

2

Papers, May - Dec. 1863

see also folder 45 for July document

W. B. ROGERS
MC 1

Wants of the Institute of Technology as to space

- | | | | |
|---|---------------------------------------|--|----------------------------|
| 1 st floor
2 ^d floor
3 ^d floor
4 th floor
5 th floor
6 th floor
7 th floor
8 th floor
9 th floor
10 th floor | 1 | A general Lecture room say 80×100 feet
Lower floor of east wing of building (A) | 100×80 feet |
| | 2 | B Museum of School of Geology requiring large space for massive specimens and arrangement of minerals to be in first floor of central building (B) | 100×80 |
| | 3 | Chemical Laboratory say on half of the west wing lower floor (C) | 50×80 |
| | 4 | Library and general committee room (D) | 50×40 |
| | 4 | Small Lecture room and ^{for} School of Physical ^{& chemistry} with apparatus for Lectures (E) | 50×40 |
| | 5 | Basement room for Fuel warming apparatus motor power, packing Boxes and general store room for various things in waiting room to exhibit working models of machinery to be | 3 rooms
100×80 |
| | 6 | School of design | 50×110 |
| | 7 | " of Mathematics | 50×40 |
| | 8 | " " Geology & (minerals) | 50×110 |
| | 8 | Small Lecture room for about 200 students | 50×40 |
| 9 | East wing 2 ^d floor museum | 100×80 | |
| 10 | North building 2 ^d floor " | 100×80 | |

12.
School of Industrial Science

1. A large general lecture room.
 2. Small lecture room for Chem: & Chem. Arts.
with small ^{App: room} ~~laboratory~~ adjoining.
 3. Small lecture room for Physics & Mechanics:
with App: room & workshop adjoining.
 4. Small lecture room for Geology & Mining
with room for specimens, models &c. adjoining.
 5. Small lecture room for Mathematics.
 6. Large laboratory for Chem: & Metallurgy
& Chemical Arts in general.
 7. Laboratory of Physics & Mechanics...
with app: for testing strength of
materials, mining machinery &c.
 8. School of Design... One large room, &
a small apartment for models &c.
-

Book of the ...

80
100
24000
3

... for ...
72000
8000

80000

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1. Temple place

Boston May 4. 1863.

Dear Sir:

At the risk of repeating what may be in great measure known to you I feel it to be a most undoubtedly the present duty of telling you of agreeable duty to announce to you the favorable action of the Legislature on the two subjects connected with our Institute which have come before them.

If the ~~information~~ ^{will} ~~has not~~ already reached you, I am sure you ~~will~~ ^{will} be glad to hear that they have repealed the ungracious condition accompanying the grant of land on the Back Bay, and ^{The Drs. + H. N. H. Esq.} ~~that we~~ are now relieved ^{of} ~~from~~ all possible liability connected with the sales of the surrounding lands.

They have moreover shown their appreciation of our ~~objection~~ ^{claims}.

~~It is~~ ~~retained~~ ~~on~~ ~~our~~
stability by appropriating
to the active operations of the
Institute three tenths of the
proceeds of the public lands
granted by Congress to Mass:
for the promotion of education in
Agriculture & the Mechanic Arts.

What may be the ~~real~~ value of
this appropriation when realized, &
within what time it shall become
available we I presume somewhat
uncertain, but the amount, it
is thought will ~~not fall short~~ ^{reach}
of one hundred thousand dollars.

By a separate Act the
Legislature have given the
remaining seven tenths of the
grant to the formation and
endowment of an
Agricultural College.

Following the suggestion of

in his message & address
the Governor, a strong effort was
made early in the Session to
secure a union of this entire ~~fund~~
prospective fund with that of the
Buppy estate & to make the
Agricultural College & the
Institute of Technology parts of
a grand plan centering in
Harvard University.

The latter ^{proposition} ~~feature~~ ~~was~~
~~so~~ suggested at the hearing before
the Legislative Comm: met with
the instant reply from myself
& others that the Institute had
from the beginning determined
to stand alone, & that its
independence was essential to
its success, & that it would
accept no grant from the State
or from any other quarter
which should in the slightest
particular interfere with
this independence.

After hearing our statements

I am wrapping the subject very
 fully on ^{these} different occasions, the
 Committee abandoned their original
 purpose & passed the two bills
 which ~~with~~ ^{have been} important changes
~~have~~ enacted by the Legislature
 & of which I have already communi-
 cated the substantial features,
 making the Agricultural College
 an entirely distinct institution &
 giving the ~~same~~ Institute the
 above-mentioned share of the
 Congressional grant with no other
 condition than that the Chief Justice,
 Secy. of Board of Education & Governor
 shall be ex officio members of
 the Gov^t of the Institute.

We are now busy planning
 our building for the School of
 Industrial Science, & thanks to
 your munificence we hope soon
 to see its foundation laid.

Believe me dear Sir
 with great respect.

Yours Truly
 William B Rogers.

D^r. William Walker.

J. D. Walker

May 4. 1813.

J. PRESTON
J. G. PRESTON
ARCHITECTS,
6 JOY'S BUILDING

6 Joy's Buildg -

May 9th 1863.

E. H. Eldredge Esq.

Chairman Sub. Com^{tee}

Dear Sir,

Your note of this morning came duly to hand, in which you requested us to name the terms upon which we would perform the duties pertaining to the Architectural & Superintendent's departments for the construction of the building proposed to be erected by the Institute of Technology.

The Commission that we uniformly charge for these services, is five percent of the nett cost of the building. This Commission is to cover all expenses of every kind for Plans, alterations in Plans,

W. PRESTON
ARCHITECTS
3 JOYE BUILDING

full sized working Drawings,
Specifications, Contracts, and
all other duties incidental
thereto.

Yrs. Respectfully -

Wm Preston
W. Preston.

Letter from J. & W. G. Preston
stating terms for services
as Architects & Superintendents
Dated May 9th. 1863.
Laid before the Building
Committee & acted upon
May 11th. 1863.

[to U. D. Ross]

(X)

1. Temple place

Boston May 24. 63

My dear Sir:

I have been wishing this week past to write you at Conn: but my brother's arrival & the absence of important news regarding the Institute have led me to postpone the pleasant duty until now, when I must be content with having my Missive meet you in N. York.

