10-16-1858

John Willson Phila. Pa. Jefferson College Medical Clinic Notes

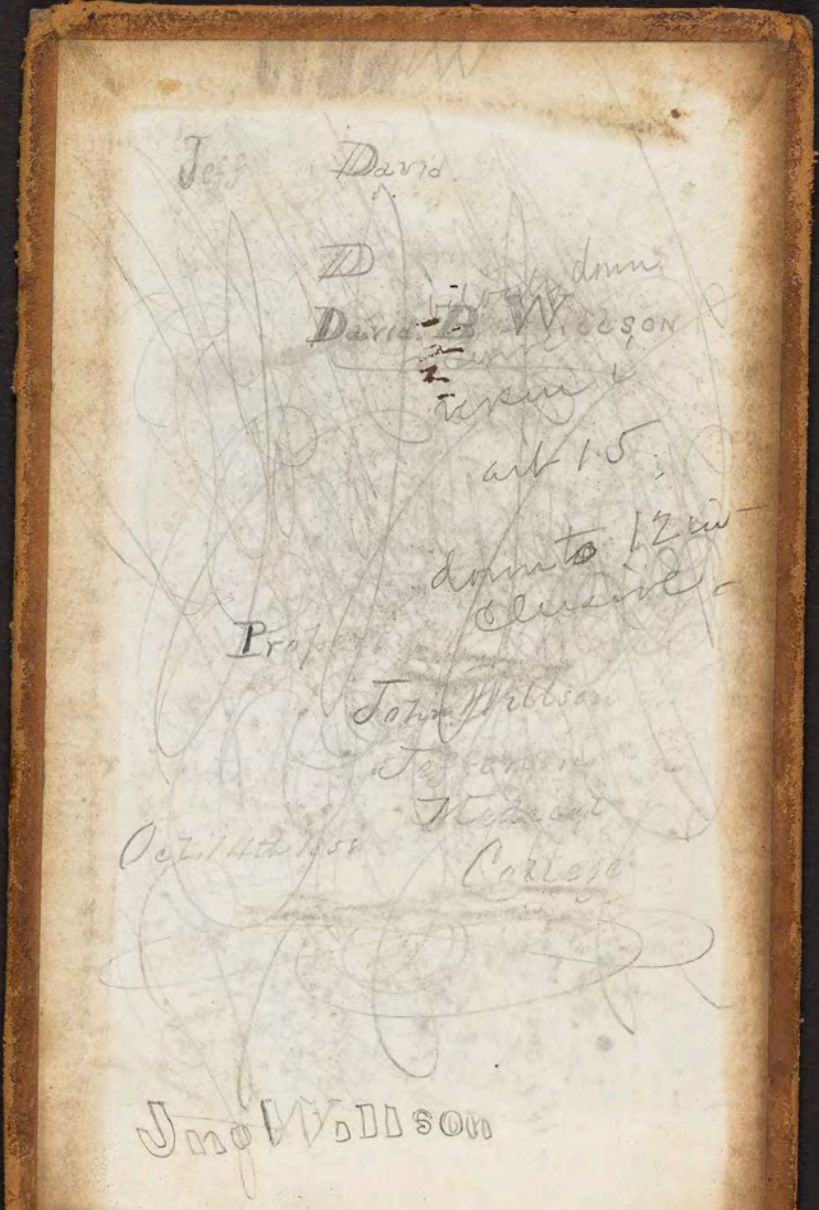
John Willson

David B. Willson

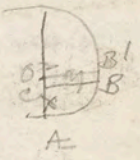
John Willson

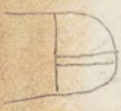
Phila

Pa.



Engle,
Deale
Cresson,
Engles.
Benson.
Shaw, Angus
Bredin, AO = r
W. Jones, AB = s
Patterson



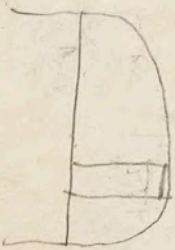


$BB' = ds$

$B\,\text{D} = dx$

$$dx = \frac{x\,ds}{y}$$

$x : y :: ds : dx$



Jefferson College
Medical Clinic
Oct. 16th 1858
By Dickson

1. Michael Jensen. hepatic dis

Complained of pain on right side & back much better than he was, tongue a little red, before over pretty nearly right. Treatment before was, Calomel 1/4 gr. 2 or 3 times a day, morning & bed. time 2 gr. Tonic powders, & 2 grs. Chalk. Leave him a few days without any medicine, if he continues to get better, if not, same treatment.

2. Do not eat, but is dumb no husband, no prattling, but entirely dumb, seen deaf, than before (such symptoms ought not to be disregarded, they are a warning, sometimes a finger is half dead, side of the face has no feeling, something wrong at the central organs) A case of paralysed congestive tendency, tongue a little paralysed to one side than another.

If anything is the matter with the brain, or spine on one side, the manifestations are as a general rule on the other, with few exceptions. Has a slow pulse, irregular. Pulse can be frequent, instead being quick.

Treatment. Cathartic. Prescription. Rhubarb, Calomel, 2 grs of above, every 5 days until it operates, & then stop. If he has headache, apply wet towels, eat no meat.

3. Nancy, epigastric pain over the region of her heart, coughs, pains when she has a fever, has chills. Chills bring on cough, pulse regular, tongue very much coated, shortness of breath. Probable 5th week. a pulmonary affection, feet swollen, some

Prescription cod liver oil during the day & 5 grs Dover powders at night

Surgical Clinic

by Prof. Gross

Two cases of Club Foot. Divide the tendon Achilles by subcutaneous operation. Operation over, apply an adhesive plaster. Keep upon back for a few days, and keep quiet, and then let him walk about. Introduce about ½ to ¾ inch above the junction with the calcaneum. Separate by a gentle sawing motion. Wound left large enough to admit 2 fingers.

2. Club foot called Talus. Shortening of the tendo Achilles, precisely same as other one, in both feet. Apply club foot apparatus, divide tendon Achilles, [illegible] and then apply the apparatus. Introduce tenotome [illegible] and divide tendon Achilles, [illegible]

3. Tumor upper eyelid. Had it 14 years. Movable, skin a little more red than other skin, appears

Sunday Oct. 18.

Dickson's Lecture

In treating practice of medicine we teach to discern.
When the patient behaves his actions is perfectly well according to things, it is called the state of ease. Disease is according to Hamilton, a change of an individual, a change from his normal state, a change to worse. When the change is not progressive the disease is called [illegible] disease is [illegible]. Should disease be treated by remedies to prevent, to discern, to distinguish, to diagnose. To [illegible] of the [illegible] we discern about [illegible] as Asthma affects the cells of the lungs, although it has an effect on [illegible] of the body.
2nd. Recovering disease. In order to discern this the physician must know the causes of it. It is present, as [illegible] diseases of Consumption. Dyspepsia, [illegible] are [illegible] diseases which [illegible] may be discerned. Through [illegible] movement

There are special causes of diseases in some regions, which are bounded by certain geographical boundaries. such as the plastic pulverian in Poland. Over many parts of the world we have malarial fevers the cause is unknown. These are called endemics. then there are epidemics. diseases that get about. the most remarkable of these is influenza as the invasion of this will increase the mortality of a place in a year very much. We are trade the causes of this disease when we know about it, when we know the cause we can counteract. Here there is yellow fever, cholera. Then we speak of hygiene. & the last, the cure of these diseases.
Then

Lecture

Monday Oct. 18. 1858 By Gross

Text book Ziegler Modern Surgery

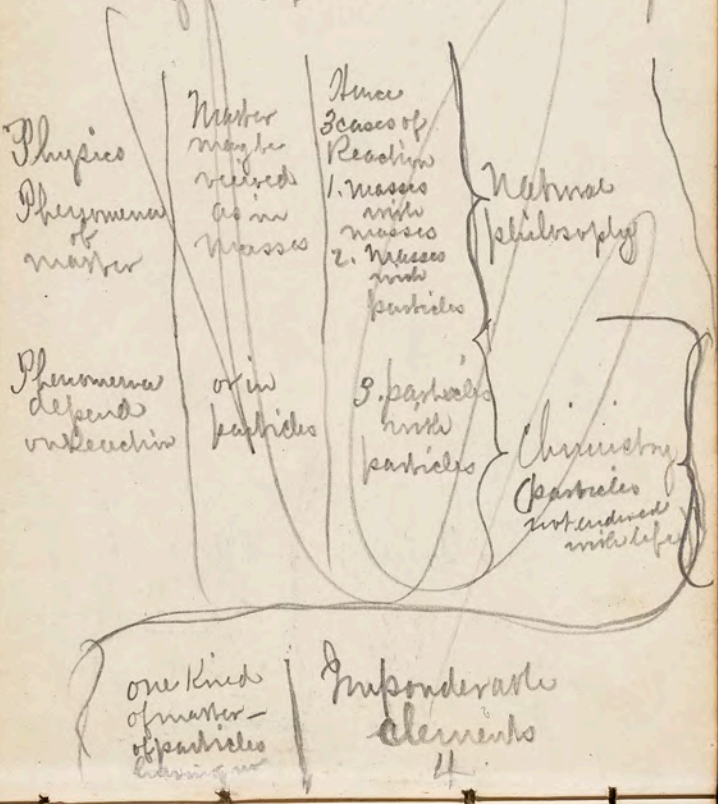
Erichsen's Art & Science of Surgery

Paul Surgeries

Inflammation, nearly all the diseases that occur in the world are the effects of inflammation the vital principle in the maintenance of as much. Inflammation is considered healthy when it is reparative. Inflammation is likely to occur in all parts of the body except the epidermis, nails, hair. It is among the first that that has in the function of the body. The cells the base epidermis to are [illegible] It is preserved about the part where it [illegible] It has various forms acute, chronic, [illegible] desmic & diathesis

acute when it runs rapidly thro' the
stated channels. Chronic is when there
is very little manifestation in the
coming on or progress.

Lecture by
Monday Sept 18. 58 Blache Chemistry



weights

Another kinds of particles. having weight

Considerable Elements

65

Physics
phenomena
of
matter

Matter
may be
viewed
as in
masses

Phenomena
depending
Reaching

or in
particles

matter or phenomena produced by the action of

Physics is the science which investigates the phenomena the power that matter has over matter is called Reaction, mutual action. When we view matter. it is sometimes viewed as particles held together and composing masses. At other times we view the minute parts, called particles. On this ground there have been 3 cases of Reaction, 1. Reaction of masses with masses, 2 masses with particles. 3. particles with particles. The 1st 2 cases of reaction belong to natural philosophy while the reaction of particles with particles relate to Chimistry. The particles with which Chemists have to deal are those without life, these belong to physiology Chimistry is that science which investigates the reaction arising out of particles with particles, leaving out the living particles.

A familiar example is the billiard ball striking another one. This image in a looking glass is reaction of masses with particles. Dissolving sugar in tea is a reaction of particles with particles. In a mathematical sense matter is divisible without a limit, but according to my opinion, particles are indivisible by a chemical way. The most essential properties are opacity, transparency, colour, which are all relative but independent called light. There are also porosity, which implies the compressibility, out of this comes, effervescibility, which brings in, elasticity. The ways in which matter is united in chemical world is by attraction. There then is an other which binds to burst them asunder which is called repulsion

Chemistry treats of the action
drawn forth by the attraction & repulsion

Particles manifest two divided into
4 imponderables, light, heat, magnetism

imponderables are not easily subdivided,
ponderables are divided into 13 non
metallic, 52 metallic, non-metallic
comprises, 3 gases, 3 — 4. 3, solids
Iron, silicon, Boron.

If there are 2 kinds of particles, some
together there 2 kinds of reaction embodied
at the same time. If so Oxygen hydrogen
&c. We must believe that the attraction
as between ponderable
& repulsion be imponderable

That Chemistry is the science which
investigate the properties which arise out of the
attraction & ponderable & repulsion of
imponderables

Lecture by
Monday, Oct. 16. 1858 Pancoast
Airdowry

Annual Number 32.17
Plus of Sums 51.5
Card. " 11.30

1/3 is original 2/3 is existing matter. This is the general Computation, and about all that is necessary to recollect.

Lecture by
Oct. 18. 1858 Prof. Meigs

Lecture

Monday Oct. 18. 1858. by Prof Meigs

The Os Sacrum called so because the ancients used to think that an immortal bone placed there called Os Luz, which they thought was indestructible. It ought to be 4 inches long, 4 inches wide. If you draw a triangle equilateral 4 inches each way, you can draw an os sacrum in it. If it 5 inches long it is too long, if 3 inches it is too short, and difficulties arise in each case. There are 2 basins in the pelvis, the outer or greater superior, the front of the pelvis is made of muscles, which make a soft place for the child's head as it rests there. The woman walks. The length is 5 1/2, the sacrum 4 the coccyx 1/2 which makes 5 1/2 in all.

Dangleson

Oct 18. 1858 Monday

Jackson

Tuesday Oct. 19th 1858 Practice of medicine

A normal action of all the functions of the body is what is generally thought, health. We have various morbid states of the system, which are called diseases. The cause of disease in the blood, deficiency of the red, & various qualitative changes, & the consequences of these various disturbances. Let us first all agree in the division into the kinds, but we must show that we are not prejudiced. Doctrine must open ourselves to discuss, that there are always exceptions to doctrines. There must be some cause for disease, which are always to be found. Diseases depend on causes given without. Causes are divided into 2 important parts,

causes are divided into 2 important parts,

predisposing & specific or incidental. Predisposed depends on predisposing cause. Specific are both predisposing & exciting. Predisposing causes are passive. A Predisposes subject. Pred. causes. Sleep is a good example. Malaria here very seldom occurs during sleep. There are many diseases which occur in sleep. Tuberculosis sleep is a pred. cause. Hereditary predisposition is a passive cause. Laws of diseases. They may be in solids or fluids. Take perfectly healthy person & subject him to changes they would not be diseased, but no human body could be found in a state of perfect health for that is not right physically, as long as right chemically.

Lecture

Oct. 19, 1858 by Isaac

Lecture

Oct. 19. 1858 Gross Resorgent

Inflammation of unbreaking healthy with reference to the local or constitution. healthy, what it tends to the reparation of the part affected. Sometimes when unhealthy. In another version when constitution is healthy, we bring the parts nicely together, & the parts will be filled in between by a plastic matter, which will unite by means of inflammation, but if unhealthy the parts will unite by blood, but the inflammation is not decreased. It is either common or specific. Every person is subject to the former, but there is a predisposition into which certain individuals are subject to, which is called specific. There is a peculiar poison called Syphilitic, from which a specific inflammation takes place. When we apply this by inoculation it spreads over the whole body differing from common inflammation. Dissection poisoning is another.

Class of specific inflammations. Also when there

Causes of specific inflammation. Also when there
may have been a deposit. It is not always
visible, but latent, giving rise to nervous disease when
the origin is in this form, which is sometimes
inflammation of the lungs, which is un-
attended with pain & difficulty of breathing.
Tissues [illegible] which are most important
to disease or destruction of the part. Pain in the
deepest of the structures. In deep seated
Redness of the most intense degree. In
the character of heat deep. The expectation
in destruction, ulceration, heat, & intense discomfort
The discoloration varies in character, e.g. livid, purulent
pain, it is severe in the [illegible] exfoliation, expectoration
blood. Redness is not always present, only
when there is the presence of much blood. The
heat, [illegible] pain, when there is inflam- is deep
seated when there is no redness. Discoloration is an
[illegible] of the vessels into the
vessels of the affected parts.

Termination. Inflam. can be readily cured

explain this phenomenon. It must be produced by the vibrations of the particles of Nerve fibres, Blood, Muscle, Cellular membrane, Bones.

Heat. This is present in great degree in all inflammations of the lungs, Spleen, Liver &c. The heat of the body does not transcend the bounds of life & health.

Lecture
Oct. 19, 1858. by Professor Chemistry

1st. Repulsion. 2nd. Imponderables 3rd. attraction 4th Homogeneity. The particles of bodies are acted upon by attraction Repulsion. 2 particles of heat & particles of light repel, but, probably, 1 particle of light & 1 particle of heat attract. Imponderables, light, heat, electricity magnetism. Leave the 1st & 2nd.

