3 months over Mer-
cury is saturated with the
same force as usual —

Oct. 17. By rejection of the At-
tempt: I think we must con-
not be owing to want of
Oxygen, &c. It
is difficult for a man to
abandon opinions which
he has been the first to
promulgate — opinion founded
on a series of ^{Reasoning} ~~facts~~ the most
brilliant, perhaps, ever made
by one individual in the
Science of Chemistry. Yet from
D. D. we can repeat every
thing. A slight acquaintance
with his works, with convin-
cing me that he is not
the Slave of his Father;
and that influenced by facts
he has more than once
retracted his own opinions,

and we are not without
superiority of having this
join with the rest of the Phil-
istines of this world to be
the sublime truth of the
perfect world, but immortal
Saviour.

The Exp. of a Lib. of us
on snow at 32 raised with
a Lib. of water at 972 and
Temp: of the mixture being 32
proves that Caloric may
mix with bodies in consid-
erable quantity without producing
any change in their temp:
but their forms are in their
combination necessarily changed

The Doctor Frank ^{on the}
Theories of Chemistry, Medicine
and Physics 1 Jour. North
1799 &c —

6. At a haubth, two young
writers carried a well known
woman of the town and one
one of her nymphs to the haubth
and placed them on a very
conspicuous seat fitted up, as
is supposed, purposely for Lady
Anthon, placing themselves
beside the ladies. The proprietor
who is a rich and respectable
native, unconnected with the
Gentlemen but in vain. At
last he ordered the constable
to turn the women out.

Next evening upwards of
forty students assembled at the
house, but the constable, on

so severely that his life was
in danger. The Constable
commenced an action against
a few of the Gentlemen, they
looked on to bribe him with
a considerable sum to drop the
action. — The Gentlemen however
were severely reprimanded by
the Chief Justice. —

7. The inland duties, it is said
were laid on to support the
College they bring in Eleven
Lass and the College expenses
amount, it is said but to
three, so that the Company
gain three Lass. —