The building Com: last appointed have had a meeting - I directed Mr. Preston to make estimates for the plan as submitted - These I suppose will not be ready before your return.

Your friend W. Bigelow

Now I understand better
Leman's offence at the
appointment of this building
Committee, ^{Chairman,} ~~knowing~~ that,
by the former action of
the Govt. the subject was
placed in the hands of the
Comrs. of which he was
Chairman.

When you spoke to me
of appointing the present Comrs.
& named the gentlemen proper
to compose it, I was under
the impression that Mr.
Bayliss expected to be absent
& that you had conferred
with him on the subject
& found him ~~so opposed to~~
desire to take part ^{in the matter} at
present. I supposed however

that he & the other members
of the Old ^{Com.} were to go on
with the business

maturing the plan of a
Museum building. I
regret however that ~~we did not~~
push on the preparations for our cent
~~but consider the matter more~~
building; for instance we did not advert
carefully in relation to the first
to the previous
action of the Govt., as the
course pursued does seem
a little inconsistent to ^{the} ~~the~~ ^{older Comrs.} ~~the~~
however ^{entirely} innocent
we have been of any willingness
to neglect ^{their} ~~the~~ ^{feelings} ~~feelings~~ or
to disregard their feelings.

I have not personally met
him, but Mr. Boston & the Secy
tells me they have both ^{I learn} ~~expressed~~
~~been of an desire to~~ ~~his~~
~~co-operation~~ & have endeavored
to correct the unpleasant
impression under which he
has been labouring as regards
the actions & motives of the

Gov. in this matter. Your
absence at this juncture presents
the Chief Obstacle to a pleasant
& harmonious understanding, for
Your explanations & assurances
would ~~be~~ ^{be} more than any thing else
^{in removing the} ~~to remove the~~ ^{in removing the} ~~inconsistent~~ ^{inconsistent} "inconsistent"
~~Cordials" but~~ ^{faller,} which an ally seems to have

I have so much respect for Mr
B.'s ^{high} abilities & character, & so
grateful a remembrance of his ~~past~~
services in connection with the
Institute, that I should greatly
lament the loss of his sympathy &
help, ~~and I should be deeply pained~~
~~at the thought that such~~
~~a~~ ~~God~~ ~~could~~ ~~be~~ ~~ever~~ ~~supper~~ ~~any~~ ~~measuring~~ ~~the~~
~~estimation~~ ~~was~~ ~~occasioned~~ ~~by~~
~~any~~ ~~ill~~ ~~will~~ ~~that~~ ~~turned~~ ~~active~~ ~~against~~ ~~him~~
~~as~~ ~~an~~ ~~agent~~ ~~of~~ ~~the~~ ~~Govt.~~ ~~chargeable~~
~~upon~~ ~~him~~ ~~the~~ ~~will~~ ~~in~~ ~~which~~ ~~he~~ ~~has~~ ~~been~~ ~~long~~
~~at~~ ~~the~~ ~~work~~ ~~with~~ ~~the~~ ~~Board~~ ~~of~~ ~~Trustees~~ ~~who~~
~~co-operated~~ ~~with~~ ~~him~~ ~~from~~ ~~the~~ ~~colleagues~~ ~~who~~
~~then~~ ~~XXXXX~~ ~~in~~ ~~the~~ ~~exercise~~
entertain so much regard for his character &
services.

It seems to me that the last proposed
Committee might include Mr. Bigelow
& perhaps the Treas. & I hope when the
first next week that this addition will
be made.

The Non? Conn: has not
yet made up a Report. W.
Tobey has sent her down to
Newport but I have not seen
her since his return. He is
in a secondary as to the
Vici Past. I have seen
D. M. Wymore in the hope of
persuading him to make a visit
to his old friend. Perhaps, he
will do so this week. The
final Annual Meeting with
Supper not come off until
next week. That is all -
I am.

W. B. R.

J. M. D. Rofs,

May 24. 1863.

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National Academy of Sciences
Washington, D.C.
May 25, 1863

Dear Sir;

The Office of Weights & Measures requests that you will examine & report upon the hydrometer of Joseph Saxton, Esq. Assist. U.S. Weights & Measures Office. It is proposed as a substitute for Greiner's hydrometer now in use.

An instrument & description will be sent to the Chairman of the Committee. The Committee is constituted as follows:
J. F. Frazer, Chairman, F. A. P. Barnard,
W. Chauvenet, W. B. Rogers, J. G. Totten.

Please address me as early as convenient signifying your acceptance of this duty as a Member of the National Academy of Sciences.

Very respectfully Yours
A. D. Park

Pres. Nat^l. Acad^y of Scien's

Prof. W. B. Rogers

From A. D. Beck

May 25. 1863.

[4/2/63]

[5/27/63]

Know all men by these presents:

That I, William J. Walker
of Newport in the State of Rhode Island
do hereby give and grant to the
Massachusetts Institute of Technology,
the proceeds in money of six hundred shares
in the Old Colony and Fall River Rail Road
Company, belonging to me, provided that
there shall be subscribed or pledged by persons
of supposed responsibility on or before the
tenth day of the present month of April,
an amount of money for the benefit, use,
and endowment of the aforesaid Institution,
which, when added to the sum hereby grant-
ed and given by me, shall together amount
to not less than one hundred thousand
dollars, and thus enable the said Insti-
tution to comply with the terms and condi-
tions of an Act of the Legislature of
Massachusetts so far as to acquire and make
available for the purposes of said Insti-
tution a certain parcel of land located
in Boston in the State of Massachusetts,
and which has been granted by said Act

to said Institution.

omit [A Certificate of the President, the Vice Presidents and Finance Committee of said Institution that such compliance with the conditions of said Act has been made, or any other proof of this fact being made satisfactory to James M. Beebe, and Edward S. Tobey of Boston aforesaid, and to Dr. Morrill Hyman of Cambridge, (Massachusetts) and their written declaration of approval, accompanied by an expression of their opinion that the conditions of the grant hereby made have been complied with on the part of said Institution endorsed on said Certificate, being presented to said Edward S. Tobey, he is hereby authorized and directed to pay to the Treasurer of said Institute of Technology, who shall be especially authorized to receive it, the proceeds of the aforesaid six hundred shares of Stock in the Old Colony and Fall River Rail Road Company which I have authorized said Tobey to sell at any time he may

think best within sixty days from the date of these presents. The proceeds of said shares shall be paid at such rate over and above their par value as the average rate per share at which said Tobey shall sell one thousand shares of my Stock in the Old Colony & Fall River Rail Road Company which I have authorized him to sell.] omit to here

In testimony of the foregoing instrument, I, William J. Walker, have here to affixed my signature and seal in Newport aforesaid on this second day of April in the year Eighteen Hundred and Sixty Three.