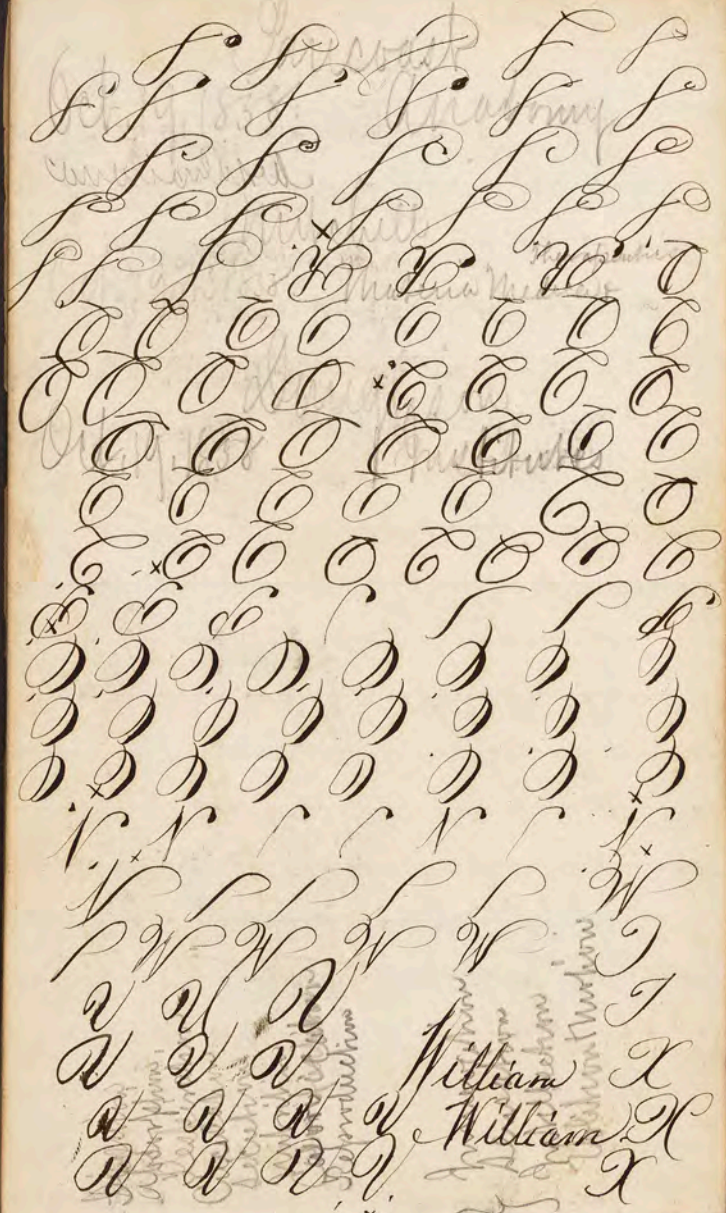
Heat. 1. Heat is a vibration of the particles of matter. 2. Waves transmitted to the heart & arteries. 3. Or heat

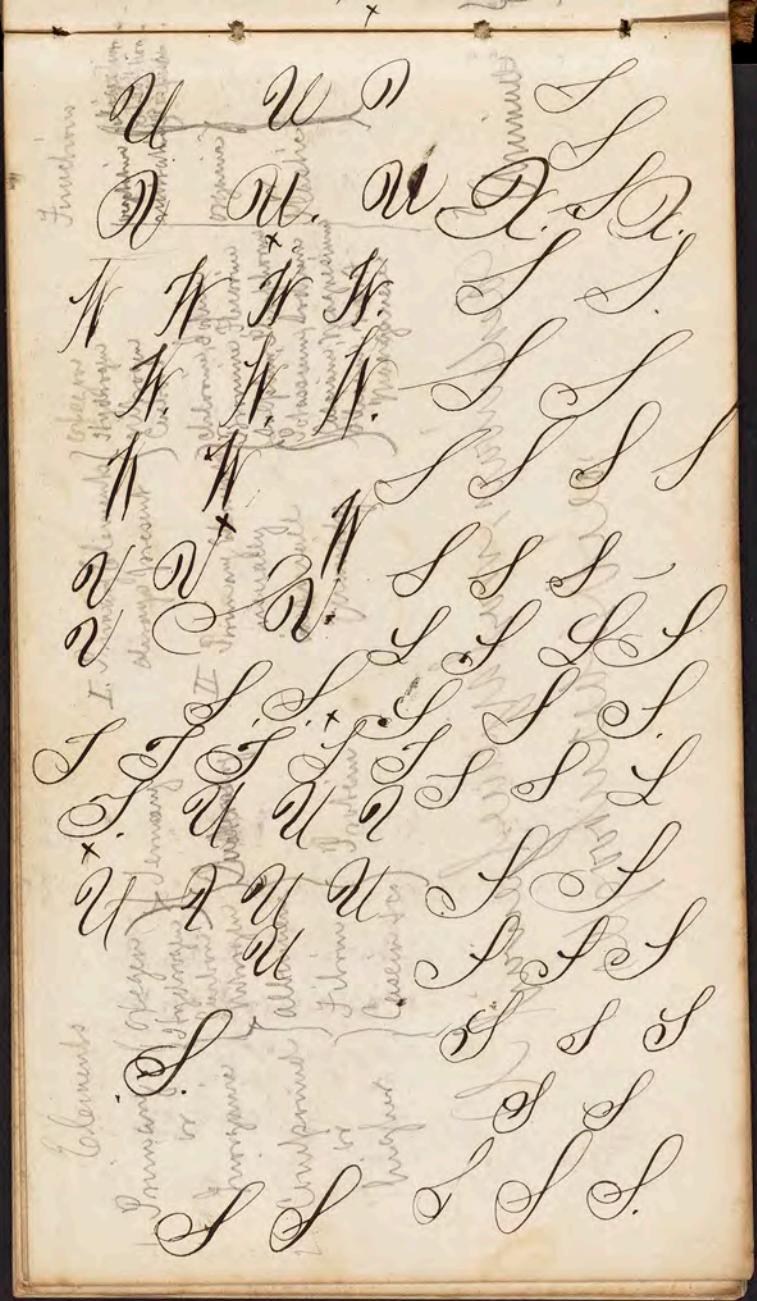
proportion the heat enters into the different bodies. 4. Changes in bodies by heat. 5. Different instruments by which we tell its intensity.

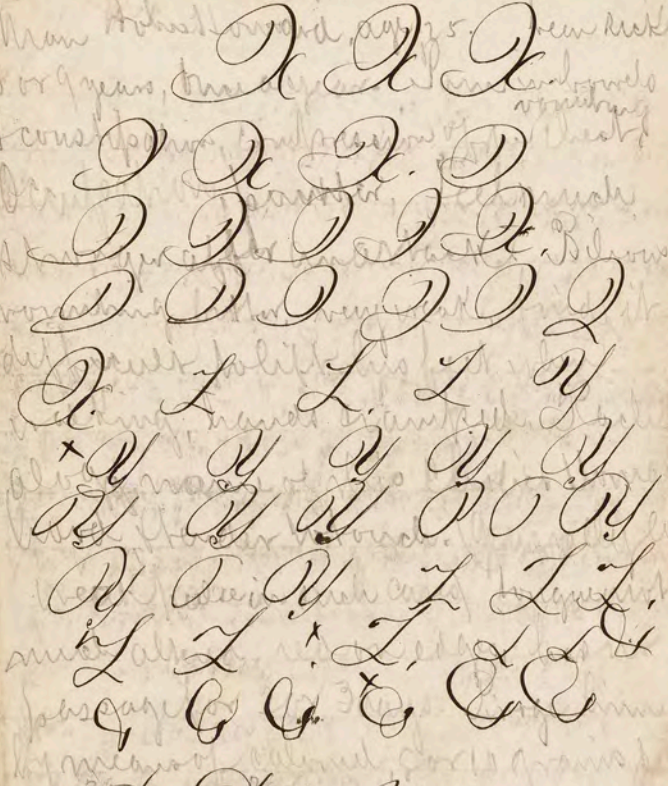
What puts it into motion. Any cause of the pendulum whatever discharges the capacity for heat, or calorie. It is the dose taken which is the proportion which each pendulum takes. Considerable matters of different sort have different attraction for heat.

Section of Calorie, dependent on decrease of capacity. Arranged under 2 heads. 1. Conduction. 2. Chemical change. Take a piston, insert a piece of tinder into a tube with air, and by rapid condensation, you drive the calorie out, and set the tinder on fire.

Just as you increase the capacity of pendulum. 1. Dilatation, the opposite of condensation.







David B.

D D

David Burk Williamson

Mrs. Barney 6 yrs 6 mos of age,
have sick 18 months. Eczema over face
body, skin; rough, thick, [illegible]
cellular glands on [illegible] neck
indicative of tuberculosis of the cellular tissue
[illegible] Scarlatina. Ordered [illegible]
in each case 5 drops 3 times a day of
Fowler's solution
Edward [illegible] 8 mos old, Malnutrition
[illegible] Diarrhea, has had severe [illegible]
Pleurisy, last convulsion 5 months
ago, cords pink 2 weeks after bowels
loose, 12 passages day, sometimes 4 times
a day, Enlargement of bones of wrists
still worse, cutting 4 [illegible] teeth
tongue not much coated, head perfect
every [illegible], although has whole skin
[illegible] eruption. Doctor has
tongue coated above everything.
Wash solution of Alkali, Carbonate of
Potash in water, Iron in tongue
[illegible]
1 Mrs. Harrison early stages.

Patrick age 45 been sick since Jan, slept 2 months. Dizziness of head, once fell about 3 mos ago, very sudden pain back of head some time. Feel breathing apparatus back, has thirsty bowels irregular passage 2 days hard, dark scrotum head dull then high fever at the commencement, pain in abdomen. Case of Gastric disorder, and nervous. Moderate doses of Blue pills 10 gr Rhubarb 5 gr Calomel of each 2 t. a day. Mind

Surgical Clinic

Oct 20. 1888 Gross

1. Woman 70 years of age, married, family. Presenting a lump in left. gland; had it 2 years, involves lymphatic glands, inoperable, antiseptic dressing. Cancer always suppurating very hard tendons reaching up to back of the nape, tumor, remarkably hard, as a hard cancer. Excruciating pain, disturbed during attends this kind of tumor. Incurable, can be done for a while. This. If wound return remember asepsis system is fail by the cancerous tissue. Can only regulate the diet, or stop them. palliative treatment.

2. Case of Lithotomy.

Herbalands Classification

Class 1. Stamatica

Division 1st. Restaurantia

Ordo 1. Alimentia
2. Acida
3. Alkalia
4. Tonica
5. Chalybeata
6. Laxantia

Division 2nd. Catalytica

Ordo 1 Antidyskrasitica
2 Antiseptica
3 Antiseptiflora
4 Anthelmintica
5 Antiscorbutica
6 Antiperiodica
7 Antitoxinelva
8 Antiagrammata

Class 2nd Adrenigenica

Class 4th Glandulantia

Class 5th Miscellanea

Class 2. Neurotica

Division 1st. Stimulantia

Ordo 1. Stimulantia generalia
2. " " Specifica

Division 2nd. Neurotica

Division 2. Narcotica

Ordo 1 Anesthesia
2 Somnifera
3. Delirantia

Division 3rd Sedativa

Ordo 1 Sedantia generalia
2 " Specifica

Thursday Oct. 21. 1858

Dickey

10 A.M. Practice of Medicine

Morbid affections of the circulatory
Disease, abstract, Little Known, Curable,
Known perfectly well. In the study of its
Pathology & Physiological Classification.
There is scarcely a case that the circulatory
function is not affected by sympathy.

Understanding this principle which you
know a great deal, all diseases sympathize
with the circulation. The symptoms
are most conspicuous. Circulatory Organs
Pulse
Appearance of these diseases most certain
Indicates the Action of the heart, Nerves
& the small organs. If these do not
do their duty, upon them congestion.
For Cholera, Death is the cure.
Never cured the first paroxysm of the

3. Increased atmospheric tension is necessary
to the normal action of the heart

1. By contraction of the capillary organs, 2. By arterial organs. Hard pulse, heart beats its full force, strong, full force, 3 consciousness of its contraction. 1. frequency, force, rhythm of the pulse. Average pulse, man, 70 to 73. woman, 73 to 76, Woman more frequent, Man hard, W. soft. In heart, pulse varies from 50 to 100. Frequency must not be confounded with quickness. Human 2. Obes. Nervous asthma affects the pulse. 2. Irregularity of the circulating fluid. Rhythm, the intermittent pulse, 2 different impressions. Emotions occur when heart excited goes to sleep. Most drinking Occurs in hypertrophy, the influence to be drawn from it, I think. Local hyperæmia is a very common congestive affection, is entirely prevented by nitrite of amyl. Hemorrhages in pneumonia, typhus, scarlet fever, is decrease in fibrin.

Gross

Wm. Gregg

Esteem.

Placed as we are in the world, surrounded by many things on all sides to entice us we are powerfully tempted to do wrong. When from Eden's grounds man was sent upon the world he was given up to the tempter, his former nature destroyed entirely changed leaving as we see now marks upon him that serve as some ancient monuments erected in the past to shew the observer that the past was ~~more than the present and that~~ far less but the mouldered remains of what it was formerly great & grand. On the survey of the human mind and the distracting passions that rule him and the appetites that urge him on there yet appear

traces of what he has once been.
Had he been left by an angry
Judge when he left himself no
controlling power had ruled him
but he would have moved on blindly
to his ruin. Yet in him we
discern principles that
judging from their power now
would have been mighty in
directing him. Among these
is the desire of esteem. A
natural propensity of man
its origin is outside of man
he does not put it in place
it in himself yet it is in
his own power to thwart its
honored rule. Its power in-
effectual. Look at the child
how it pines away if neglected
It is not the mere absence
of care for his its body but the
neglect affects it because it
loves to be cared for and feels
all is wrong when it is. Claims to

esteem and regard. As it grows in years it learns that this is to be cared for and that it must sometimes yield. But the power of the principle is not discharged for all this. Blot not from man the desire of the esteem of his fellowman and you obliterate one of the strongest human bonds of Society. In how many ways in life even during a day do we see how anxious men are not to lose the esteem of those with whom they associate. Let their money go let it fly to the winds of heaven and let a man occupy the same place in the esteem of his neighbors how is his arm strengthened and how he feels that God give him

the he can bear any suffering on his own account so that his name is unstained before men. Let Why does the skulking thief chose the midnight hours of the night. does it not seem as if the eyes of none were upon him and as no one would detect the guiltyact. Bring him forth in daylight let the eyes of man fall upon him in and if he do not manifest his confusion we all feel that he has lost one of the principles that could have any effect in bringing in back to his position in Society and we hesitate not to say that he is a hardened man. How uneasy the thought that we are detected makes us feel. We shudder at the the idea and feel that however humble the, humble in position the one is who has caused a

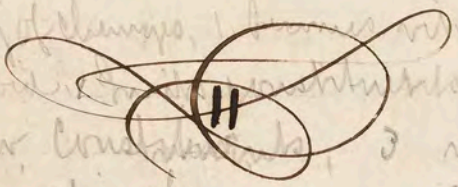
against us we would wish to have his good esteem, even though his favor does not affect us in any way. When one dies who has spent his life in doing wrong how anxious he is to clear his name from all aspersions on it. Much as he dreads the thought of accounting to the high judge for his conduct yet he also feels as if he would must not leave the earth and have his name mentioned only to be reviled and his memory to be execrated. Thus we see the miser at death vainly endeavoring to propitiate the feelings of the world by bequests of money at his death when even if he wished he could hold the control of it no longer. — But we have to take another view of this principle of esteem let us beware of making men's esteem the rule of our conduct in all things.

Great as may be the influence
of ~~that it should have~~ the good
esteem of men or all our ac-
tions yet we must always
remember that it is not right to
them that we are responsible
for our actions that however
just our actions may appear
in the sight of men yet there
is another and a far different
judgment to be passed on
our deeds than that of men.
Each man is liable to be called
to account but for his own actions
and should not let the doings of
others lead him into error.
Look over the history of the
the great men that have ap-
peared on earth. Did Noah
they all follow their fellow
men and wait for their
decisions approval of their
courses then they had never
executed the positions they
do. Had Father waited patiently
for his course to be sanctioned
by the forces he acknowledged

his name would as a Reformer would not have been heard. He burst forth from the shackles that bound him and seeking other the approval from on high shaped on his mission. Then behold a Galileo looking forth on the sky revealing from nature's book 360 blazons that fact that the beings blindness of the times refused to see. Other examples. Least of all in religion should one wait for man. there These are exceptions in the annals of time. These broke the regular bond of Soc. because they were sent to break them. but with men generally the desire of esteem is always and will be a controlling principle and even in those who have risen above the general

limits we see the same desire
of others prompting them to
weigh well the matter and be-
coming satisfied in their minds
of the truth of what they uttered
they cared not for the present
but looked with confidence
with the future — As man
becomes more & more better
and better his saying will
be true but until he has
reached a higher grade
than he is at present we
he can never think that

Vox Populi ~~est~~ Dei est,



But these do not constitute the disease itself. Buffy blood is blood drawn from inflam. parts. B. crust, consists of fibrin dissolved in albumen. Red globules have the corpuscles have a stronger affinity and fall together and form columns or rouleaux. Is usually found with inflam, but does not constitute it. Find some increase in the albuminous serum. Morbid hydd. of new contents. Clots is very common. It is formed sometimes as good as nothing into the blood.

Non Elimination. Morbid matters if not taken from Blood leaves it poisoned. But as more Morbid matters added to the blood by non elimination actually retained. We thus suspect that malarial matter

the blood by reasoning
Production. Pus is in the blood
by this power. Scarlatina. Small pox
is thought that it is in blood. In
Inoculation sometimes the blood is
used for inoculation. Inoculation.
via. Observe the following rules.
1. That all diseases imply vitiation
of the blood 2. That Vaccination
rarely eradicates the disease
Diathesis. condition of Cause
connected to all fevers poison such
Hypersemia is the most universal
concomitant of disease. What is it?
what does it tend? The spleen
Bowels been thought to
this function particularly Secret
Hyper. is sometimes as obstructed in
a short time by some purpose Liver
Bowels, Kidneys other by passing
the spleen yield to the Hyper

This is called Congestion. Hyperæmia becomes inflammation by the addition of [illegible] element, or reaction.

It is always coincident with inflam.

Inflammation is totally as [illegible] irritation as totally a nervous.

in Apoplexy, 1st irritation 2nd, Shock, 3rd inflam. Ground point of diagnosis here a sudden circulation & sink [illegible] down. Blood goes with more force & goes in greater quantity in a vein going from inflam. part than to a whole part. In Cholera there is congestion [illegible] organs do not do their duty 2. Hyperæmia Cause of the organs 2 Inflam 3. If [illegible] or effusion of the parts

Lecture

Typhoid Fever

Typhoid Fever or typhoid

inflam. When inflam is in an

active & great organ, the fever is always

there. Always before this a depression

occurs. He is chilly, cannot expression

his faculties, vertigo, dryness in mouth

throat, rusty and coated tongue like

geese. After these have existed a day

or or a little while we have the fever.

The countenance is flushed, headache

the respiration frequent, headache,

remarkable sensible, tongue coated,

thirst, no appetite, bowels constipated and

urinary secretion is scanty, high

colored, [illegible] urine, are the

symptoms of this fever. Sleepless,

fainting all over, are also symptoms

Afternoon 4 P.M.

Man has been created mortal. Liable at any time to be called away from his place on earth. One generation passes away and another succeeds ~~the~~ although it is so we cannot see the change yet each day we hear of a death and silently but effectually the hand of the destroyer moves on carrying off his victims to their graves the tomb making way for others to rise and spend the noon tide of their days but only to be summoned hence as others were before them. Thus it is with all the renowned or the unknown. Many of the great of this world have waited for succeeding ages to celebrate their praises. The busy activity of life takes no notice of them to render them special objects of honor. Heaven the ~~only~~ only [illegible] with its presence for every one ~~in general~~ and respect for ~~no~~ each other person we with its principles of respect to some in [illegible] carried even to [illegible] of the grave we

with its principles of respect to some in
[illegible] carried even to the grave we
find no more given to the
great at all to be compared
to the great destructions of
the old world small as they
are. A Prescott passes from
among us and although
appreciated has
produced no commotion.
His departure is noticed but
no especial eulogium is passed.
But Bancroft an octogenarian
on the continent of the old world
a man old in years and honors
with age has departed. Who
attends his remains to the
tomb? The nobility of the land
each glad to testify to his
merits and the renown he has
shed upon the country.
He was different here. True we
have no nobility but some
marks of respect should be shown
to those who have distinguished and
labored with their minds. Let
no one say we are not bound
to reward the departed men
of letters praise is a reward.
Let a politician die or a soldier
or called immediately after

their deaths no matter what they were before statesmen and therefore justly mourn the country mourns. Over what one He who has passed the nation it may be unhandily although some politicians fail in that this at least seem to be saying to do the old rock and therefore justly to be praised but of the man who has silently worked upon and moulded the nation moving thinking minds is left to be honored in after time.

Well might she honor him for he seemed like a rem- nant of the past a connecting link between this Century & the past than one who has lived on until more than a half of the present Century has elapsed. Although

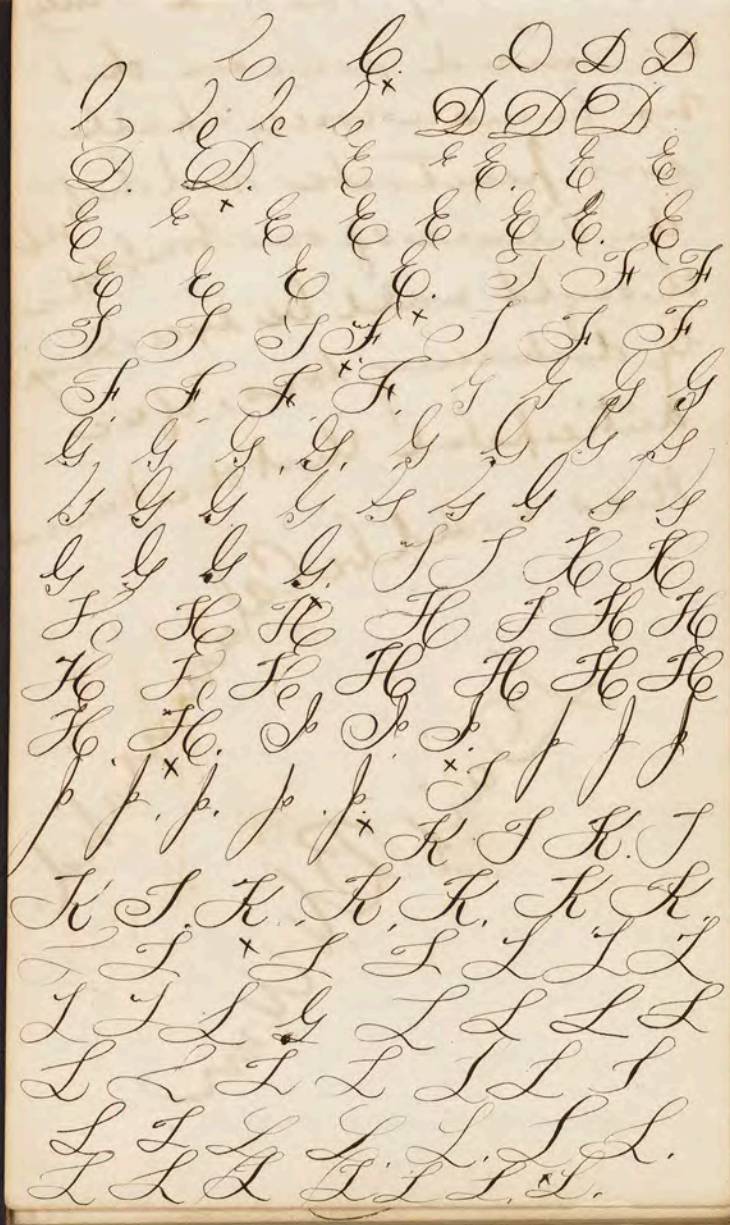
no pageantry accompanies

no pageantry accompanies
here the remains of those who
have labored in the domain
of the mind yet their mem-
ory is cherished so that on
this continent Humboldt's
name is as well known as it
is in Europe and his death gave
rise to eulogiums upon his
character as a man and as a
Scientific man that honor
him as much as all the pomp
that was assembled around
his Corpse at Berlin So
with the memory of Prescott
He holds the silent tribute
of the mind of the Country And
although his death Made
universal Commotion yet
was lamented all. When
we think of the deceased
the great & the principle
& Contrast our mind

immediately recurs to the unnumbered thousands whose departure is not noticed. How many a soldier has died on the battle field waving in the ranks of the army of some Conqueror who regarded men but as the tools of his hands. They fall leaving their names to be mentioned but on the day of Judgment. How pleasant it is to turn from this and feel that after we are gone we shall still be remembered by some of those we leave behind us and how earnest should we be to leave behind a spotless name that it may never be mentioned

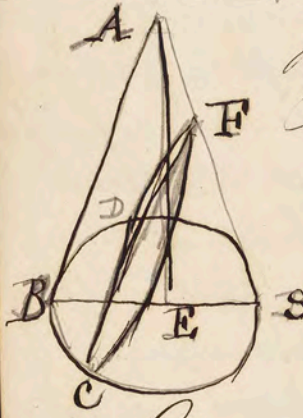
to be reproached. Fully
convinced as we are that
no human voice shall
ever penetrate and disturb
the silence of our tombs the
thought would be exceeding-
ly distressing to us, if we
anticipated that our memo-
ries would be calumniated.

David Burton.



Maximum parabola from given Right Cone

Page 99 Prop. 11



Maximum parabola cut from given Right Cone. Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Cone Annie Annie A A B. B B B B B

Young Lady, 17 years, tumor in
the neck. Left side connected with
lymphatic glands, under the
Be operated on Wednesday
Processes probably extend back to the
large nerves of neck.
Chief tumor on forehead, which
was treated by extensive operation
including [illegible] portion, extending
completely through the ligature discharged
[illegible] close the other half of Nasal
Called "Mothers Marks" Varying
from a pins head to as large as
the head. Consists of the capillary
veins & arteries, which are closely
connected by elastic matter, which
may be recited mass. Both the
arteries & veins by the heart's pulsation
Introduce at one side around the
half, and reintroduce at other

side, and hand firmly.

Child, Tumor occupying upper lid, Adhesions, removed by means of incision of upper lid

Child, weak Club Foot called Varus. Foot at nearly right angles here before on last Wed. week. Contraction of the Tendo Achilles Anterior & Posterior Tibial muscles Divide the Tendo Achilles & apply Apparatus to the foot. Did not the other last time. Introduce instrument flat wise, then obliquely with in front of T.A. turn it in the position & then turn quickly & divide the T.A. Put some plaster across & apply Apparatus

what they are. Really the things
in the time of Kronos & Rhea.
time of Kronos means ante-
diluvian = antiquated, abs-
olutely antiquated, 240.
6, is concealed in 240.11.
Why
Rea is not about to be ? = Why
should it be?

Acetum - Theories of what ancient Remedial uses of - Distilled vinegar - Acetic Acid
Rubefaciant - Vesicant, Escharotic, Pyroligneous Acid, how got, difference from Vinegar to
Scarifier & other properties - Remedial uses of Poisonous action & Medicine, Pernicious uses by females
Acidum Benzoicum, Benzoic Acid, Flowers of Benzoin to, Aphrodisiac properties, Sources of Acid
Remedial use of Gum Benzoin, Remedial & pharmaceutical uses of Tincture of Benzoin - Flowers
Acidum Carbonicum - a natural product - use of, in various drinks, Its absence in urine leads to
consequent acidity of, Effervescing draughts - Yeast - Uses of the products Position of, How to manage
Acidum Citricum

Allen, 239, 13 dark means that the next lecture refers to what follows 239. 18, seem to imply to me 75, regain good use ancient Roman days A & to S now indifferences its cause to Rome & now recall

Aceticum, Vinegar, (preventing anything under ordinance in it to stand in a temperature of 80 or above, it will ferment by the absence of oxygen) Ancient uses, for Diarrhoea, uterine hemorrhage, (sugar of lead is now used for the last) fevers, sometimes employed as diuretic laboring on a deposit of any earthy matter in the urinary parts, it is used. Carries off the ammonia used a great deal now in sponging the whole surface of a man in fever, in typhoid, not in inflammatory. Good in Rheumatism, gout, Rheumatism, ℞ A.V. 2 times daily ℞ orange peel tr
Another use is in inflammation caused by having the eyelashes from breaking. ½ dr is mixed with tablespoonful of water. Force with syringe into the borders of the eye. Another use is in burns. Scalds, on steamboats in case of scalding, soak cloths in vinegar keeping constantly.
Distilled Vinegar. Acetic Acid: ~~White~~ transparent, colourless, fragrant smell

10 of any acid, resembles water, not heavier, acid taste, better in prescription than vinegar. Spiritus Nr. by neutralizing the can. with vinegar. Remedial agents. Abscess in tonsil, when forming, is cured easily by this acid, external, heat in a covered tin cup, heat flannel hot, dip in Acid & squeeze & apply to throat, and then wrap with bandage 1 or 2 times. The throat will be red, then it is Rubefacient. In 1 or 15, blister Escharotic. Clear off top of corn horny matter, & apply heated acid with toothpick, then wrap around some bandage saturated with it. Useful in blankets. Through a tube, acid was poured on the part directly, & when the part is white, remove all appliance & apply water dressing

& when pain is gone, apply 5 grs. Red Precipitate with 1 oz. of

Pyroligneous Acid, obtained by burning wood, & thus by distillation it is obtained

Is Antiseptic, & disinfecting, heavier than Acetic Acid, has a woody smell. Remedies, Sore Nipples, passed down the fissure, mix with white of egg. & pass into it. Good for Capitis or Dandruff. Hair removed, and surface cleaned apply mush poultice mixed & wash it with solution 1/2 ounce Chl. of lime in pint of hot water. dry & paint with this Acid. Do this morning Evening and put on oil cap. Cure for Ring Worm. It is stimulant. Used in this way in Scarlatina Malignan. This very false. Hydrochloric element is there. Swallow a portion of it

advise frequently by this

administer with hypo syringe
1 Pint water 1/2 simple syrup 20 or 30
times a day. Arrest gangrenous affection
removes fetid odor. Potium Power
Females use it a great deal in reducing
fat. Recent, no appetite, no digestion;
Acute of young lady has used
this, examined after death
the lungs was riddled with tubercles
Even when taken in small quantities
it is poisons some. Sulphuric Acid is
sometimes found in it. To make
your test. pour some into a tumbler
1/2 full of water & then pour 2 or
3 drops of Acid, & it will

Sat. 3 P.M. Obstetrics

Transverse

Head is 3rd position L.O.A. diam.
4 from back to front 5 O. Occipital
1/2 to 2 inches long when head is out,
11 1/2 in the world. The placenta
does ... is delivered
[illegible] is delivered by

Monday 25th Practice.

Influenza. Probably caused by
Hyperemia or congestion with inflammation
of the lungs. Bennett claims that there
cannot be influenza. Incubation
Expectation. A fever with a cough
of the parts called irritation.

During thumps the pain of pneumonia comes

All diseases are not inflammatory. We have inflam without ulceration & ulceration without inflam. We have also pus, ulceration is also one of the consequences of inflam. Mortification, also. When of the part, which is inflamed, is the result of the impairment of the part by solidification of the lymph. This has been Common inflam.

Specific Inflam, Erysipelas, small pox, Gonorrhœa, This inflam, derives its source from the cause, which has produced

Fever, general inflam. is divided into 3 divisions 1. Lymphatic. 2. Sanguiferous 3. Nervous. This has 2 types. 1. Continuous 2. Remittent

patient may appear getting worse, more emaciated, and then comes on another kind of fever called hectic fever not very much except but as in other parts

sweat which causes the patient to become much
flesh. Rashes occur when fever is pronounced
entirely independent but attended more or less
with stupor. Heat has known to rise
as high as 112°, according to Granville, in
the Vagina during Retention. During
scarlatina 112.20 F. The Post. mortem
heat after Yellow Fever 113. Extreme cold
has never been tried nigerly. Jones
writes say that during chills
it has fallen to 72. In Cholera
the tongue sometimes to the
coldness of ice, while the patient
complains of heat & the body as
cold as a board. This is one of the
most

Gross Inflam.

Monday Oct. 25. Surgery

Continuity, Continuity, Agency of nerves. Sympathy, Blood 2 ways of spreading.

Intimate process of inflam What does it consist of? will be the subject this morning. Changes which take place Blood in altered in constituents, in Corpuscles & Globules in fibrin. Changes take place in the forms of inflam Blood vessels are in a state of dilatation as well as all the nerves & veins which connect with them. Capillary vessels more readily as can only be seen by microscope

so called from their resembling in size the hairs, Capillaries. There are 2. kinds according to microscopists

1. conveying a stream of blood continuously. 2. Admitted corpuscles very sparingly, one after the other When an operation is performed these vessels resent the knife to minute fibres, thus stop all circulation there is merely oozing of blood if even that. Red particles are supposed to be spheroidal, circular and exist in great numbers & contain the colouring matter, more or less in every species. White are much larger than Red, contain no oil, creep along sides of vessels. These two systems are much connected in number, the white ones adhere to sides of vessels Red ones become united with white and there is much confusion. Blood

rushes through. In healthy left ventricle of heart contracts 4 or 5 times a minute in disease 100, 110, 120 or 130. Red corpuscles number & become inherent vascular, become marked irregular in shape in every conceivable way. Owing that the lining membrane being dense pours out plastic matter, and this plasma becomes abnormal. Blood becomes stagnant as inflam goes on & advances. It is not dissolved, but also liquefied heated tete. Blood state of the with of the vessels, brittle, softened, permitting the blood to go into the surrounding cellular tissue, Ecchymoses. These changes take place in the vessels themselves. Part inflam. is made more vascular than a healthy part.

11

The vessels of arteries carry a much larger amount of blood. There is not more frequency however. We might suppose that nerves carry on an important part, but it cannot be precisely found out. Various theories have been made about this. All depends on Circumstances. In early stages of inflam. there is an increased fever, but when [illegible] part becomes stagnant, there is debility.

Barbe

Monday, Oct. 25.

Ch. 1. Pce. 32° } Diff. 14° | Ch. 1. mean 32° } mean
" Water 172° } Mark 32° | Another Ch. mean 172° } 102°

Enclosed

Condensed

Clinicky

Changes produced in Molecules by Calorific. Lead. Sub
lead &c. Changes in aggregation. Sulphur, Freezes
at 232° but 248 it will melt, & heat it
to 572° the liquid sulphur will boil.
Water. cooled to 32° by subtraction of calorific
from solidity, heat to 212°, & it will go
into steam. Carbonic acid 55° below zero
from solidity it. We will assume that
were heating into solids. Changes from solids
to liquids & we increase it in bulk.
Changes. Ice turned into water is an
exception. ice in melting, continuing
to get smaller by heating. Let heat
What occurs when solids are converted into
liquids & vice versa. That the boiling
point of any liquid, the elastic
force of its vapour is just sufficient to
overcome the pressure of the atmo-
sphere

If the pressure be less, the forces will be less & therefore the temperature will be less, & so on this ofc that liquids boil at lower & the tops of mountains because there is less atmosphere to weigh upon it & more of it below the boiling point, &c

Dunglison

Monday Oct. 25 1858 Institutes

Dickson

Tuesday Oct. 26. 1886. Practice

There is one simple constant symptom in Fever. Separate types & forms of fevers. Symptoms are alone signs of disease when they occur in certain way, they are infallible signs. Different parts of the body are most affected by the various fevers. Fever affects the blood circulatory system & the nervous system. We so presented have always as affecting these two systems. Some of them have their actions on one first & then the other of these are the sympathetic fevers. In a case of a wounded person who has a fever a few hours after. There is great doubt whether there is any blood poisoning. It is probable that all contagious fevers belong to the general type at first. Any form of fever must exhibit its characteristic symptoms before we can prescribe for the cause.