In presence of
E. M. Nicolai
E. S. Tobey.

Signed

William J. Walker.

Copy of an
Instrument of Gift
from
Dr. W^m J. Walker
to the
Mass. Institute of Technology.
Dated April 2d 1863.

⊗

Boston May 31. 1863.

Dear Sir,

Your letter of the 25th inst. naming me as one of a Comm: of the Nat. Acad. to examine & report upon the Hydrometer of Joseph Saxton Esq. has been duly received.

In view of what I believe was the understanding of the Academy at the close of the meeting in New York, that the rules then adopted were to come up for final consideration & action.

At the December Meeting;
I had not supposed that
it would be thought expedient
to enter upon the business
of the Academy until
after that time.

This however would not
deter me from accepting
the invitation conveyed in
your letter; but the pressure
of ^{my} engagements forbid, my
undertaking the duty
assigned.

Allow me to call your
attention to the fact that
the clause relating to
Alteration of Laws, which

you will remember was
repealed on the last morning
of our meeting in N. Y. is
retained in the revised
edition of the Rules, for
the Gov^t of the Academy
recently distributed among
the members.

Very respectfully yours,
William B Rogers.

D. A. D. Backe
Pres^t. Nat. Acad. Sci.

To A. D. Beck.

May 31. 1853,

1. Temple place (X)
Boston June 24. 183.

Dear Sir.

The Mass Inst. of Tech now occupying rooms in the Merc. Guild? In December it is proposed to extend its operations during ^{as early as practicable} the ensuing season & for this purpose will require a considerable additional space. This further accommodation has should prefer to have in the same building with our present rooms & contiguous to them, and as the large Apartment on the same floor, the former reading room, could be made to answer our objects for the present we should be glad to avail ourselves of it, provided the expense of the arrangement fall within the economic limits, which we are bound to observe.

It would be our purpose to lease the room in question for two years, using it in part as a place of deposit of Models, & other Materials for an industrial Museum & in part as a lecture or class-room for

Students of practical
Science.

As our projected building
on St. Back Bay will be
commenced this summer we
expect within 2 years to be
in a condition to transfer
our operations to the
amplified space which it
will provide.

The objects of the Inst.
are doubtless already
known to you & cannot
fail to command themselves
to your hearty sympathy,
as they have done thus
far to the approbation
& aid of the friends of
education & the promoters
of the industrial arts
in this large mercantile
community.

In asking you therefore
to name the terms on which
the Inst. can have the
use of the Apartment
referred to for a period of
2 years we feel assured
that your liberal interest
in the public good for which
we are labouring will
induce you to extend to
us the most favourable
arrangement in your
power.

Begging you early as
well as generous consent
of the subject we
remain

Yours very truly

W. B. Rogers

E. B. Bigelow

for the Inst.

To W. Paul Mason.

In regard to large
Dorm & Merc. Build
on 11th St. & Fed.

June 29. 1863.

Department of Science and Art.
INDUSTRIAL MUSEUM OF SCOTLAND,

Edinburgh July 13th 1863

Dear Sir

I have made the enclosed tracings of our new buildings somewhat rough but they will give a general idea of the construction of the Halls.

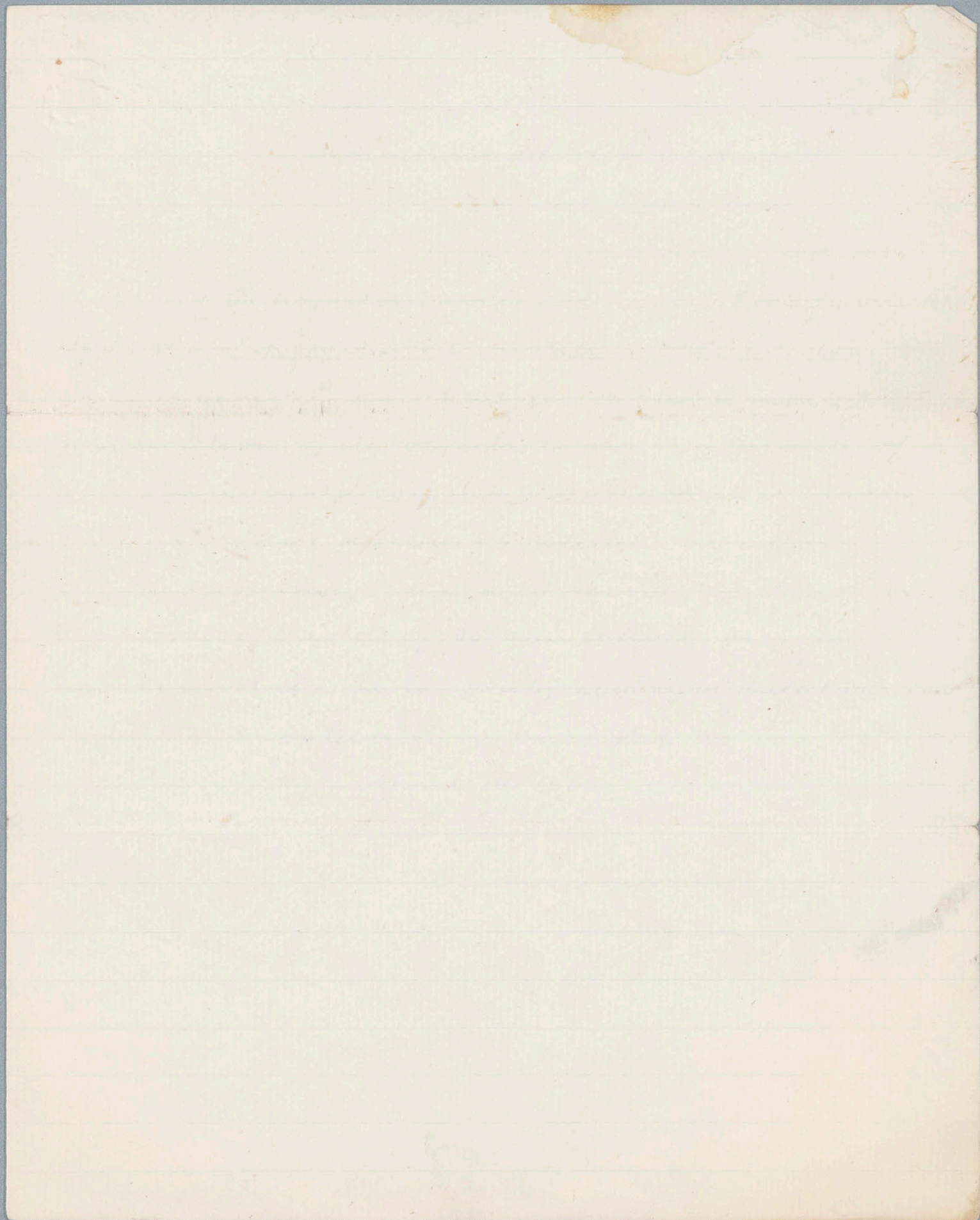
There is not a complete plan of the building here, but the part shown is very nearly the half of it, & with the views which you have will shew pretty well what is intended.