We accede all the varieties of hyperæmia
to because which produces them. Internal
Fever in remittent fever approaches
Periodicity divided into 3. Natural
Changes in Nervous affections as well as
the Changes of Fever. Rubefacients
differently at night than during day.
2. Habit. Practice brought perhaps
this Disease by taking a chill at
the evening, and continued until he
had a regular periodical fever chill
when he stopped. 3. Diaphoretics
has the power under certain circumstances.

Gross.

Tuesday, Oct 26. 1858. Symptoms Inflam
mation of Mucous & Decussating Fibres
Removal of exciting cause, & preventing
exciting & inflamed Action. Even when
the cause has been removed, the disease

being so far advanced in this case Treatment

being so far advanced since this Spare Treatment of inflam. 1. Constitutional 2. Local. of the Skin.
Blood letting, Purgatives

In many cases the first Blood-letting will stop the disease altogether. This is not necessary to inflame, even if a strong pain fever. We are governed by 1st. State of pulse 2nd. Morbid Affections, condition of system at large, Temperature of the part inflamed.

Mitchell

H.P.M. M.M.M.P.

Acidum Benzoicum. Very White. Obtained from Gum Benzoin. Not without fragrance, although not very. Obtained by sublimating the Gum. It is used reduced to powder, & placed on a saucer, the saucer placed over a stove. The acid is driven off & collects in small as an efflorescence. It is sometimes used in hemorrhages & epistaxis

drive up the nose by sprinkling, it will stop hemorrhage. 1/2 oz. to a pint for piles. Wrap cotton per rose, push them together, 3 or 4 in. above place 4 pound weight to 250°, lay coarse powder of Benzoic, and, chloride over it, & it will be studded with the acid. This has an empyreumatic odor. There is an important pharmacopeia. It is called Paraffinum Liquidum. This B.A. is always added to this mixture. This is used in Urinary affs. It stays in the body & does not go out as the acid does. Relief of the prostrate gland.

℞ B.A. ℥j, rubbed up with white of egg & tube added hot & Mucilage Capsicum

Carbonic Acid.

It is the gas, which is derived from Boiling Water.
It was used as a remedy in the form of
injection on foul ulcers, disinfectant. Poison.
Fire of charcoal, no means of getting off gas,
Oxygen has been consumed to burn charcoal,
Carbonic Acid or Oxide Gas is formed, & its
poisons them. Take persons out in the
air, & throw cold water on them, sometimes
apply counter irritants, but they do not no
good if water dont
Acidum Citricum, lemon juice
found in Aquifl, cranberry, & whortleberry,
although not so pure as in lemon.
Obtained from lemon by separating
from lemon by strainer, & saturated
them with Carbonate of lime. This is
united with sulphuric Acid, the
Citric Acid floats on top in crystals
Very hard & soluble in water

Valuable in Rheumatic Gout, sick stomachs. Make drinks 1 tq/ to a pint of water. To make effervescent put 15 gr. in tablespoon & throw into other substance. To distinguish from have 4 tumblers, Into a solution of potash in 2. Pour Into one Tartaric Acid, & there will be a precipitate insoluble in water Cream Tartar

It is used for beauty. There are some cases of acidity of stomach which can be cured by this. Rheumatism to neutralize it, effect in a dose of 1/2 potash.

Hydrocianic Acid, or Prussic Acid. Scheele came by the fact that the last made had something to do with Prussiate Compound of

Hydrogen & Cyanogen. If it is prussic it is transparent, & if there is any iron in it, it will be dark coloured. It ought to be kept either in a dark bottle or some bottle with paper round it to keep rays of light out. This is contained in a great many plants. Contained in mountain laurel, peach Kernal, &c is very potent. A single drop put into the mouth, ear, or eye, will instantly kill. But it varies, Absolute medicinal are the Kinds. Medicinal is far less strong than Absolute. ~~Strong~~

~~Yours &c~~

L Dunglison.

Prussic Acid

Dunglison

Dr. Dr. 26. 1858 Philadelphia

Functions
- That relate to the preservation of the individual
  - 1. Animal & Organic relation
    - Sensation
    - Intellection
    - Muscular motion
    - Expression
  - 2. Nutritive
    - Digestion
    - Absorption
    - Respiration
    - Circulation
    - Secretion
    - Nutrition
    - Calorification
    - Excretion
- That relate to the preservation of the species
  - 3. Reproduction

Bache Lecs

Tuesday 2 P.M. Chemistry

Medical Clinic

Wed. Oct. 27. 12 M. Dickson

1. Young Lady. 3 mos ago made false step, has been sick since. Has pains in Ankles & Elbow. Rather coincidence than cause. Knee was swollen when a 3 years old, and there is a scar. There is some constitutional affection. Had swelling on neck for 3 weeks, whenever she catches cold has same. It a subject of strumous affection. Her feet swell after walking short. Keeps her flesh and nothing like acomp. Keep the constitutional symptoms without any special effect but that. There is a small diff. bet scrofulosis & Tuberculosis. Advise rest, keep feet up. Rub dry mustard on

off parts, ankles & elbow. Cure of Iodine Salts is a good alterative. infusion of Cinnamon wish Iodine 10 ounces of C. with ½ dr. Iodine Tablespoonful in Wine glass of water every 4 hours. Hard to tell whether we can control the diabetes or predisposition

2. Phil Reider. Age 42. Had complaint in throat 6 or 7 years. Commenced after eating Spits up occasionally in mornings a little blood, pain in swallowing, sore stomach upwards, Eat, sick at stomach. Pain in head. Sick at stomach after eating last time. Feel pain all along the face. Fallen away considerably since last time. More tender sickness here. Throat red. Fever thermo up. Diff. Breathing sometimes. Swallows easily. Case of Chronic Pharyngitis & Chronic Laryngitis. Fever. Chills, not very deep, in the Morning. Head very much disturbed when below fever. Pulse frequent, quick. Tongue clear, furred red at point. No pain to part in lung breathe just near shoulder. Head Nervous troubled with hemorrhoids

with dry bleeding wash over of pure. Apply alum powdered. moisten fingers with saliva, & apply down throat as far as can touch 5 grs. in a day or 2. Prescr. White Oxide of Bismuth 2 grs of Dover's Powder 3 times a day. after applying Alum, wash it out with water, but leave it as long as possible

Richards — Lem ill for 3 mos.

3 here on 2/3. much better. tongue better. Feels sick in bowels, pain in finger long when breathes long.

Continue same treatment

H. Wood Hudson Ho. — Lem sick 5 or 6 days. pains in bones. Comp. bore throat has crept into the pores. in bones: rheumatic. Chronic Rheumatism. Cont. use bend for pain hinders from sleeping. Hot fomentations has keeping in bowel. Pass opposite page. Fishermans. Apothecaries Goods. Put down as Malaria treatment. Treatise of Potash taken in too large quantity

as he can. Tonics. Iron. Potash bromide during day has made 3 grains each.
a.p.
1 dr. to every 4 ounces water. wine glass intervals
Carbonate of iron 10 grains each during day. Keep
warm. Don't expose himself.
5. Margaret M'Donkey. sick 2 years. Throat
began symptoms throat thrush. Cough
troublesome. Pain in throat. Can't take long
breath. Cough during night, sometimes
day. Spits up some purulent matter.
Sufficient sleep up. When about rising
in morning cough spits most. Don't
wake up coughing. When going up stairs,
breaks short. Appetite moderate but
not wrong otherwise. Tongue not much
furred. Lungs, not very bad. Tinct.
of Lobelia 5 drops in water.
6. Mrs. Hunt. 38 years. been sick 7
weeks. Got up at night took cold. Cough
pains in left side, affecting the chest

must not neglect. Had fever, suffers from headache. Pulse, irregular, frequent, tense bowel mucous rare chest coughing difficult breathing when coughs. bowel mucous rare when breathing. Rhonchi. Bronchitis, pronounced, although probably ~~accompanied with some disease~~ Epidemic Influenza Cerebro-spinal Meningitis Group of Cells of the Optic Thalamus. Epidemic Cerebro-spinal Meningitis. Cause unknown. Symptoms. Pain in back of head, stiffness of neck, vomiting, delirium, convulsions, coma & death. Commences suddenly. Terminations.

Eczema. Tuesday, 13th.

++++ Bad taste in mouth. Coated tongue. Pain in back of head & stiffness of neck. Vomiting. Delirium. Convulsions. Coma & death. Commences suddenly. Terminations.

Surgical Clinic
Gross

Young lady. Received injury in arm a year ago. Large projection back top at the elbow where there ought to be a small point. by the triceps muscle. Dislocation of the ulna.

Child 3yr. tumor in the ileum region extending towards the ribs. When 15 mos old a little lump was seen there never been entirely absent. If a hernia the contents would have sometimes slip back when child recumbent, would have effected the appearance General health is good. Intestine tumor filled with serous matter. filled with pus. Chronic abscess Endoscopic puncture, & allow the pus to come out, Hope thus the tumor will disappear

Child Kept quiet, light diet, Sponge bath
to-morrow give a cathartic. Insert
Knife soon to Keep the opening
under. This is an abscess of
Scrofulous Nature all through Children
3 Child — Difficulty in deliver
Wrist flexor muscles. Divide
the tendon
4. Boy. Malignant inflam. of the matrix
of the nails Spreading ulcer. Malignant
Pustule This is common among
Children from 5 to 12 years of age
Most often between in Children
of Scrofulous disposition Worse
at night than day time. General
health Poor way, Appetite bad
during the progress of the
disease. Feels bad, tongue
clean, Pale nail off by lesions
Pr calomel, epithelioma

5th Woman. 67. Swelling on back of hand, tumor, tumor, very tender, ulceration on top of joint of knuckle. Pains more at night than day. Not preceded by any wart, crapy thing. Hard, malignant in character. Remove it by an elliptical cut, and remove some healthy part with it, and then draw skin together.

6. Young lady with tumor on neck. 3 yrs standing, 17 years of age. Be careful not making an incision not to let the air into the veins least it will go to the heart and destroy life. Glandular tumor. Not malignant in character.

Dickson

Sunday Oct 20 1861 Practice

Self-limitation of disease. In fevers it is more marked. It must not be allowed to direct our treatment. Each disease has a beginning, middle and end. Exceptions. You can't prolong the fever a day by forgetting them by maltreatment &c &c. Small Pox for instance. There is a stage, as in inflam. of mucous membrane, during which important changes take place. Some physicians say that when appetite returns, pulse returns to healthy, I say that no man can say when patient is convalescent. When pain ceases at one of places I may say that 6 days to 6 months the disease lasts. There is such a thing as natural end to all diseases but they vary from circumstances. If you take away

pay or intermittent fever vary as

~~The question~~

omit constant $u = a^2x - x^3$

$Du = a^2 - 3x^2 \quad D^2u = -6x$

$3x^2 = a^2$ when $Du = 0$

$x = a\sqrt{\frac{1}{3}} \cdot y^2 = \frac{2b^2}{3} \cdot y = b\sqrt{\frac{2}{3}}$

$V = 2\pi a\sqrt{\frac{1}{3}}\frac{2b^2}{3} = \frac{4\pi a\sqrt{\frac{1}{3}}b^2}{3} =$

$2\pi \cdot ab^2 \cdot \frac{2}{3}\sqrt{\frac{1}{3}} \quad \frac{2}{3}\sqrt{\frac{1}{3}} = \frac{1}{3}\sqrt{3}$

$\frac{4}{9}\pi\sqrt{3}(ab^2)$

Two puns by Dean Swift.

A Woman in passing near a Cremona fiddle knocked it down with her Mantua. The Dean, shouted out

"Mantua, vae miseræ nimis
- um vicina Cremonæ

A man lost his spectacles on a rainy night, & the Dean consoled him by saying

"Forte pluit ~~forte~~ tota, redeunt spectacula ~~rana~~

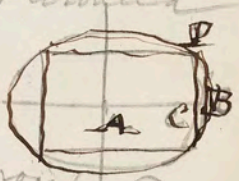
gebra minimum. $y = b\sqrt{\frac{1}{3}}$

$x = \frac{y^2}{2p}$ $\quad x = \frac{\frac{1}{3}b^2}{2p} = \frac{b^2}{6p} =$

but $b^2 = 2ap$

$\frac{2ap}{6p} = \frac{a}{3}$.

9, ellipse may revolve around conjugate or transverse axis. Solid given by revolution around transverse axis,



ellipse revolves & gives a prolate spheroid and so Semi-rectangle gives a cylinder,

$AC = x$ $\quad PC = y$

$\frac{(x-y)b^2}{a^2} \cdot \frac{a^2}{b^2}$ co-ordinates of point P,

$\frac{x}{op} = \frac{y}{op} =$

99. $Du = \frac{(b^2+\eta^2)\left[4\eta^2-(b^2+\eta^2)\right]}{\eta^2} =$

$\frac{(b^2+\eta^2)(4\eta^2-b^2-\eta^2)}{\eta^2} =$

$\frac{(b^2+\eta^2)(3\eta^2-b^2)}{\eta^2} = 0$

$b^2+\eta^2=0$ gives imaginary quantity which is inadmissible.

$3\eta^2-b^2=0 \quad 3\eta^2=b^2 \quad \eta^2=\frac{1}{3}b^2$

$D^2u = \frac{4\eta^3(3\eta^2-b^2)+6\eta^3(b^2+\eta^2)}{\eta^4} - \frac{2\eta(b^2+\eta^2)(3\eta^2-b^2)}{\eta^4\eta^3}$ divide

and substitute and you

FD : AC :: PD : CR.

$2x : a+x :: y : CR = \frac{ay+xy}{2x}$

$\frac{(a+x)y}{2x}$.

area $CFR = \frac{(a+x)^2 y}{4x}$.

from equation $y^2 = 2px$

$y^2 = \frac{b^2 x}{a}$ for $p = \frac{b^2}{2a}$

$x = \frac{y^2}{2p}$ $a+x = \frac{2ap+y^2}{2p}$

$4x = \frac{2y^2}{p}$

$(a+x)^2 = \left(\frac{2ap+y^2}{2p}\right)^2$.

$4x = \frac{2y^2}{p}$ $\frac{1}{4x} = \frac{p}{2y^2}$

area $CFR = \frac{(2ap+y^2)^2 \cdot y}{4p^2}$ $\frac{p}{2y^2}$ =

$\frac{(2ap+y^2)^2}{8py} = \frac{1}{8p} \cdot \frac{(2ap+y^2)^2}{y}$.

$u = \frac{(2ap+y^2)^2}{y}$, but $b^2 = 2pa$

$u = \frac{(b^2+y^2)^2}{y}$. $Du = \frac{4y^2(b^2+y^2) -}{y^2}$

$(b^2+y^2)^2$

$\frac{1}{3}$

9th. $u = 2rx^2 - x^3$

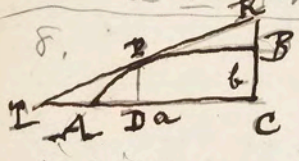
$du = 4rx - 3x^2$.

$4rx = 3x^2$ $\quad D^2u = 4r - 6x$;

$4r = 3x$ $\quad y = \frac{2}{3}r\sqrt{2}$,

$x = \frac{4r}{3}$ $\quad Dx = 0$.

$D^2u = 4r - 8r = -4r$

8. 

portions of semi-parabola triangle is circumscribed about a curve when sides are all tangent to sides of curve when ~~two~~ three sides is tangent to curve other two coincide with AC & CB. Least possible triangle area.

$AC = a$ $\quad BC = b$ $\quad b^2 = 2pa$

area triangle $= \frac{TC \times RC}{2}$ $\quad p = \frac{b^2}{2a}$.

$PD = y$ $\quad AD = x$ subtangent is $TA + AD = 2x$ $\quad \therefore TD = 2x$

$JD = 2x$

$TC = AC + TA = a + x$,

22. ἄνθρωποι no mean persons 24 but transcendentalists & prators. 29. ἔχει λόγον has a reasoning (argument for it) is probable; stand to reason. 239.

Kendall. Feb. 14th.

7. 

Section of sphere and is cross class triangle in it

BD = radius of base of cone = y
AD = altitude = x
OA = R = given
area of cone = $\frac{1}{3}$ area of base × alt. =
$\frac{\pi \times y^2}{3} = V$. of
$DN = 2R - x$
$y^2 = x(2R - x) = 2rx - x^2$
$u = \frac{\pi x}{3} \cdot (2rx - x^2) =$
$\frac{\pi}{3}(2rx^2 - x^3)$

is done. and not yet it is necessary
to add now a letter, to turn
aside such a Esther, Jerem. 29,
shall we translate work qeia-
porg as) 2 38. 1 Tim 4 16, 2 Tim
O HE, we can, (Exposer),
if we have common sense,
(do it in the most beautiful
way (I would say) that
Esther we know 2 38.6
2nd mode next comes now turn
is for as Mamikay in our pray-
ers there is a Dan 3 for us to pray
to them, to cause them by what
they are and whence they
delight us being called
13, are even to a
request Jequiring
wants of the good. Petitions
moderately cautious, Reverent
18. What then what would done
by the one naming Chris-
tian called her Esther 2 22.

Allen, Seth, Noth
23, 15, It seems to me
that this (can be explained)
in many lines of which
if one makes a little or much
deflection. B. wishing to
convey ideas that the
soul was buried in the
present (life) (Bis) 18. and
because in turn what the soul
would show. It shows by the this
(body) It seems to me that
O. & his followers placed
this name, under the impression
that the soul was suffering
punishment, on account
of the things for which it is
punished 2 4. That this
(prison) was the organ
(the saving means) of
the soul as it is engaged
until it repents (and turns) What

89-93. Two quasi or ironical expressions are speaking in a flourish manner. textus technical 13, however it appears laughable & in very truth being named as it was imposed (this refers to ψU χη r not ρυσε χηr.)

Draft Feb. 14th,

explain art 45.
to move over yard. take 3 times force as over a fork

~~M = S~~ f = m × s, ~~that~~ moved ~~over~~ μ ∝ M S $S = \frac{v^2}{2g}$, ∴ $S \propto v^2$ $\mu = M\frac{v^2}{2g}$ μ ∝ M v²

if body rotates about an axis v ∝ r μ ∝ M r².

v ∝ r got from ~~f = mv~~ f = mv. but f = mr (momentum of particle) f ∝ v f ∝ r v ∝ r.

λογίζεσθαι calculate, 236, 15.
ἐγὼ μὲν οὖν should ask you
ὑποδιατριβὰς deliberations.
νοῦν, we call the soul
body something = the it
is a reality = it exists
τὴν nature, 20. how (ὡς)
adverb of manner 21, ἔτυχε
happens place in English to
speak in an off hand man-
ner in English Greek says
as to speak (ὡς εἰπεῖν)
Error) 6. ἀναψύξεσθαι
Cooling, τὸ πῦρ τὸ 27.
Keep quiet be still. 237,
1. ζῷον τι μέγα βοῶδες = a
bore, 4. ὀχεῖν support
in moving about implied
as to γένεσθαι put in
ὄχος a chariot ἐχεῖν to
hold, 237, 10. ῥᾳδιουρ-

97. Σ = Dem

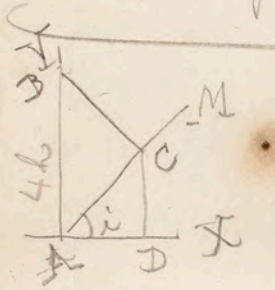
Allen, Feb, 12th

235, 21; ὡς just as before I was instructed) even now I appear

26. τοαg'o is τοαga τον το τοαg'θ, or ορ αξορτες. το name τοαga τυοσα or τοον τυοσ is to name from a thing or appear like. take out of Dome, in naming it from that from which we take into our head to name it. ξηρα a common word or ορα appellative 236, 2, adv. generally ρραρ ρ α τα but no translation by Tovvarτον we put in letters on the other side to others. 9. ον δεν τον τον ξα ων δξα τον = α. ανα δξεω, ανα αδ ξεω to look at ΟΚΤΟΣ obeens

μογγ (verb) | however
272. woe dor adverb
to the ground. 273. through
(but you get to the end.
293. future denotes
necessity 298 What's the
use. What's the matter
313 Take or sitting.
315 ογγ faculty dis-
position instath 320
ελκελς yield to. 329
λαβε flapping in the
stormy speech.

Trafer Feb. 11th



AD = AC cos i,
AC = 4h sin i,
AD = 4h sin i cos i.

89.
being Knocked to pieces
compass drawn Lechonry
237. therefore (two) 241.
making verse was thickness
words into cells Tied so
prose is Dermo Solutus.
242, Engraved
wrought out 247
Did you go any further than
this, he proceeds μη. you
didn't go did you but he
Knew he did. 246. γε
yes. 249 το word or de-
notes eagerness. 250. You
bestowed this a great benefit
on mortals, 253. καὶ νῦν
καὶ emphatic What do
these 254. γε yes. 259
how will he think (thought)
262. μεδωμεν let
pass. 266 tired of your
talk it wearies 268.

202 computation
hastening flickering in
a faction in an opposite
direction. 206. ἀκμὴ as
point of needle Rubble
209 ἅπαξ ὃ οὐκ frequently
not once for all. 213. χρεὼν
fixed by fate. 214 λόγος
discourse, 215. they did not
deign at all to look, βλέπω
Cast a look 218. ὄνειαρ
figure of grammar, 221
allies to all. 221. to add
emphasis 226 What then
you ask, 228 ὅπως
as soon as, 230. arranged
his dominion. 232.
from a child 236
I released mortals so that
they were not compelled

87. last line page 430, reason purposes that they might speak, relative clause expresses either 1. reason, 2. purpose 3. Condition, 4. Consequence 431.3rd. two consequence limiting or defining subj such that there was a notion of 431 10 letting it out = put out to interest 431.5. under their guidance 11. purpose that 43 art. dicebat was wont to say. 430 & 5 quod id pro for & any one. P. 74. 5m of Publius, probor recommend myself to. XIII what thesis art has been determined was formerly book.

Allen. Feb. 10th

Jackson. Feb. 10th.

justitia uprightness 429,
~~Das~~ 1 line from bottom of
page opinion means
the a reputation 40.
Moreover=claim 430.
7th line comma after
anyone any one of those
who are leagued as robbers,
430, 13th line from bottom
judges's judicial de-
cisions on the establish-
ment of the republic, 15.
facile adjective. XIII
Herodotus said "apud
Medos" only, not what fol-
lowed. 430-13 from bottom
Quum premature being
suppressed. 430, 7th
line from bottom warded
off weaker from coupling.

planted for the sake
of the name from the
name of love. 2 3 5. 10.
This means heroes either
because, 2 3 5, 7. & Jer
because the heroes
come from the Greek father
abhorrent. 8. 7 to or
either 8 or 9 or eleven.
11. owes. Said Thus adventually
10. 11. Da Dagger,
Dagger shake Da unto a
Span between no phrases
sides 15. where can I
mean I can't & yare
I able to find it I don't
expect myself. Really
I am not able but if
I were I would not.
22. to have received a
fine deal.

Allen. Feb. 9th. 1859

1st line 234, ambiguity of equivocation name $317 #31 Expenses addition go down town is it other thing than what is asked = name 234, 18. therefore this means especially as I think, demands 21. on Barrel (or happens to be the name, 25. therefore make the proposition doo in this way 20. at least 23, to your reward 234. 28. too too in this respect, but what I pray, 235. the name of him has been affixed to show the admiration from love, 235 Crown the deeds 235 that it has been

from this get $x \propto \sqrt{y}$

$x = 2h \sin 2i$

$\sin(90° + x) = \sin(90° - x)$

this shows art. 35,

for any given value of i less than $90°$ there is another value of i which has its sine = sine of first quantity therefore $\sin 2i$ = equal for any values of i complementary

art. 36, to get differentiable (19)

$4hk \cos^2 i \, dy = 4h \sin i \cos i \, dx - 2x \, dx$

if $dy = 0$ gives maximum for it can't increase

$4h \sin i \cos i \, dy - 2x \, dx = 0$

$2x \, dx = 4h \sin i \cos i \, dy$

$x = 2h \sin i \cos i$

resume ($t = t'$)

$f : f' :: r' : r$, f uno is $\frac{1}{289}$ b. $f = \frac{b}{289}$

$g : g' :: r'^2 : r^2$ $\quad g \propto \frac{1}{d^2}$

$g' = g \cdot \frac{r^2}{r'^2}$

$f = \frac{b}{289}$ $\quad f'(= g') = g \frac{r^2}{r'^2}$

$\frac{b}{289} : b \frac{r^2}{r'^2} :: r : r'$,

$\frac{1}{289} : \frac{r^2}{r'^2} :: r : r'$

$\frac{r'}{289} = \frac{r^3}{r'^2}$ $\quad r'^3 = r^3 289$ $\quad r' = r \sqrt[3]{289}$

K. R. 6. 615.

Projectiles

Thus $\cos^2 i = \frac{1}{2}$ sensible error

and within are ample & honorable

87. matters is presented to them turns them wholly to ball & and hurries them, then who would not admire the Splendor & beauty of virtue to us whole of a man Cometius all in number. XI, 38 they think that he in whom this has been perceived, to has been traced by fire - Compact effects. XI 38 this quality of the mind to look down (on these things) and value virtue especially.

Fraser Feb. 8th.

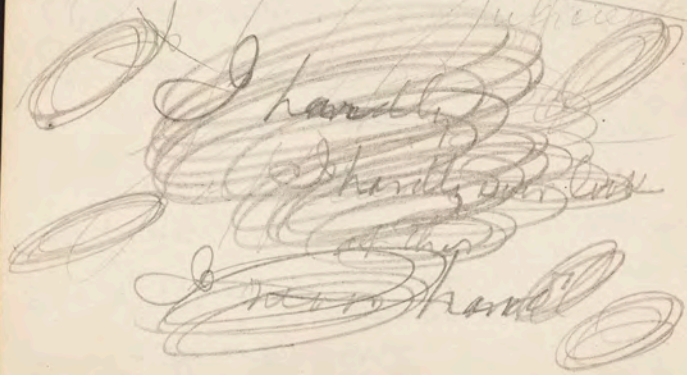
Distance from earth where $f = G$. we have

$f' \cdot f'' :: \frac{r}{I^2} : \frac{r}{I^{12}}$

Jackson Feb. 8th

428. 35 ast ut dic annos
when we say "36 at minimum
Zelin now thus admire
Punct. notion. proctor quam
opinionem and above their
expectations nec-ofinata
unexpected unlooked for
contumo / on root of
temere thoughtlessly to
treat without Consideration.
Justness Justness
nascens just Add on
429 5 line but when the fires
of Envie are brought to bear
on them they very many
are frightened immeasurably.
3. afficiuntur are re-
garded X1 38 nec im-
mensa nec immensely. 429
9. Those who wink left of great
minds shake skin as those
in book 1873
in every respect immensely

79. Else there is no max. or min. Differentiate twice and assume 1st to be 0 and by Rolling get one or more values for x, and substitute them in 2nd, if positive this is min. value if negative " " max. " Often get a fraction but here it don't trouble you. If fraction = 0 numerator must be. If after you have got value of y and have a constant take it out,



rest, Dy, h be greater than all the rest and a certain value - where there is max. or min.

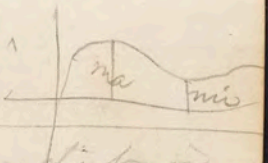
Dy must be 0, because Dyh Dyh in these 2 equations are necessary opposite in signs and cant be the same in sign to get results

$Dy = 0$, find 1st diff and co-eff. & make it $= 0$.

value of variable must make 1st. diff. co-eff $= 0$ in order to get max. or min. it must then make 2nd diff. co-eff. positive for min, & negative for max. If it makes 2nd equal to 0 it must make the 3rd $= 0$ or

77. the preceding.

Explanation



$y = f(x)$ what conditions
& how that the intermediate
ordinate is greater than each
~~on either side~~ neighbor

$\eta' = f(x+h)$

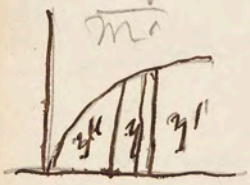
$\eta'' = f(x-h)$ by Taylor's theorem

$$\eta' = \eta + D\eta . h + \frac{D^2\eta}{1,2} h^2 + \frac{D^3\eta}{1.2.3} h^3 -$$

$$\eta'' = \eta - D\eta . h + \frac{D^2\eta}{1.2} h^2 - \frac{D^3\eta}{1.2.3} h^3 .$$

$$\eta' - \eta = D\eta h + \frac{D^2\eta}{1,2} h^2 + \frac{D^3\eta}{1.2.3} h^3 + \&c$$

$$\eta'' - \eta = -D\eta h + \frac{D^2\eta}{1,2} h^2 - \frac{D^3\eta}{1.2.3} h^3 + \&c$$



If the function is a max.
both values will be negative
If min. both positive.
For small quantities first
term greater than all the

§ 34. 8. Poetry is hexameter, 14. But the good are nothing but Poetry!, St Luke. Rata' is tmesis

Kendall. Feb. 7th,

omit for the present from the subject to page 84.

Maxima & minima.

u and x may always be represented by ⌢ and ⌣ across a curve. Maxima & minima that value of variable which give the greatest possible & least possible values of the function. But we consider it as that value that gives us the value which is greater or greater than

oo to ee by change in this
Earliest way for oo to as
See Plato's Gorgias words
this use of it. 233. 8 ~~ee to~~
per vor pray. ~~I that~~
~~the Lows may turn out by~~
233, 16, Et by regular
Edge Dyr proof ~~ee~~
suffix Dyr Ie changed
to te for euphony. 22.
Ete inasmuch as they
Said 25 having perceived
them all the rest how ab
length they address them
by this name. 234. 1. glaii
E as ad, Eas in very
trick. as ink Superlative
123 Hear 2 Dr. t i accent
comes from oo, and does
not mean at all but
means anything
(beautiful.) 234.5.

is ~~hotto~~ band with holes
and filled with thermometers.
Outside ~~bar~~ of bar is above
dew point ~~Dew~~ inside is
below dew point. Then dew
point of time at place where
dew is deposited. Next
is travelling instrument.
Beetle of Tuns fixed the
Dash. Another, Dr Regnault's
large vessel with 100 cubic
inches of air and put mercury
in pass air through Ca, Cl
and see what moisture is.
Allen. Feb. 7th.

232.

17. all new year Dr change
them (either good or bad sense)
18. the Hon of Prop at Tues,
22: to day to use it (couple) Gave
to consider &c 233, 3,
also to do with book

rahm (wet & dry
bulbs Augusts hygrometer
depends on moisture of air.
More moisture in ashes
evaporation, next is
determines it by deter-
mining point at which
it will be deposited. called
Daniell's dew point instru-
ment. It is a cryophorous.
Ether in bulb. Its bulb plain
is delicate thermometer.
dipping in ether. Other
bulb filled with cotton. It
is defective. Thin. inside
is lower than air outside.
This dew for England
Next. Bache's one.
Consists of box with freezing
mixture. Across this is
case through which bar
of tube passes. over this

be absorbed and it will twist ~~as it was~~. Earliest hygrometers founded on this principle consists of human hair passing over pulley and weight is attached to it, index line fixed to pulley. As it absorbs or loses water it expands, and turns index. It is rather a hygroscope. Called Saussures hygrometer. Another places thermometers on stand one naked other covered with muslin kept wet naked bulb indicates temp. of air, other one is lower from evaporation of water. Evapo-

St. Bernard had no po-
tatoes. When he asked them
they said they could not cook
it for it takes much of
210° water boils at
1920. He told them to put
a lid on pot which they
did & boiled the potatoes.
Ct. Rumford put air tight
cover over pots. The melting
pt. of ice to be at 32° is not
strictly true. Fact has been
found if you increase pres-
sure you lower melting pt.
Ice occupies great bulk
than water of same measure
Compress ice becomes water
Quantity of watery vapor in
air. 2 gases and a vapor
constitute air. Watery vapor
varies. Art of determining
is called hygrometry.
Piece of wood moisture off

effervescence. You see
evidently bubbles of gas
escape. This is vapor of li-
quid itself. Why Under
the Elastic force increases
with temp - but much more
rapidly. Bubbles of vapor
have great elastic force
when generated at bottom
and when they come up
they must have elastic
force more than 15 lbs.
to sq inch or else they will
collapse. Hs Boils at 212°
because its elastic force
is then = that of surround-
ing force. At bottom of
mine it takes higher temp
to boil. Go up to mts, boils
at low temp. Sixth. Day
moved mine at Mt

water with it. Water has greatest latent heat, Make ice liquefy very cold as ice & salt goes to 0°. You can get by some salts to −80° or −85°. Solid Carbonic acid & ether goes to −150°. Solid Nitrous oxide goes further. Pulse glass is pretty experiment. It is a cryophorus with ether in vacuo. Your hand gets cold just as ether last drop of ether evaporates into the other. When liquid passes into a gas particles rebel each other with force this force is called Elastic or tensile force of vapors. At present Chemistry boiling. It consists in species of

bulb, boil water in it, and then close and let it cool. There will be vapor of water only but put bulb in iced salt and the water will freeze in it. This depends on fact if you have two bulbs connected with no air in them & boil water in one & vapor goes over & freezes in the other. ——freezing mixtures. depends on fact that solids becoming liquids take great heat. Sugar won't do it. This is probably Chemical Combination. as lime. But different with KO, NO_5. by mixing these properly can get great cold, Dr Algiers [illegible] Baked salts and cool them

67. and what persons he speaks of as the preceding progenitors 12. until he had made proof of the thing proposed, what it was or if he gives back or not. precede 14. to go upon ~~the water to go to the~~ to thunderous.

Trafer. Feb. 7th

Total that is contant as salt Sugar. Economy requires to evaporate at lowest heat Ether produces great cold. Expose body to air current of air evaporates quickly also in vacuo. In air pump evaporation of ether will freeze water. Dr. Wollaston invented an instrument Cryophorus. It tube ends bulb at each

one taban ta tov, meaning
it would say & call and say ταῦτα
ταῦτα instead of ταῦτας.
ἀτάρ means it has an
arbitrary signification not
depending on construction
(really) ἀτᾶρ 231, 22,
ὄηλοῖ shows (present tense)
18, καταγοᾶτε to function
it, 29, (note she is called
by names Dike and Zyra)
232.1, ὑβριστὴς κοινωνι-
κὸς ἀνθρώποις equivalent to ἐν δούλου
232.3. κόσμος means a way
and "satisfy". but Plato Socrates
takes it from κεῖσθαι meaning
to sleep and it shows that
κόσμος (means) not a boy but
the purity and unanalyzed character
of his mind. 232.5. is
properly called by this name
ἡ ἐμὴ μαιευτικὴ τέχνη

65. it is a parabola.

$$0 = 4hx \sin i \cos i - x^2$$

$$0 = x(4h \sin i \cos i - x)$$

$x = 0$ or $(4h \sin i \cos i - x) = 0$

$x = 4h \sin i \cos i$.