The Section shows the Cross
view of one roof & part
of the longitudinal view
of another. This I have
thought enough as the roofs
are all the same.

I shall be glad to
give you any further
explanation & beg you
won't hesitate to write if
anything occurs to you.

yours faithfully
Alex. Galletly

Professor Rogers



(Copy.)

Commonwealth of Massachusetts.
Council Chamber.

Boston April 10th. 1863.

Satisfactory evidence having been furnished that the Massachusetts Institute of Technology is duly organized, and has funds subscribed for the prosecution of its objects, to the amount of One Hundred Thousand Dollars: it is hereby Ordered: That the said Institute be allowed to take possession of the land reserved for its use, by Chapter 183 of the Acts of 1861, and to hold, occupy and control the same, subject to the stipulations and conditions contained in said Act.

April 10th 1863.

Order Adopted.

(Signed)

Oliver Warner

Sec. of Com^{tee}

[7/8/63]

Secretary's Department Boston
June 12th 1863.

(The within & foregoing is a true copy
of the original Order on the files of
the Council.

(Signed)

Chas W Lovett

Dep. Secy.

Office of the Mass. Institute of Technology.

Boston July 8th 1863.

I hereby certify that the above and preceding
is a true transcript of the "Copy of the original Order"
furnished by the Deputy Secretary of the Commonwealth,
and now on the Institute's Files.

Attest,

Thomas H. Webb,

Secretary.





[7/16/1863]

The undersigned, the President, the Vice Presidents, and the Finance Committee of the Massachusetts Institute of Technology, do hereby certify that there is now subscribed or pledged by persons of supposed responsibility for the use, benefit, and endowment of the aforesaid Institute, Forty Thousand Dollars, which, when added to the amount of funds granted and given to said Institute by Dr. William J. Walker of Newport in the State of Rhode Island, amounts to not less than One Hundred Thousand Dollars, and that thus the aforesaid Institute has complied with the terms and conditions of an Act of the Legislature of Massachusetts so far as to acquire and make available for the purposes of the aforesaid Massachusetts Institute of Technology, a certain parcel of land located in Boston in the Commonwealth of Massachusetts, and which has been granted by said Act to said Institute.

In testimony whereof the undersigned, the President, Vice Presidents, and Members of the Finance Committee of the aforesaid Institute, have respectively hereto affixed their Signatures and Seals on this fourteenth day of July, in the year Eighteen Hundred and Sixty Three.





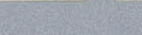
In presence of

Fred. E. Simpson }
 Edward S. Howes }
 Gardner Childs }
 Thomas H. Webb }
 Wm. Warner }
 J. B. Wilder }
 Charles Canoll }

William B. Rogers 
 President...
 Jacob Bigelow 
 Vice President
 Marshall P. Wilder 
 Vice President
 Merrill Wyman 

Levi Willcutt, Chas. E. Lyons
 Tho. H. Newell, P. J. Levi
 J. Welch, Jas. D. Briggs
 Henry L.avenport, Herb. Thswall

Finance Committee

M. D. Ross 
 Wm. B. Beebe 
 J. J. Tobey 
 E. H. Eldredge 
 A. Wiley Edman 

The undersigned James M. Beebe and Edward J. Tobey of Boston in the County of Suffolk and Merrill Wyman of Cambridge in the County of Middlesex and Commonwealth of Massachusetts hereby approve the annexed certificate signed by Wm. B. Rogers President & by other officers of the Massachusetts Institute of Technology as satisfactory evidence to us after the fact that said Institute has complied with the terms and conditions of an Act of the Legislature of Massachusetts whereby a certain lot of land was granted to said Institute, and it is therefore our opinion that said Institute is entitled to receive from Edward J. Tobey as the attorney or authorized agent of J. William Wacker of Newport R.I. the sum of Seventy five thousand dollars granted & given to said Institute by said Wm. J. Wacker in virtue of his instrument of gift bearing date Newport R.I. the second day of April in the year one thousand eight hundred and sixty three

A testimony whereof, the undersigned
have hereunto affixed their respective
signatures on the sixteenth day of July
in the year eighteen hundred & sixty three

In presence of His M. Secy

Thomas H. Webb Edward J. Foley

Charles Carroll Morris Wymann

read - 1. Temperance

(X)

Boston Aug. 18. 43.

Gentlemen.

I have just been informed that Prof. Ogden N. Pood late of the Troy Univ: ^{is a candidate for} ~~will be nominated~~ to the Chair of Physics in the Col: College Univ: of Michigan. I am so and believing him to be well conversed of Mr. Pood's superior qualifications for such a place that ~~without knowing who may be his competitors~~ I do not hesitate to say that I deem ^{with respect to} your Institution ^{most} fortunate in being able to secure his services.

My acquaintance with him, dating from ^{before} ~~before~~ the commencement of his scientific career, ⁺ has enabled me to know him well not only as a student and a cultivator & expositor of physical science but as a gentleman & companion.