Allen, Frazer Sub. 5th.

231. Pelham What kinds of things are. Those namely which took place many & terrible to him Stile living of which the end (was) his country was overthrown to his opposition with the Sentence and to him dead in Hades the hanging of the Stone over his head is wonderfully consonant with his name it. is wonderful how consonant & and it seems really as if (that) the chance of the chance speech of Fabius (a chance speech) seems to have given to him such a name as of one wishing to call him

vertical and resultant of velocity is decompsed into horizontal & vertical components but gravity only affects the vertical one therefore gravity only affects the ordinate of the point and not the abscissa that is direction along AC, therefore B & B' will lie on same line AB' is space described in time t with velocity v & gravity did not act ∴ AB' = vt = y' that is ordinate of point B' BB' is deflection due to gravity that is $\frac{1}{2}gt^2$ in time t. and is also = x'. v is constant g is constant and we have

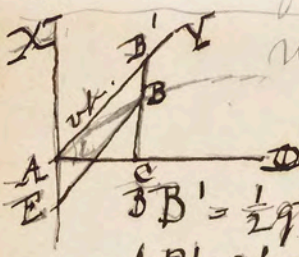
$x' \propto t^2$ $y' \propto t$

$y'^2 \propto x'$ this shows

Fraser Feb. 26th,

New wave for ark,

39.



$\frac{1}{2}B' = \frac{1}{2}gt^2 = x'$

$AB' = vt = y'$

$t = \frac{y'}{v}$

$x' = \frac{1}{2}g\frac{y'^2}{v^2} =$

$\frac{g}{2v^2}, y'^2$

$y'^2 = \frac{2v^2x'}{g}$ for $v^2 = 2gh$

$y'^2 = 4hx'$

or $x' \propto t^2$

$y'^2 = 2px$ $2p = 4h$.

$y' \propto t$

$y'^2 \propto x'$

Explanations,

A Y = which is direction of projectile is axis of Y and X axis of X Suppose projectile to go with velocity v and supposed hadgon to AB'. on this line if there was no gravity but gravity would make it be at B in vertical line because pressure is

therefore will describe BB'
in time describes $B''B$
therefore body at A fig I will
describe AC in time would de-
scribe 2l

t = time of describing AC.

$s = \frac{1}{2} g t^2$

$2l = \frac{1}{2} g t^2 \quad l = OC$

$\frac{2l}{g} = \frac{t}{2}$

Result $\frac{1}{2} T : t :: \frac{\pi}{4} : 1$

$\frac{\pi}{4} < 1$ therefore $\frac{1}{2} T < t$

therefore body goes down
~~AC~~ chord AC in longer
time than down arc AC.

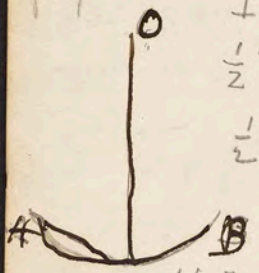
$f \propto \frac{r}{t^2}$ gd for one

$f = \frac{4\pi^2 r}{t^2} \quad f' = \frac{4\pi^2 r}{t'^2}$

61. properly ἁμαρτάνω, ἁμάρτημα, Boudetas means, ἁμάρτημα. Any judicial blunder inflicted by gods to ruin a proud man.

Trafer Allen, Feb. 3rd.

fig 1.



$T = \pi \sqrt{\frac{l}{g}}$

$\frac{1}{2} T = \frac{\pi}{2} \sqrt{\frac{l}{g}}$,

$\frac{1}{2} T = \frac{\pi}{2} \cdot \frac{t}{2}$

$AC = \frac{1}{2} AB$

$AC = CB$

$\frac{1}{2} T : t :: \frac{\pi}{4} : 1$

fig 2.

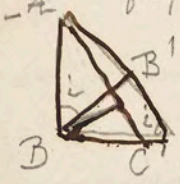
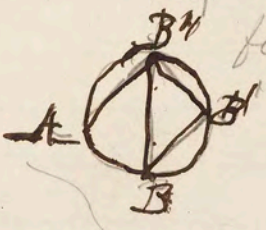


fig 3,



$2 l (DC) = \frac{1}{2} g t^2$

$\frac{l}{g} = \frac{t^2}{4}$

$\sqrt{\frac{l}{g}} = \frac{t}{2}$

By. art 14 describes $B'B''$ in time describe $B''B$ area AB'' and $AB' = B'B''$

for the murder of Chrysippus by him and the cruel things he did to Thyestes, all these &c &c — — the appellation of the name binds a little to one side and is concealed so that not to manifest to all &c &c,

2 3 1 1. as Schutz. even against this nobleman it was said in the murder of of Myrtilus that he became unable to perceive beforehand and not yet to see (any) of the things forward which (relate) to the whole race with how much misfortune he filled it seeing the near only and the matter at hand for this is near when he desired in every way to marry Hippodamia. and every one would think that

sx of this. Σ30,5 must certainly expressed it is more (certain) than overcoming of Θεοφιλος Θ ΚΙΝΔΥΝΕΥΕΙ seem to be is all its force. Φαινε 2.30.15; for Agamemnon seems to be such a one that ag whatever to labor through & endure carry through with perseverance. (α'ν α ἀν ὁμόσσωμαι) whatever seemed good to him, putting a com- (καρτερεω to persevere with endurance) plete accomplish- ment on what he resolved upon; by through virtue (or valor) and the proof of this and of (τελος completeness perfection) his entire perseverance endurance was the delay at Troy of the multitude the name Aga- memnon — and perhaps Atreus is right

olive oil	360
ice	32°
Milk	30°
Mines	20°
oil of turpentine	-14°
Hg.	-39°
Liquid NH_4O	-40°

Sulph. Carbon 116° (Boiling pts
Pyroxylic pts 132°
Pyroxylic pts. 151°
Camphene. 315°
Sulphur. 601°

Allen. Feb. 2nd.

12. as to the matter we were just now speaking of, but have (the name) signifying the same thing 230. 4 (or amodotion 4 pers) Ἀποδοχή (but a name which signifies the opposite

57.

Target 1024° – 240.

1080 as ma Steam greater latent heat than any vapor.

Applications.

Take $NH_4O\,NO_5$ or NH_4Cl very soluble, do combine they must get heat, and Mixture is cold,

Points of fusion

Substance	Authority	Temp. Faht.
Platinum	Platner.	4593°. 2
Cast iron	Daniell.	2786°.
Gold.	"	2015°. 6
Copper.	"	1996°.
Silver.	"	1873°, 4
Antimony.	Kupfer.	955°. 6
Zinc.	Daniell.	772°
Lead.	Rudberg.	607°.
Bismuth	"	509°.
Tin	"	
Sulphur.	"	442°. 4
wax.		226°.
Spermaceti		142°
Tallow.		112°
Oil of amber		106°
		92°
		50°

it on beam pass a tube from flask into it put steam into it steam condenses forms water. Continue it to 188° and now you'll find you have 9 ounces of water, 1 of, 1 ounce of steam in condensing has heated 8 oz. of steam 128°. or 102 But it has cooled from 212° to 188° 24° Latent heat is 1018 1024 or 102°. That 1 ounce of water at 70° in passing from steam at 212° to water at 188° has raised 1024 ounces of water one degree, heat given out was temp, Spe. heat, latent heat required Spe. heat,

55, 6:150° :: 40: 1000°

Latent heat of steam is 1000°

965.7° Regnault has.

Latent heats	
Water 1000°	in becoming
Alcohol 370°	steam absorbs
Ether 163°	enough heat to
oil turpentine 138°	raise 1000 lbs,
NO_5 335°	1 degree,

Is latent heat the same at all temp. of steam, as temp. increases latent heat diminishes. Rule of Watt, Sum of latent heat & temp is constant $\lambda + t = \text{Constant}$, This is not strictly true, $\lambda + t$ is total heat, Practically it will do, Southern Exp. H. Pressure & pressure and steam be Take 80 lbs ounces water 60° balance

Frankenheim says heat of vaporisation below 31°, "Water evaporating causes cold." H. Vaccum is much more useful cold, Heat is absorbed, And, determined by experiment like the others. Expose water at 62° put it in oil bath at constant temp, note till it begins to boil suppose 6 mts, from 62° to 212° see how long there remains stationary it will take 40 mts

Boiling pts	
Hydro Chloric ether	52°
Sulphuric "	96°
Bisulphuret of C.	110°
NH_4O (sp. gr. 0.945)	140°
Alcohol (sp. gr. 0.798	173°
Naptha	192°
Water	212°
NO_5 (sp. gr 1.42	248°
Crystallized Ca Cl	300°
oil of turpentine	314°
B	581°
SO_3 (sp. gr. 1.843	620°
Whale oil	630°
Hg.	662°

enough to raise 140 lbs.
55° of water one degree. Reason
Sunstorms is warm comparatively. Every frost checks itself.
So with trees. So there
a lb. of ice it has to absorb
enough heat enough to
lower 140 lbs. a degree.
Latent heat = heat of liquefaction. For everybody
this State was constant
but specifics are State
either crystalline or a-
morphous. Melting pts.

	crystal	amorphous
Sugar	320°	194° - 212°
Amygdalin	392°	257° - 266°
Sylvic acid	284°	194° - 230°
Lithofellinic	400°	220° - 230°

Water continues heat Water
boils, When it begins to boil
there won't vary at all until
all water has gone here is
latent heat of vapor

ice all ice has melted and then the other thermometer is at 172°. This is called latent heat or heat of liquidity, to show you that that heat is there, Take some water surround with salt & ice put in still room. and keep it still, water will go to 20° in city even to 16° then let a cart go by and disturb it all turns to ice and thermometer rises to 32°. Where did this heat ~~go to~~ from? from the water which threw it out, Quantity of heat Latent heat of water is 140° is statement of 1st experiment. French Day & so we do that that would raise 140° lbs of water 1 degree So is latent heat of water, Dr Griggs's many things, When a pound freezes each lb of water gives out heat enough to raise 140 lbs

comparatively [illegible]

51. Change in Density &c — each body gets hot & rises as air rises from earth cools. and lets water vapor off from hole. Friend Dr. Capacities of heat.

State of body depends on amt. of heat. But few solids not melted. Leaves carbon has shown signs of fusion. Lime & Magnesia never fused. Every body liquid made gaseous Mercury boils at 680° Discharge of electric battery makes gold appear to be a vapor, Water, at 0° ice, in warmth absorbs heat & thermometer rises till 32° then it melts. then rises. How measure it. How much Experiment Take 2 vessels 1 lb of H2O at 32° 2nd (ice at 32°) Place thermometer in each expose to same source of heat observe them, in ice till it begins to rise it Rests at 32°

Urbs the City
Roma Addition

4 26. Cornelius
b. which although P. Sylla
had banished 150 17
dum is Causal as
well as fact therefore
indicative dum qua
interea,

Frapes Favourite adjective
water has specific heat,
heat. On Climate dum
heat of sun solid ground
absorb heat more deeply
than water at night heat
given off more by solid
than by water. Water cools
slowly, but radiates well,
so warm weather water

49. Record for ever to remembrance. Populus Romanus Civitas et Status Politicus tuus [illegible] If they have defended that they said defended.

Dare D. Virtus D. S. Victum
hoc hoc non far from Romulus
victory. Miriam Carmen
turned over his Country. pius
duty to Gods, country, parents,
populus ill-omened. 28.
ad exemplum for an exam-
ple of the loss of our power (supreme)
triumphare ex ordo Gallus
hic triumph for victory
over Gauls. Attend and Enjoy
a triumph for victory over
that city. Walnut which
a triumph for victory
over the in Transalpine
wars.

$4 \tan^{-1} \frac{1}{5} = .789,582,239,349,520$

$\tan^{-1} \frac{1}{239} = .004184076,002,074$

$45^\circ = .785398,163,397,448,$

$\pi = 3.14159265358979784$

$\frac{1}{239} = .004,184,100,418,410,$

$\left(\frac{1}{239}\right)^3 .000,000,073,249,775 \div 3$

$\left(\frac{1}{293}\right)^5 .000,000,000,001,282 \div 5$

$\left(\frac{1}{293}\right)^7 .000,000,000,000,0002$

$+ .004,184,100,418,410$

$2.101 - .000,000,024,416,592$

$+ .000,000,000,000,256$

$+ .004,184,100,418,666$

$\tan^{-1} \frac{1}{239} .004,184,076,002,074$

Jackson Jackson

Jackson Feb. 18th,

47. $a = \frac{1}{5}$

$x = .2$

$x^3 = .008$

$x^5 = .00032$

.2
.008
.00032
.0000128
.000000512
.00000002048
.000000008192
.000000003276 8
.000000000131072
.000000000005243 8
.000000000000209715 2

then divide by x Co-efficients

$1 \quad \frac{1}{3} \quad \frac{1}{5} \quad \frac{1}{7}$

$+ \quad .2$
$- \quad .002666666666666 7$
$+ \quad .000064000000000 3$
$- \quad .000001828571428$
$+$
$-$
$+$
$-$
$+$

+.200	064	056	9 51	981
-.002	668	497	102	101
$\tan^{-1}\frac{1}{5} = .197$	395	559	849	880

$a = \tan^{-1}\frac{1}{5}$ $\tan 2a = \frac{\frac{2}{5}}{1-\frac{1}{25}} =$

$2x = \tan^{-1}x$

$\frac{\frac{10}{25}}{\frac{24}{25}} = \frac{5}{12}$ By same formula

$\tan 4a = \frac{\frac{10}{12}}{1-\frac{25}{144}} =$

$\frac{\frac{10}{12}}{\frac{119}{144}} = \frac{120}{119}$ $\tan 45^\circ = 1$

$\tan(p-q) = \frac{\tan p - \tan q}{1+\tan p \tan q}$

$\tan(4a-45^\circ) = \frac{\frac{120}{119}-1}{1+\frac{120}{119}} =$

$\frac{\frac{1}{119}}{\frac{239}{119}} = \frac{1}{239}$ $b = \tan^{-1}\frac{1}{239}$

$45^\circ = 4a - b$

for any arc

$x - \frac{1}{3}x^3 + \frac{1}{5}x^5$

45. $D^2x = -2u + 4u^3 + 6u^5 + 8u^7$

$D^3x = -2 + 12u^2 + 30u^4 + 56u^6$

$D^4x = 24u + 120u^3 + 336u^5$

$D^5x = 24 + 360u^2$

make $u=0$ in function $x = \tan^{-1}u$ all disappear in D^2x $D^3x = -2$ $D^4x = 0$ $D^5x = 24$ $x_0 = 0$

in formula given

$$x = \tan^{-1}u = u - \frac{1}{1,2,3}u^3 + \frac{1}{1,2,3,4,5}u^5 - \&c$$

$$x = u - \frac{1}{3}u^3 + \frac{1}{5}u^5 - \&c$$

---

to find π:

we have arc in terms of tang. odd powers of tangents $x =$

$u - \frac{1}{3}u^3 + \frac{1}{5}u^5 -$

$4 \tan^{-1}\frac{1}{5}$

$\tan(2a) = \frac{2\tan a}{1 - \tan^2 a} +$

$d^3x = u\,d(1-u^2)^{3/2} + (1-u^2)^{5/2}\,du$

$D^3x = (1-u^2)^{-3/2} + 3/2\,(1-u^2)^{-5/2}\,u\,2u$

$D^3x = (1-u^2)^{-3/2} - 3u^2(1-u^2)^{-5/2}$

$D^4x =$

for $x = \sin^{-1}u$,

$u = 0$

formula

$x = x_0 + Dx_0\,u + \frac{D^2x_0}{1.2}u^2$

$\sin^{-1}u = 0$

$D^2x = 0 \qquad Dx = 1$

$D^3x = 1 \qquad x = \tan^{-1}u$

$Dx = (1+u^2)^{-1}$

$Dx = 1+u^2 \;\big)\; 1 \;\big(\; 1 - u^2 + u^4 - u^6$

$1+u^2$

$-u^2$

$-u^2 - u^4$

u^4

$u^4 + u^6$

43.

for sin or cos

$$Dx = \pm \frac{1}{\sqrt{1-u^2}}$$

for tan or cot,

$$Dx = \pm \frac{1}{1+u^2}$$

Maclaurin's theorem

$$u = \sin x = u_0 + Du_0 x + \frac{D^2 u_0}{1.2} x^2$$

$Du = \cos x$

$D^2 u = -\sin x$

$D^3 u = -\cos x$

$D^4 u = \sin x$

$u = \sin x$

formula $x = 0$

$\cos x = 1$

$\sin x = 0$

$$u = 0 + 1x + 0 - \frac{1x^3}{1.2.3} + \frac{1x^5}{1.2.3.4.5} + \&c$$

$$u = \cos x = 1 - \frac{1x^2}{1.2} + \frac{1x^4}{1.2.3.4} - \frac{1x^6}{1.2.3.4.5.6} + \&c$$

for inverse function

$$Dx = (1-u^2)^{-\frac{1}{2}}$$

$$D^2 x = -\frac{1}{2}(1-u^2)^{-3/2} \cdot -2u$$

$$D^2 x = u(1-u^2)^{-3/2}$$

$$d(1-u^2) = -2u\,du$$

$\frac{dx}{du} = \frac{1}{-\sin x}$ $\sin x = \sqrt{1-\cos^2 x}$

$\sin x = \sqrt{1-u^2}$

$\frac{dx}{du} = -\frac{1}{\sqrt{1-u^2}}$ $u = \tan x$

$\frac{du}{dx} = \frac{1}{\cos^2 x}$ $\frac{dx}{du} = \cos^2 x$

$\cos^2 x =$ $\tan = \sin \cos$

$\frac{\sin^2 x}{\cos^2 x} = \tan^2 x$ $\tan^2 = \sin^2 \cos^2$

$\cos^2 =$

$\frac{1-\cos^2 x}{\cos^2 x} = \tan^2 x$ $\frac{1-\cos^2 x}{\cos^2 x} = u^2$

$1 - \cos^2 x = \cos^2 x u^2$ $\cos^2 x = \frac{1}{1+u^2}$

$\cos^2 x u^2 + \cos^2 x = 1$

$\cos^2 x (u^2+1) = 1$

$\frac{dx}{du} =$ $\frac{dx}{du} = \frac{1}{1+u^2}$

$\cot x = u$

$\frac{dx}{dx} = -\frac{1}{\sin^2} = -\frac{1}{1+u^2}$

$u = \sin x$ was the formula in last lesson where x was arc now diff. of inverse formula when sin cos a is variable Called inverse function $u = \sin x$ when we have $u = ax$ inverse is $x = a^{-1}u$ $x = \frac{1}{a}u$

inverse circular functions $x = \sin^{-1} u$ or $\sin^{(-1)} u$. It is inverse function of $u = \sin x$ x is arc whose sin is u, if u as function x reciprocal of x as function of u. $u = \sin x$

$\frac{du}{dx} = \cos x \quad \frac{dx}{du} = \frac{1}{\cos x}$.

Variable here is $\sin^2 + \cos^2 = 1$

$\cos^2 x = \sqrt{1 - \sin^2 x} \quad \sin x = u$

$\cos x = \sqrt{1 - u^2} \quad \frac{dx}{du} = \frac{1}{\sqrt{1-u^2}}$

$d(\cos x) = -\sin x \, dx \quad \frac{du}{dx} = -\sin x$

to manifest the nature
of the element, which
the law furnished to give
the name) 229. 2. to ta
the same 228. 25. So will
did he know, 228. 27.
Dr. S argument. 229.
2. to ckidden to
variegate 227. 17. & why
why their 229. 3. & tegra
alike by law different from
one another. Comparison
229. 5. appear to be difficult
being the same 6. a & 2.
inasmuch as, pe ta ker-
tar transposed or of
the force of the name is
in all ~~other~~ ~~different~~ altogether different
letters of all kinds."
letters.

Kendall. Gram. 3 Edit

41

39. Copy to our [illegible] order to speak falsely or [illegible] and separating our own observation to thinking that I touch upon any track of the [illegible], or [illegible] expand to our order [illegible] perhaps, 3 0 0 v t, 2 [illegible] I do not affirm it [illegible] or offspring 12 our order to a [illegible] it is nothing (troublesome) it makes no matter, 13, while the essential nature is differently disclosed in the name, 14, it is not curious, 20. but while we place in the without [illegible] its power made evident it is proper to call that hand which shall show it to us. Do see that — — — there is no harm to but that as not by the whole name

again but heat it & cool it and you can do it. Will try to do it for gas. Take hollow cylinder with piston to fit it tightly, it has hollow in front put piece of spunk in push in the piston compress air quickly set fire to spunk. Seems as they have to oil but it is not so. Air pump put blood makes fog. Affects lungs, water cold in day warm at night.

Allens Farm 3/24

17. These names resemble Grecian names 22. Of that of which they are is King he is also the protector of course

37. water has gained a temp
= t' | Sp. Heat w'
weight of heat w' t' = gain
of water gain = loss
wt = w' t' c = $\frac{w' t'}{wt}$.
Regnault has made valuable
experiments. all decimal frac-
tions H is 3.4046 greater
than any solid. Water 1
ice Sp H. $\frac{9}{10}$. steam .475
air .237 Specific heat of
$\frac{1}{2}$ watery vapor. Is Sp Heat
equable? No increases with
temp. to remember this consider
heat as gas body absorbs heat
cool rarefies temp. of body takes
more heat & lower temp, takes
less heat, or from pounds
Compresses body gains temp
expand body loses temp.
piece of iron 3 blows heat
red hot. do it once or twice
one Ounce piece can't do it

about gases this is fallacious
Gases would Escape, Mixtures
won't do. It has been tried to de-
termine Spe. Heat of gases
by sound through thin
pipes of organ, Blow with
CO gives the lower note with
higher, These are uncer-
tain. Best due to Berard
Delaroche, mode is, vessel
taken guarded against radiation
vessel filled with water two
thermometers inserted at
various heights, water
is continually stirred.
then gas ascends through
a coil passing through
water. Measured both when
it enters & leaves the coil
w = weight of gas
c = Specific heat
t = Degs of temp.
Wat = gas loss of heat

55

Lead	0.293	0.3372	2945
Tin,	0.514	0.3358,	735
Zinc	0.927	0.3321	403,
Copper,	0.0949	0.3340	396.
Nickel,	0.1035	0.3404	370,
Iron,	0.1100	0.3315	339
Platinum	0.0314	0.3348	1234.
S.	0.1880	0.3359	201,
Hg.	0.330	0.3714	1266,
Au.	0.0149	0.3292	1243.
Tellurium	0.0912	0.6501	802
Arsenic	0.081	0.6768	940
Silver,	0.055	0.6694	1352
P.	0.385	1.2415	392
Iodine.	0.089	1.2500	1580
Cobalt,	0.1498	0.4914	369
Carbon,	0.25	0.1698	76.4
Bismuth	0.288	0.2271	887.

Sp gr H = 1 Water = 1 Specific Heat

+ Water at 40° two pts gives 60°. By which see that Hg looses twice above as much heat as H O gains then Hg at 40° + H O 100° Water Result 80° Water cooling 20° gives heat to heat Hg 40°. By [illegible] equal weights Hg at 160° + H O at 40° Result at 45° heat that Hg looses cooling 115° is enough only to heat water 5° and Hg at 40° + H O at 160° Result 155° which proves same thing French say capacity for heat, These specific heats are not absolute, Unit is H O Specific heat of H O is 1.

at weights	atoms	atomic wts.

53. ~~of mass exactly it is~~
amt. of heat necessary to
raise unit of weight through
unit of temp. in English
unit of wt = lb. degree Fahr.
Hg requires small quantity
H O " large " (bulb
Substance ~~was~~ took cast iron
coated units polished iron
full units Hg bring it to 212°
hang it in vacuum of air
pump do same with water
have thermometer in. Why
does body cool? Same vessel
Same surface of Hg loses
more heat than H O in a
minute. It has the specific
heat. ~~quan~~ amt. of heat &
time take to cool to certain
temp. II, take by measure
equal volumes of Hg + H O Ht
1st take H O at 100 and then
Hg H O at 40 then mingle 70°
But take wt. of Hg at 100°

white Hg is least dilatable it begins first, Heat affects it first. 2nd alcohol. 3rd. water. We should say Hg was very sensible to heat.

Sensitiveness to heat.

1. Historically, why is one body more sensitive than another? 2nd. Do all bodies at same temp. Contain same amt. as heat? Thermometers show only ratio of heat, or density of heat. This experiment was first attended to Boshave Wallender. He had two flasks of Hg, H O, alcohol before fire Hg became very hot, sooner and he found that Hg parted with its heat fastest. This is called Therefore heat of body

31. & these are present. Incident.
2 very words appropriate to
deeds of heroes. ἡ. τὸ ο τ ες or
which of the 2, 8. for he alone
was the protector of
saved the city & the long walls.
22 ὅτι ὁ ης ὁ or ὁ τ ε evidently
5. the thought then, if Dit
he, rising inflection of
voice ἦ. ᾧ ᾗ γ ε ν τ α ε
suggest, 10. the son of.
to call the son of the
the Ashyanax (the city King)
of that which the father ruled.
12. τ ε ὅ η ὁ ο τ ε why in
the world.

Trapezium Jan 31st

Heat,

experiments of dilatation
of diff. liquids. Have 3
vessels one water (blue)
alcohol (red) mercury.

that the gods call the very
things (names) correctly
which namely are to them
by nature; 225. 30. τοῦτο
what kind of (eagerness)
225. 28. ουν: relative
226. 4. πρόνοιαν what
then. σεμνόν or rather grand.
semi-seriously. 10. ἀφροσύνη
φροντίδων Βαθυκλέα or
μειρακιώδη, (ουκ ουδὲ θεῶν
νόον ξυνῆκας) καλὸν μᾶλλον
ἢ κατὰ Βαθυκλέα
13. μειζόνως too great
15. more easily (to consider)
these names which he says
belong to the gods 2. Socrates
to consider what is correctness
in these names he speaks of
17. Ἦ σὺ γε certainly you know
the ~~passages~~ epic passages
in which [illegible]

29. 5. to prefix to the thing following (after this.)

225. 8. the ~~most correct~~ Shortest investigation is with those who know paying money to those men and giving thanks, Brooke's error is reputed to be.

~~Kendall~~, Jan. 27th,
From Jan. 28th,

art. 20 $t \propto \frac{1}{\sqrt{g}}$

$\frac{1}{a}$ inversely $g \propto \frac{1}{d^2}$
proportional $t \propto d$
to a,

Allen. Jan. 29th. 1859.

225. 15. This request would be absurd if when I do not receive entirely the truth of it, I would should entertain the things spoken about such a thing as worthy of any thing but since it does not please you, 225. 29.

in while making / being made)
and what of whether ecclesia-
ptical Knowledge
& ecclesiastical the Scien-
ces. 224. 9 adds + 2 = none
is is not (so). 10. äga illative
12. If the Rudder is going
to be beautiful, pleasure necessa-
ry, & ornate & the demon-
stration shows. 15. The placing
of names is in probable - must the probability
of being not mean a mean-
ing nor the part of mean-
mean 23. When you have for-
gotten what I said a little
before. & ecclesiastical a
common man. 224, 25
I know not how to reply to what you
say & But it seems to me that
& ... if you would show me
225. 3, to any part object

27. Body descends along an inclined plane if it is free gravity exercised.

Page 117, book means of take points E, E', E'' near together forming together a semicircle with AD diameter body fall same time from A to E as take to describe AD.

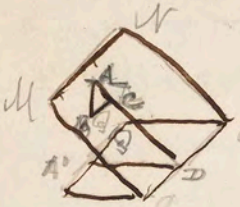
Allen. Dan. 26th

223, 17. Will now not these drink that in this manner the legislator who the one here and the one among the barbarians who as long as [illegible] is not a worse law giver than any one anywhere else EROS, the ideal

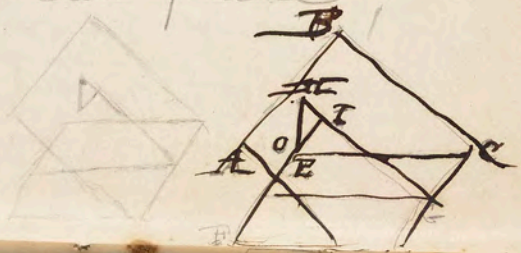
223, 24. κείται is put. has been put, ELROS ESTI It is more likely that he will who [illegible] would better [illegible]

223, 29 ἐπιτοταλτο to understand, εἰ γὰρ ὁ ὅσιος

better have v always as
Velocity of free gravity is
Rame as the Velocity



~~B4~~ + Gravity
goes down line
A B vertical
decomposed into
B C perpendicular to N E and
into A C in plane N E. By
requirement B C ~~is vertical~~
must lie in a plane perpen.
to N E and so must A B
be perpen. to P H, the plane
that is perpen. to a horizontal plane
and to N E that is must be
a vertical plane



25. been transmitted through a given medium a 2nd plate of the same medium will transmit more of it than a similar plate of another medium though it may be more transcalent than the 1st (Thermochroze).

Friday Jan 26th,

---

eq Glenahans of page 111
$v = a - gt$ v velocity at any moment of time a ascending velocity gt descending velocity given by gravity, at space would go over in ascending $\frac{1}{2}gt^2$ space described by body descending from force of gravity. when $v = 0$ body has come to rest. v value

We have diff. transalencees
in diff-directions; It de-
pends on form of crystal,
close resemblance of light
& heat,
effects in transcalency,
with color. We have refraction
of rays of heat, We have
double refraction. all analo-
gies of light hold good ex-
cept conduction & convexion

Allen. ~~2 2 5~~ Jan 26th
222 - 25. to impart that
Nature to each one as (god's)
is naturally most beautiful
to each one)

Tompson Jan 26th

Law 3rd of Heat.
When heat has already

23. what source, Causes
1. Bodies transmit diff
ent. from diff. sources
(Rock Salt, 2. transcalent
bodies all transparent, but
degree of transcalency, not
to transparency experiment to let
part of Sun's black rays & black
Cup. Black glass thr lampblack
into melted glass, Put little
Carbon in becomes yellow.
3rd. Allow heat to fall on
Crown glass & rays go through
they & rays Find sheet
of it is more heat than
through flint glass. Sun
light. transmit light through
blue glass put red glass
before the light stops it.
But if you put another sheet
of blue glass it goes through
without stopping. So on
the flint crown glass has
stopped what it wanted
as in light

by all Lamp's heat, Bohemian Vase of fine Lamb black, red heat.

Order of transcalency 100 incident rays (Intense heats)

Rock-salt, 92
Flint-glass 65
S.C2 63
Crown glass, 49
Ether, 21
Alcohol 15
Alum 12
Water, 11

Oil lamp, - 77,

Platina | red / not | - 57.

Copper at | 340 - 34, / 212° - 12

Rock salt & water illustrate 2nd part of law 2nd, order of transcalency not order of transparency,

Glass: Red - 47. Yellow, 34. Blue - 33. Green 26. Violet 53.

Rock salt seems to be aspiration and expiration - Stone, Lavender, Stone heat as Marble from

Transmission
Absorption,
Brilliant metals radiate & absorb little heat.

Transmission,
Melloni great investigator,
Nomenclature taken from heat
Ground glass transmits absorbs as much light as engraved glass. Transmission of heat transcalency. Bodies not transmitting apaket to heat, Melloni says. Diathermenous and athermenous. Say non transcalent bodies. Melloni found various facts & laws.
1. Different bodies are different by transcalent according to source. More intense heat greater the percentage
Pane of glass has same

Clothing: In Alps the sunburn from strong sunbeams comes from strong sunlight. Large snow mountains reflected.

absorbing power of heat.	Solar	alcohol lamp.	Coal.	Tallow	Spirit alcohol	400°	200°
Steel	0,42.	0.34,	0.175	0,12.			
Spec. metal	0,34.	0,3.	0.145.	"			
Platinum	0.39.	0,3,	0.17.	0.14,	0,105	0,1	
Zinc	"	0,32,	0.19.	"			
Tin	"	0,32,	0,15.	"			
Brass	"	0.16	0,07.	0.06,	0.055,	0,05(cu.)	
Gold	0,13.	"	0.045.	"	0.045.	0,04	
Silver very brilliant	0.08.	0,035	0.025.	"		0,025	

Victory of Sylla, [illegible]

19. antea venimus we have been coming for a long time. Quam diu nos venimus we were for a long time

& [illegible] pontus saturday, quum expectasset while there stood out, as [illegible] in that publico Empresario also in this man (Sylla) est enim causative qui publicauit who published qui publicabat and one who published.