Although still a young
man he has ^{won a high} made himself a
name among men of science by
various original & ingenious
researches & publications, &
his ability & zeal are such
that he ~~will continue to add~~ ^{cannot fail to add steadily}
to this reputation, & to reflect
honor upon the institution
with which he may be
connected.

^{amiable & practical}
His amiable & practical

nature must I am sure make
him a favorite among the
young men who seek his
instructions, while his
manners & gentlemanly bearing
^{must contribute to}
~~will~~ ^{will} win him the confidence
& regard of his associates.

Among the rising men
of science in this country
there is no one more deserving

than Prof. Poore of such

an opportunity for useful labor
^{to which he has not yet been} ^{opened for some time}
as that now ~~desires to be held~~
~~reserved~~ ^{and his} ^{interest of education}
& it is my earnest wish ~~that~~
& science. I shall rejoice to hear of
~~that it may be accorded~~
to ~~him~~ ^{him} his appointment.

Very truly & respectfully,
Your O^bd^t Serv^t.

William B Rogers

Copy of Testimonial
in behalf of Prof.
O. W. Wood for Dean
of Physicians &
Med: University

Aug. 18. 1863.

forwarded to Prof.
Henry. Wash: D. C.

Altered & forward
to Trust. of
Columbia Coll.
N. Y.

Oct 29. 63

973

Peace Dale Aug 20th 1863

Dear Professor

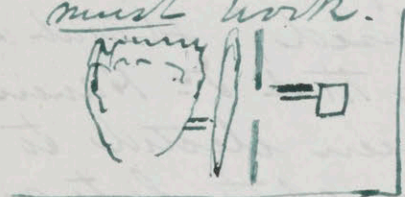
Your kind note I have just received with much pleasure - The vacancy is in the State Univ - of Michigan, at Ann Arbor, and I see by a note from Gould that the President Tappan has just been "dismissed," so that it is very likely that Dr. Haven may have been elected to fill his place at the late meeting of the Board in June.

I have also to thank you for your kindness in obtaining for me the ^{vote for} appropriation from the Rumford Committee, which I hope in the course of the next few months to use with advantage.

Frank Storer wrote a short

account of some of your plans to
get up a constant light & I most
heartily hope that some of them
will turn out to be as practical
as they are ingenious.

It almost seems to me as
though ~~the~~ your idea of a loop
around the flame as a measure
of size, if used in connexion
with an opaque screen, having an
aperture smaller than the flame,
must work.



Until Stokes
wrote to me
I did not

know that you had worked
so much at the subject.

Very Sincerely

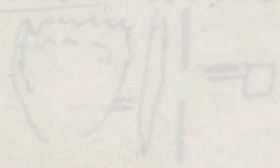
O. N. Rood

Prof Wm B. Rogers.

I have requested Gould to
tell you whether Dr. Haven
has been made President of
Am. Acad. - R.

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know that you had worked
so much at the subject.

Very sincerely

T. M. Rowland
Prof Wm B. Rogers.

I have requested Gould to
tell you whether Dr. Haven
has been made President of
Am. Assoc. - R.

(1)

The Committee charged with the duty of preparing a plan of building adapted to the purposes of the Institute & of carrying the same into effect when duly approved by the Gov^t. beg leave to submit the following report of the Course & result of their enquiries on the subject.

In entering upon their duties your Committee found that much valuable information had been collected by the Comm^r previously appointed for a preliminary and more general investigation of the subject & they gladly availed themselves of the facts & suggestions as well as the plans & drawings thus prepared.

In aid of the further & more specific ~~enquiries~~ ^{enquiries} ~~developed upon them~~ ^{developed upon them} ~~was believed~~, as well as in preparation for the active building operations soon probably to be commenced your Comm^r ^{early in their labors} found it expedient to ~~fill the necessity of experienced practical~~ engaged the services of Messrs J. & W. G. Preston already so usefully consulted by the preceding Committee in appointing them to be the Architects of the contemplated building - Calling upon them for drawings & estimates & advising with them as to the details of such plans as the Comm^r ^{should be by a time} ~~might~~ have under consideration.

While pursuing these ² inquiries, we have kept in
view the general purpose contemplated though not
formally adopted by the Institute, of making
provision for the School of Div. Science & the Museum of
Arts in two separate buildings, the larger to occupy
the central part of the square, & the less to be placed at
its western end to correspond with the structure lately built
by the Soc. of Nat. History at the opposite extremity.

Knowing that it is the intention of the Gov^t ~~for the present~~
to unite these two departments ^{for the present} as far as practicable in the
one building first to be created you have been guided
in our consideration of the scale & internal plan of the
edifice by a reference to this ^{temporary} two fold ~~temporary~~ ^{temporary} Applicant.
^{which} At the same time looking to the evident benefit of a
separate structure to be devoted exclusively to the purpose
of the Museum we have ^{considered it most wise & economical} ~~been careful~~ to conform
the leading ^{& permanent} architectural features of the plan to the
~~probable~~ ^{School of Div. Science} wants of the ^{Other} Department, including
the various lecture & class rooms, Laboratories, Apparatus
rooms - School of Design & other Architectural arrangements
suited to the service ^{of instruction systematic &}
popular embraced in the plan of the School of
^{that Department} Industrial Science.

In endeavoring to conform these inquiries
to these general views & ^{with} known purposes of the Institute
you have ^{been} ~~not~~ ^{not} officially called on to
consider for an answer questions, have found it necessary
to keep in view the resources immediately or at an
early day certain to be available for building purposes

and have therefore limited their investigation to plans
encompassing an outlay either written or but little
transcending the present means, capable of being thus
applied.