Fraser Jan. 25th

absorption inversely as reflection we found good radiators are bad reflectors. ∴ radiation inversely as reflection ∴ absorption directly as radiation. This is one great Experiment. Unfrosted surface has no effect on radiation. But it has great effect on absorption. Dark tones of color absorb. Light " " " do not. Shades of color. You use these

offear. VIII non ignarus in oppo-
sition to bumpers. Imperium
the Supreme power. bellaverat
waged either for allies or in
a civil. the imperium the
termination
treaty of the war were ruled
& unavoidable (seventy) make
political sins of blood
populum of Rome imperium
ties. 27. or defend & send
if they had defended aequus
beam Scales justice
lead defend to strike
down. potiores Sullani victoriam
(orbis terrarum circle of lands)
We have entirely lost after the
victory of Sylla Mem 28,
vano jure Calamitas

Jam antea Mumbanus we were
diminishing — for a long
time back Not vero emphasis
victory of Sylla, jam

17. $\frac{\sin x}{x}$ passes to limit

$\cos h = 1$

$\frac{\sin h}{h} = \frac{h}{h} = 1$ ~~$\omega = u$~~

$\sin = \cos x$

Jackson Law 25th

25. with what tokens of fear was he wont to be pained. admirable too great degree Quinn although confusion stems notes. Thereof spricked and Thracian marks Cubrandum bed chamber ~~it~~ cum quidem and that too. My good adjective as good substantive. O misereum when speaking of me O misere when speaking to one the patient purpose 25. When each one feared he desires to have ~~it~~ pricked 25. nec cum fefellit would she dis appoint hope members in the possible

$\int \sin x\,dx = -\int d(\cos x) = -\cos x$

01:R7 :: sin R : sin ROS : sin dx

(for arc measure angle)

angle R passes to limit

angle R = angle T (but little difference) $u = \sin x$

$u' = \sin(x+h)$

$\sin(x+h) = \sin x \cos h + \cos x \sin h$

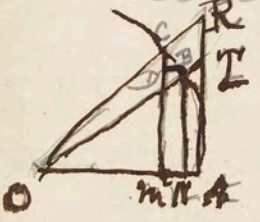
$\therefore u' - u = \sin x \cos h + \cos x \sin h - \sin x$

pass to limit $\cos h$ will become nearly $= 1$

$\sin h$ will approach to arc,

$$\frac{u'-u}{h} = \frac{\sin x \cos h}{h} + \frac{\cos x \sin h}{h}$$

If $u = a^x$ $x = \log_a u$ with
a as a base $dx = \frac{du}{a^x \cdot la}$
$dx = \frac{du}{ula} = \frac{du}{u} \cdot \frac{1}{la} = \frac{1}{la}$
is a modulus of the system
in which a is base $\frac{1}{la} = \frac{1}{1}$
$= \frac{1}{le} \frac{1}{e}$ is constant $= m$
$dx = M \frac{du}{u}$. Rule for
Circular Functions



apply increment
CB in triangle
CDB CD incre-
ment of sine BD
increment of cosine. Similar
to OBN. CB = dx really
in pass to limit it is dx
OB : ON :: CB : CD
OB : BN :: CB : BD.
Symbols $1(R) : \cos x :: dx : d\sin x$

$D^2 u = K^2 a^x$ $D^3 u = K^3 a^x$

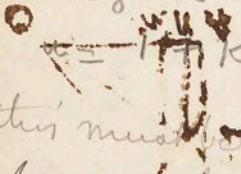
McLaurin's theorem is

$u = a^x = u_0 + D u_0 \frac{x}{1} + \frac{D^2 u_0}{1.2} x^2$

substitute values from 1.2 making

$x = 0$ $a^0 = 1$ $D u_0 = K$

$D^2 u_0 = K^2$ &c



$= 1 + K x + \frac{K^2 x^2}{2} + \frac{K^3 x^3}{1.2.3} + \&c$

this must be true for all values

for x hence find K of $x = 1$

$a^{1/K} = 1 + \frac{1}{1} + \frac{1}{1.2} + \frac{1}{1.2.3} + \frac{1}{1.2.3.4} \&c$

sum is $= 2.7182818282$

in calculus I distinguishes

hyperbolic logarithms, what

relation does K bear to it

$a^{1/K} = e$ $a^{\frac{1}{K}} = a$ $a = e^K$

$K = \log. a$ & $K = l. a$

$\frac{du}{dx} = \log a^x$ $du = a^x \, l a \, dx$

13. Transcendental functions
Logarithmic functions:
$u' = a^x$ $u' = a^{x+h}$

$1 + \frac{1}{1.2} + \frac{1}{1.2.3} + \&c.$

1
1.5 $\left(\frac{1}{.2}\right)$
$\left(\frac{1}{.3}\right)$
$\left(\frac{1}{.4}\right)$
$\left(\frac{1}{.}\&c\right)$

1
1.5
.1666666
.0416666
8333333
1388888
1984127
2480158
2755
2756
250
21

$e = 2,7182818284$

$u' = a^{x+h}$
$= a^x a^h$ suppose a^h equal
to. Series of known h, Ohmes of $h =$
1 first term $a^h = 1 + Kh + K'h^2 + K''h^3 + \&c$
multiply by a^x get new a^{x+h} in series
$u' = a^x + Ka^x h + K'a^x h^2 + \&c$, Rule to find K &c
h when u known
$h = Ka^x + K'a^x h + \&c$ how found
$L = du$ $dx = Da^x = Ka^x$ to find
$du = dx \cdot Ka^x$ it take
$u = a^x$ I denote
by Mr Lardner
theorem

to weave. 16. a v to w dahm/ethe
end. 23 or looking forward that
which forward which looking
he made the one which he broke,
222, 24, that the natural qualities
necessary for each work he
~~should~~ he should impart as
that beautiful are natural to each
one, 223, 5, for each & mutth
was by nature to each idea of
weaving. 223, 11, KOQOS
rope OS means a lark not
buried up. KOQOS real-
222, 12, Eoc— immediately
after. to KaXOS collective
beauty to KaXor abstract
beauty, up to, to adorn-
ES the perfect ideal of
truth.

Kendall Dan 24

11. the ado, 222, 20, Should we have not drawn call mark quickly That very thing the Shuttle which is the shuttle. 22,23, Exercise Boyle 221.10 Hangmoper Separate 221, 13. What do we say do when naming with a name which is an instrument. 221, 16 by exercise what they are. 221, 23, the workfellow (Kind of man) 221. 30 Ever. Robert all right, 222. (as often as he uses a name. 229, 9 It is not the part of every man. 222, 16 + no's apologies for the word myth a Kind of word maker. 222, 12. 11 Mr. Morgan a public practitioner had diploma from the public, Mr. Wotherspoon had not, I know of no test to look to discover. Exercise in addition Exercises air look in addition 12. area of no test at all go back & look. 15. does he not make the Shuttle looking to Duck, a thing can't natural

as to reflection leaves it all and
Conf to light law of reflection,
angle of reflection equal to angle of
incidence. Calculate angle not from
normal, If body has an irregular
surface rays of heat go back
in all directions Called diffusion
as regards reflection. All
good reflectors of heat are
good reflectors of light &
vice versa. Polished metals
best reflectors - Glass bad.

~~Absorption~~.

All heat must be either reflected
or absorbed. 1st law. Absorption
inversely as reflection

Allen. Monday Jan. 24th.

---

221. 18, 21 222, 20 222, 23
223, 5. hard for trains, refer
below, ~~to 18 a~~ 221. 24
and will is after the manner of a
weaver, 221. 18, and able to separate
the essence as the shuttle

11

ground was little lower. Above that things remained the same going up thermometers rose gradually. How protect from frost, with curtains or boughs cover them with awning. Other way was to make a smoky fire and like a cloud. Or to place slacked lime under trees.

Reception of Heat

Radiation is establishment foundation. Receives 1. by Conduction. 2. Convection. 3. How receive radiant heat. When radiant heat falls on body it must be received or thrown out. If thrown back it is reflected. If not it is transmitted or may stay in (absorbed). Use absorption. If heat is fluid or gas then bodies would act like sponge. If you think heat is vibration of particles absorption is destruction of this motion.

it receives. Earth radiates into free air. Best radiators cool first and deposit water first de-posited. Growing plant is very finely divided, porous bodies. Clover radiates as well as Lamp-black. Grass walks radiate more slowly. Moisture from stratum of air immediately in contact with the body. How do things saturated with dew, such as cloud, Earth radiates to cloud and vice versa. Thunder clouds are colder. Wind takes off air as it cools. This is called Wells theory. Sir H. Davy made it only a hypothesis. He took an acre of ground. Her started from post below bot of ground and put thermometers on in ea part. at night thermometer at clover was at 32°, then at ground was 32°. 1st under the

your pedal becomes coated with water. Ice cream in water does the same, Air Water evaporates. Summer air has more moisture than winter air. The quantity of water air can dissolve depends on temp. Cool hot air it must give up its moisture first can hold it. This is conclusion in bringing dew pt hot air Deposit of water from stratum of air next to pitcher. This dew is deposit of water because plane of deposit has gone down to a temp. below that of the air around. Dew first deposits on leaves then on grass then on marble then on metal (polished) after it won't deposit on polished metals. Explain. During day our side of earth gets more heat than it radiates / During night earth gives out more heat than

with Something. Yes.

Frafa Jan. 24th.

I have supposed that polished bodies radiated less than coarse bodies porous. But it depends on closing the pores as has been shown. Color has no influence on radiation all depends on nature of surface. Theories, 1st. that bodies of higher radiate to bodies of lower heat. But Provost of Geneva established that is true that every body radiates proportional to temp. an heat from sun comes by radiation. Apply this to dew. Dew is deposit of moisture from the air. Rads. I on clear night 2. Still night 3. only falls on bodies exposed to sky above. Dew does not fall Thaw organization. What is the Thermofit. Frost is frozen dew. Experiment. Before summer pour cold water in pitcher

5. of its cutting and being cut
and with which (instrument)
it is natural & these we effect
our cutting and shall not
thus be put to advantage 220
6. Do we or is it not then?
12 Whether we have spoken rightly
speaking in that way in which
it may seem best that it should
be spoken by any one of the
way it is natural &c, to our
advantage, &c & really
speak, to our common way of
saying & know but it with
positive "to cut" 22. &c a-
ry your just now were shown
(best terms) 23. objective
are not subjective but are
objective subjective (thought
arguably in as objective doth
24. If any thing is about to be
acknowledged to our former
matters - 29 Can we not
do we say what is it necessary
to cut it was necessary to cut

Allen. Dam. 2 2nd

line 10 Page 21 q But I think that you don't think as Lewes does that all things exist for all &c. for not yet would there be some good others wicked &c. 1 b, nor that each of existing things is to each. 1 q Be Baron agrees with Lewes 20. not dragged up & down by our imagination but having themselves reference to &c. 2 St. But are their operations in the same way. or (Be Baron Barrow to stop,) are not these the operations (or means) a species of some existing things. 220. 1. or if we wish to that to cut each thing according to the nature (2 cy. 3 c. of the instrument. vola taken to hand to Boodopear. 2 2 D, 2 n /

2.

Problem (R. Conn. Mechanics)

Suppose in problem that you hit w so as to give it velocity v then if $= nv$. mass moved $m+n$ velocity due to this denoted by $V = \frac{nv}{n+m}$ for $V = \frac{F}{M}$. this is if gravity don't act but gravity gives $g' = \frac{m-n}{m+n} g$ if $v = gt$

then $v' = \frac{m-n}{m+n} gt$. these forces acting oppositely (that is gravity & the blow) therefore velocity is difference and if system comes to rest this vel. is 0, then

$V - v' = 0 = \frac{nv}{n+m} - \left(\frac{m-n}{m+n}\right) gt$

$nv = (m-n) gt \qquad v = gt'$

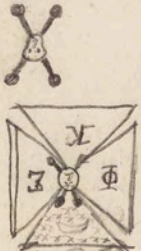
$t = \frac{nv}{(m-n)g} = \frac{nv}{(m-n)g} = \frac{ngt'}{(m-n)g}$

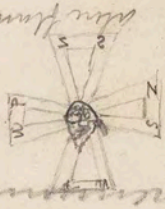
Suppose in pulley problem
W gets struck,

Elastic bodies going in
same directions
$u - 2(u - w) = u'$

$u' = 2w - u$. & this reduces
as the 1st, equation in the for-
mer to $w' = \frac{m - n}{m+n} u$,
next body had velocity v against
$w - v$, $v + 2(w - v) = v'$
$v' = 2w - v$ this reduces to
by subtracting

$v' =$





Principal Acids & Bases

Acids	Symb	Equiv
Nitric acid	NO_5	54
Sulphurous Acid	SO_2	32
Sulphuric "	SO_3	40
Sulphohydric "	HS	17
Phosphorous "	PO_3	56
Phosphoric "	PO_5	72
Chloric "	ClO_5	76
Chlorhydric "	HCl	37
Iodic "	IO_5	166
Iodhydric "	HI	128
Bromic "	BrO_5	120
Bromhydric "	HBr	79
Fluohydric "	HF	20
Carbonic "	CO_2	22
Cyanohydric "	$HCy(NC_2)$	27
Boracic "	BO_3	35
Silicic "	SiO_3	40
Antimonious "	Sb_2O_4	161
Antimonic "	SbO_5	169
Arsenious "	AsO_3	99
Arsenic "	AsO_5	115

Bases
Potassa
Soda
Lithia
Ammonia
Lime
Magnesia
Baryta
Strontia
Alumina
Glucina
Yttria
Thoria
Protoxide of Iron

$w = \frac{m}{d^2}$ $\quad v' = \frac{2mu}{m+u}$

$u' = \frac{m-u}{m+u}\mu$

$v' = u$

$(m = w')$ $\quad u' = 0$

u = velocity of m

$-v$ = " " of w

$u+v$ = relative vel. before impact

$u' = 2v - u$

$v' = 2v + v$

$u' - v' = u + v$ = rel. vel. after impact

Jackson, Trafalgar Jan. 20th. 1859.

6.19. Decimus we shall speak ita and that, a dumb dis. 20. Gladis fall. 30 bene mei homines civium Recipe often deserving citizens. 21. honors (Gratia) Rake of beautiful honor. Illaqueatus near 22 added to give emphasis. 22. tentatus is attempted, la tenentur are held by debt (ratione) depositis position. subditum a prefix. 24. let Cinetty have to be called to their assistance) Vero however (natigare to fit out vasculum to fit up. furnish themselves in such way. Vivere conversation. middle of 24. quam retentus pugna. for mortuus past ofes as they had the liberty intermissus temporary loss.

Trafalgar, Jan. 20th, 1859.

Mechanics.

Instrument to show $S = \frac{vt}{2} = \frac{gt^2}{2}$

Principle belongs to Atwood, we can defend our gravity for experiment. Atwood makes use of formula $\frac{m-n}{m+n}g$, to delicate a instrument if you give one weight one foot more of silk string, each of weights are equal each 15 units of weight here as another weight $\frac{1}{30}$ of either weight ($\frac{1}{2}$ unit of weight platform holds body up put platform down body comes down Atwood's machine

acc. force $\frac{m-n}{m+n}g = \frac{g}{61} = \frac{386.284 in}{61}$

$m = 15.5$ $= 6.332 in$

$n = 15$ $S = g\frac{t^2}{2} = 3.166t^2$

$m = 16$ $\frac{m-n}{m+n}g = \frac{g}{31} = 12.46 in$

$n = 15$

$S = 6.23t^2$ $m = 17$ $n = 15$

Now let's platforms go down, verified these two formulas. this verifies $A = gt^2$ but we can verify $S = \frac{vt}{2}$ Suppose that at any moment makes constant goes up Second 2v as $g = 3.166$. finches next second with

v constant	6.332	12.07
12.664	6.23	3.166	24.14
25.328	12.46	9.498	36.21
37.992	18.69		

Harrold's Start System moves harmonically as weights are even, weights made long for we have a ring platform below which catches weight off. This is way to make motion uniform.

Then also uniformly retarded motion

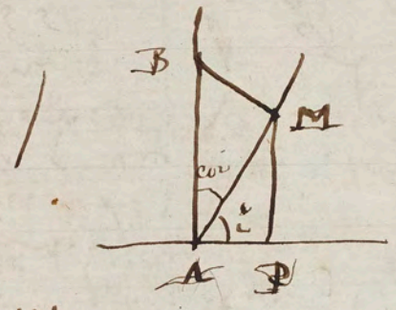
Par $\frac{n}{m+n}g = \frac{g}{16} = 24.14 in$

$S = 12.07t^2$

Time Seconds	Space (inches) $g = 6.632$	$g = 12.46$	$g = 24.14$
1	3.166	6.23	12.07
2	12.664	24.92	48.28
3	28.494	56.07	(108.63)
4	50.636	(99.68)	(193.12)

parentheses shows his instrument don't go that far.

These wood scale graduated in inches platform put opposite zero. then you have instrument set to start itself clockwork starts platform gives tick to show platform is going down drops weight drops on platform below with a noise On the second hand is a quadrant a wheel spiral form and of lever rectifies the quadrant at the minute exactly end of



$AB = 4h$

$AP = AM \cos i$

$AM = AB \sin i$

$BAM = 90^\circ - i \quad \cos(90^\circ - i) = \sin i$

$\therefore AP = 4h \sin i \cos i$

Construction for maximum Range.

1 Jrhafa, Jan. 21st.

elastic bodies
u = vels of m. v = ~~inelastic~~ m+n

-v = " of n

m, n, in opposite directions

w = common vel. after impact if they had been non-elastic

(u-w) = loss of m

(w+v) = gain of n

$v' = -v + 2(w+v)$

$v' = 2w + v$

$u' = u - 2(u-w)$

$u' = 2w - u$

substitute value of w.

and simplify.

$v' = \frac{2mu}{m+n} - v \quad (v=0)$

$u' = u\frac{m-n}{m+n} \quad (v=0)$

Hiawatha's running

$R = 2h$ $t = 10$ seconds

goes up in 5 seconds comes down in 5 $v = gt$

$v = 5g$ $g = 32$ $v = 160$ ft in a second $v = \sqrt{2gh}$ $h = \frac{v^2}{2g}$

$h = 400$ ft $R = 800$ ft

$800 \overline{)5280} \left(6\frac{3}{5}\right.$

$\frac{480}{800} = \frac{3}{5}$

$10 \quad 6\frac{3}{5}$

60

6

a mile in 66 sec.

Wilson
Devereux
Marfod
R White
Gates
Benson
W. White
Jones
Steen

W. White
Crofer
Morrison
Patterson
Benson
Rakish

1 1/2 C.P.

5 C.C. Lec.

David B. Wilson

David B. Wilson,

Junior Class

Univ. of Penn,

Phila

Grant
Crawling
Berkett

Class of '60.

$u = e^{x} + e^{-x} + 2\cos x$,

54 pages

Jefferson College Medical

Pancoast

Pancoast

Pancoast

Bache

Meigs

Dunglison

Mitchell

Gross

Jackson