As in this view two general plans have chiefly
occupied their attention the first that of a building
^{50 ft wide by 100} ~~50 ft wide by 100~~ ^{ft long} ~~ft long~~ to be placed at the western ^{end of} ^{The Square}
~~the~~ symmetrical with the edifice erected by the Nat. Hist. Soc.
at the other end, the second a structure 100 ft wide by 150
long to occupy the central position ^{opposite} ^{front} the
Nat. Hist. building on the one side & the Museum of
the Institute when erected on the other. The plans & drawings
of these buildings here with submitted so far as respects
their general appearance and details of structure as
^{in the opinion of Jesse Penn} to render a systematic ^{at the time} description of them ^{unreceiving}
~~The~~ ~~character~~ ~~of~~ ~~the~~ ~~materials~~ ~~proposed~~ ~~to~~ ~~be~~ ~~used~~ ~~are~~
^{in the main} ~~the~~ ~~same~~ ~~in~~ ~~character~~ ~~with~~ ~~those~~ ~~of~~ ~~the~~ ~~Natural~~ ~~Hist.~~
~~building.~~ ~~submitted~~

The materials proposed to be used are in the main
the same in character with those of the Natural Hist.
building - to wit ~~granite~~ granite or red sandstone for the
base, & brick ~~with~~ ^{crushed by passing} ~~with~~ ^{as a guide} ~~more or less~~ ~~facings~~ ~~of~~ ~~brick~~
work, for the superstructure. Adopting ^{as a guide} the proportions
of their materials used in the Natural Hist. building
as a guide, the ~~cost~~ ~~of~~ ~~it~~ ~~appears~~ ~~from~~ ~~a~~
~~rough~~ preliminary estimate of the Architects, that the

Cost of the ⁴ ~~be~~ ^{be} ~~Cost~~ ^{be} ~~Cost~~ about
\$118,000 Dollars.

It has however been felt by your Comm. with
increasing force ~~that~~ ^{as} the subject has been more considered
that the space likely to be needed by the School
of Industrial Science including an extensive Drawing
School and first Class lecture ^{room} together with the
large & constantly increasing accommodations, demanded
for even an imperfect Museum such as is contemplated
could not fail soon to exceed the capabilities of
a building of this extent, and they have accordingly
in their more recent enquiries sought to ascertain
the practicability of erecting the larger building
above referred to at an outlay not beyond the
available resources of the Institute.

~~With this view your Committee have endeavored
to ascertain ^{to what extent} ~~to what extent~~ ^{the cost} ~~the cost~~ the building
might be reduced without ~~materially~~ detracting from
its durability or elegance ~~by the replacement of~~~~

~~With this view your Comm. have endeavored to ascertain
the least cost at which ~~such a building~~ ^{of this character} could be
erected without such a change of materials or plan
as would detract from its durability & elegance -
and in order to secure reliable data for the
expenditure necessary under ~~the~~ ^{the} several ~~proposals~~ ^{modifications} -
considered by them they directed the architect to
make detailed drawings, & to call for ~~practical~~
proposals corresponding with them for practical
mechanics prepared to contract for the work.~~

At a meeting of the Government of the Massachusetts Institute of Technology held Sept. 8th. 1863 the following Resolutions were passed; viz.

"Resolved, that the Plan, recommended by the Building Committee for the Edifice proposed to be erected by the Institute, be adopted; and that said Committee be empowered to make such modifications in the details as may seem to them expedient, provided the aggregate cost of the whole Building shall not exceed the estimate."

"Resolved, that said Committee be authorized to proceed with such parts of the work as in their judgment will tend to promote its construction to the best advantage."

At a meeting of the Building Committee held Sept. 28th. 1863 it was

"Voted, that Jona. Preston be authorized to draw on the Treasurer for the payment of materials & labor, under the Contracts approved by the Building Committee, as such payments shall become due; & his drafts shall be authority for the Treasurer to pay the same, holding Jona. Preston responsible for any overpayments, or error in making said drafts."

Attest Thomas H. Webb Secy.

Résumé of the Course of University Lectures on Poncelet's Approximation

delivered during the first term of the Academic year 1863-64 by

William Watson Ph.D.

The subject of the course is, the development and application of Poncelet's method, for the linear evaluation of surd forms, with an examination of its remarkable extension to the square roots of quadrics in general, by Prof. Sylvester; also some other modes of approximation, not directly allied to that of Poncelet.

That the approximate value of the radical $\sqrt{B^2 \pm A^2}$ should be rational and linear, we put $\sqrt{B^2 \pm A^2} \approx \beta B \pm \alpha A$; A and B are real and positive; α and β are indeterminate quantities which should satisfy this condition, viz. that between given limits, from $B = m, A,$ to $B = m_1 A,$ the error committed in taking $\beta B \pm \alpha A$ instead of $\sqrt{B^2 \pm A^2}$ should be the least possible with respect to the value of the radical.

Let us consider, 1° the radical $\sqrt{B^2 - A^2}$
The absolute error being $\sqrt{B^2 - A^2} - (\beta B - \alpha A)$, the relative error ϵ becomes

$$\epsilon = 1 - \frac{\beta B - \alpha A}{\sqrt{B^2 - A^2}} = 1 + \alpha \sin \varphi - \beta \cos \varphi; \quad \left[\text{putting } \frac{A}{B} = \text{Yam } \varphi = \frac{\sin \varphi}{\cos \varphi} = \right.$$

$$\left. \frac{\frac{1}{2}(\epsilon^2 - \epsilon^{-2})}{\frac{1}{2}(\epsilon^2 + \epsilon^{-2})} = \frac{\epsilon^2 - 1}{\epsilon^2 + 1} = -\sqrt{-1} \cdot \tan \varphi^{\sqrt{-1}}; \text{ Yam } \varphi \text{ thus denoting the hyperbolic tangent } \varphi \right]$$

Instead of employing Poncelet's method for determining the values of α & β , let us determine them by the condition that they shall make the mean value of Yam the square of the relative error ϵ , taken between the limits φ_1 and φ_0 , a minimum.

$$\text{But } \text{Yam} = \frac{1}{\varphi_1 - \varphi_0} \int_{\varphi_0}^{\varphi_1} [1 + \alpha \sin \varphi - \beta \cos \varphi]^2 d\varphi; \text{ whence}$$

$$\frac{d \text{Yam}}{d\alpha} = \left\{ \begin{array}{l} 2\alpha \left[\frac{1}{4} (\sin 2\varphi_1 - \sin 2\varphi_0) - \frac{1}{2} (\varphi_1 - \varphi_0) \right] \\ - \frac{1}{2} \beta (\cos 2\varphi_1 - \cos 2\varphi_0) \\ + 2 (\sin \varphi_1 - \sin \varphi_0) \end{array} \right\} = 0; \quad 0 = \frac{d \text{Yam}}{d\beta} = \left\{ \begin{array}{l} 2\beta \left[\frac{1}{4} (\sin 2\varphi_1 - \sin 2\varphi_0) + \frac{1}{2} (\varphi_1 - \varphi_0) \right] \\ - \frac{1}{2} \alpha (\cos 2\varphi_1 - \cos 2\varphi_0) \\ - 2 (\sin \varphi_1 - \sin \varphi_0) \end{array} \right\}$$

$$\text{whence } \alpha = 2 \frac{\cos \varphi_1 - \cos \varphi_0}{\sin(\varphi_1 - \varphi_0) + (\varphi_1 - \varphi_0)}; \quad \beta = 2 \frac{\sin \varphi_1 - \sin \varphi_0}{\sin(\varphi_1 - \varphi_0) + (\varphi_1 - \varphi_0)}$$

2° When the radical is $\sqrt{B^2 + A^2}$ put $\frac{A}{B} = \tan \varphi$, and by the same process.
we have $\alpha = 2 \frac{\cos \varphi_0 - \cos \varphi_1}{\sin(\varphi_1 - \varphi_0) + (\varphi_1 - \varphi_0)} \quad \beta = 2 \frac{\sin \varphi_1 - \sin \varphi_0}{\sin(\varphi_1 - \varphi_0) + (\varphi_1 - \varphi_0)}$

Discussion of special cases; limits of error: In the 1° if B varies from ∞ to $2A$, the greatest possible value of ϵ , is 0.025. In 2°, if $B > A$, the greatest value of ϵ , is 0.0533.

Professor Sylvester's new method for approximating to the value of a square root.
Let r be an approximate value of \sqrt{N} , the successive approximate values are

$$r; \frac{r^2+N}{2r}; \frac{r^2+3rN}{3r^2+N}; \frac{r^2+6rN+N^2}{4r^2+4rN}; \dots \frac{(r+\sqrt{N})^i + (r-\sqrt{N})^i}{(r+\sqrt{N})^i - (r-\sqrt{N})^i} \sqrt{N} \dots (a) \text{ for the } i^{\text{th}} \text{ approx.}$$

imation; if we denote this by $\mathcal{F}(i, r)$ we shall have the functional equation $\mathcal{F}(i, \mathcal{F}(i, r)) = \mathcal{F}(i, r)$.

If we now decompose (a) the general term, into i partial fractions, and take the sum, we shall have, $N^{\frac{i}{2}}$, approximately, $= \sum_{k=1}^{k=i} \frac{2rN}{(r^2 - (r-N)\cos^2 \frac{k\pi}{i})} = \int_0^{\frac{i\pi}{2}} \frac{2Nr d\theta}{r^2 + (N-r^2)\cos^2 \theta} = \frac{r}{N} \int_0^{\frac{i\pi}{2}} \frac{2d\tau}{1 + \frac{r^2-N}{N^2} \sin^2 \tau}$

$= \frac{2r}{N} \int_0^{\frac{i\pi}{2}} \frac{N^{\frac{i}{2}}}{r} \tan^{-1} \left\{ \frac{r}{N^{\frac{i}{2}}} \tan \tau \right\} = N^{\frac{i}{2}}$ an identical equation as it should be. [$i\theta = k; \tau = \pi\theta; i = \infty$ for the integral]

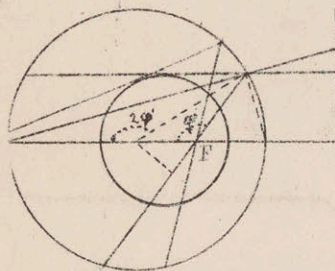
The relative error is $\frac{2(r-\sqrt{N})^i}{(r+\sqrt{N})^i - (r-\sqrt{N})^i}$. If $r > \sqrt{N}$ i.e. $r = (1+\epsilon)\sqrt{N}$ the errors will always be in excess; and the i^{th} limit of error, $\epsilon_i = \frac{2\epsilon^i}{(2+\epsilon)^i - \epsilon^i} < \frac{\epsilon^i}{2^{i-1}}$. If $r < \sqrt{N}$; i.e. $r = (1-\eta)\sqrt{N}$ the errors will be alternately in excess and in defect, whence $\eta_i = \frac{2(1-\eta)^i}{(2-\eta)^i - (1-\eta)^i}$. Application of this to Poncelet's method by substituting for r , $\alpha A + \beta B$ and for N , $\sqrt{B^2 \pm A^2}$.

The Elliptic Transcendents.

Reduction of $\int X dx$, in which X is a rational function of x , and $\sqrt{\alpha x^4 + \beta x^2 + \gamma x + \delta + \epsilon}$, to the general form of elliptic integral, $H = \int \frac{A+B\sin^2 \varphi}{1+C\sin^2 \varphi} \frac{d\varphi}{\sqrt{1-c\sin^2 \varphi}}$

Division into 3 orders. 1° $F(c, \varphi)$ — 2° $E(c, \varphi)$ — 3° $\Pi(c, \varphi)$ — Proof of the theorem $H(m \pi \pm \alpha) = 2 m H(\frac{\pi}{2}) \pm H(\alpha)$; — Geometrical representation of $F(c, \varphi)$, 1° as the sector of a false ellipse — 2° as the length of an arc of the Lemniscata.

Jacobi's geometrical construction of the formulae $F(\varphi) \pm F(\psi) = F(\mu)$; $F(c, \varphi_n) = n F(c, \varphi)$. Elliptic integrals of the 2° order; — Fagnani's theorem — The elliptic integrals of the 3° order separated into two groups; $\Pi(A+B\sin^2 \lambda, c, \varphi)$ which are circular; and $\Pi(-C^2 \sin^2 \lambda, c, \varphi)$ which are logarithmic. Doctrine of Radical axes.



Charles geometrical construction for Landens transformation for $F(c, \varphi)$. The point P in the figure has the same polar with respect to both circles, from which we have $\frac{\Delta(c', \varphi')}{\Delta(c, \varphi)} = \frac{d\varphi'}{d\varphi} \cdot \frac{2}{1+c}$ or $F(c', \varphi') = \frac{1+c}{2} F(c, \varphi)$; in which $c' = \frac{2\sqrt{c}}{1+c}$ and $c \sin^2 \varphi = \sin^2(2\varphi' - \varphi)$; $\Delta(c, \varphi) = \cos(2\varphi' - \varphi)$; also $F(c') = F(c) \cdot (1+c)$

Proof of the equation $\frac{dF(c, \varphi)}{dc} = \frac{1}{c^2} \left(\int \frac{d\varphi}{\Delta} - \int \frac{d\varphi}{\Delta^3} \right)$ which becomes when $\varphi = \frac{\pi}{2}$ $E' = b^2 \frac{dE(c)}{dc}$

deduction from this by transforming the modulus, of Legendre's formula $E'(c) = \log\left(\frac{4}{b}\right)$ when c differs infinitely little from unity. Application of Poncelet's method for approximately determining $F'(c)$. Value when c differs infinitely little from unity by calculating superior and inferior limits. If $p = \sqrt{1-x^2}$ and $q = bx$, the general form for these limits will be (the upper sign for the superior & the lower for the inferior limits)

$$\frac{(p+q + \sqrt{p^2+q^2})^i \pm (p+q - \sqrt{p^2+q^2})^i}{(p+q + \sqrt{p^2+q^2})^i \mp (p+q - \sqrt{p^2+q^2})^i} \cdot \frac{1}{\sqrt{p^2+q^2}}$$

Mr. Merrifield's method for approximating to the value of \sqrt{xy} by the following series of fractions

$$\frac{x+y}{2} ; \frac{x^2+6xy+y^2}{4xy(x+y)} ; \frac{x^4+28x^2y^2+70(x^2y^2+28xy^3+y^4)}{8(x^3+7x^2y+7xy^2+y^3)} ;$$

$$\frac{2xy}{x+y} ; \frac{4x^2y^2(x+y)}{x^4+6x^2y^2+y^4} ; \frac{8xy(x^3+7x^2y+7xy^2+y^3)}{x^4+28x^2y^2+70x^2y^2+28xy^3+y^4} ;$$

This method is identical with the one given above, for $\frac{(\sqrt{x}+\sqrt{y})^2 \pm (\sqrt{x}-\sqrt{y})^2}{(\sqrt{x}+\sqrt{y})^2 \mp (\sqrt{x}-\sqrt{y})^2} \sqrt{xy}$ gives us, we use the upper or lower sign, any term in the upper or lower series.

The application of this to the elliptic integral of the 3rd order gives $H = \int \frac{1+N \sin^2 \varphi}{1+n \sin^2 \varphi} \frac{d\varphi}{\Delta}$

$$= \frac{N\varphi}{8n} + \left\{ \frac{1}{8n} + \frac{1}{8(n^2+c^2)} + \frac{1}{4} \frac{1}{n+c^2} + \frac{1}{4} \frac{1}{n-\frac{2+\sqrt{2}c^2}{4}} + \frac{1}{4} \frac{1}{n-\frac{2-\sqrt{2}c^2}{4}} \right\} \frac{n-N}{N+1+n} \tan^{-1} \left\{ (1+n)^{\frac{1}{2}} \tan \varphi \right\}$$

$$+ \frac{1}{8} \frac{N+c^2}{n+c^2} \cdot \frac{1}{(1-c^2)^{\frac{1}{2}}} \tan^{-1} \left\{ (1-c^2)^{\frac{1}{2}} \tan \varphi \right\} + \frac{1}{4} \frac{N+c^2}{n+c^2} \cdot \frac{1}{(1-\frac{c^2}{2})^{\frac{1}{2}}} \tan^{-1} \left\{ (1-\frac{c^2}{2})^{\frac{1}{2}} \tan \varphi \right\}$$

$$+ \frac{1}{4} \frac{N+\frac{2+\sqrt{2}c^2}{4}}{n+\frac{2+\sqrt{2}c^2}{4}} \left(1-\frac{2+\sqrt{2}c^2}{4}\right)^{\frac{1}{2}} \tan^{-1} \left\{ \left(1-\frac{2+\sqrt{2}c^2}{4}\right)^{\frac{1}{2}} \tan \varphi \right\} + \frac{1}{4} \frac{N+\frac{2-\sqrt{2}c^2}{4}}{n+\frac{2-\sqrt{2}c^2}{4}} \left(1-\frac{2-\sqrt{2}c^2}{4}\right)^{\frac{1}{2}} \tan^{-1} \left\{ \left(1-\frac{2-\sqrt{2}c^2}{4}\right)^{\frac{1}{2}} \tan \varphi \right\}$$

Deduction from this of the simpler forms.

Poncelet's method for determining α and β in the equation $\sqrt{x^2+y^2} = \alpha x + \beta y = z$ $x^2+y^2=z^2$ is the equation of a cone having the vertex at the origin; $\alpha x + \beta y = z$ is the equation of a plane passing through the origin; α and β are arbitrary constants to be determined by the condition, that for a limited extent the values of z corresponding to common values of x and y in the cone and in the plane, should be as nearly equal as possible; if then $\frac{x}{y}$ varies from ∞ to k we have, putting $\tan 4\varphi = \frac{1}{k}$, $\alpha = 1 - \tan^2 \varphi$; and $\beta = 2 \tan \varphi$. Table of Capt. Gasselin.

If we call k and k' the limits of the ratio $\frac{x}{y}$; for the linear approximation to $\sqrt{x^2+y^2}$ we have $\alpha = \frac{2 \cos \sigma}{\sin(\sigma+\sigma')}$; $\beta = \frac{2 \cos \sigma'}{\cos \sigma \sin(\sigma+\sigma')}$; in which $\sigma = \frac{1}{2}(\cos^{-1} \frac{1}{k} + \cos^{-1} \frac{1}{k'})$; $\sigma' = \frac{1}{2}(\cos^{-1} \frac{1}{k} - \cos^{-1} \frac{1}{k'})$; $\cos \sigma' = \frac{\cos \sigma}{\cos \sigma}$.

Extension of the method.

Having given any quadric $\varphi(xyz)$, in which (xyz) are subject to the linear inequality, $Ax+By+Cz - \sqrt{\varphi(xyz)} > 0$, the problem to be solved is to find a linear form $Lx+My+Nz$ such that the greatest value of $\frac{Lx+My+Nz}{\sqrt{\varphi(xyz)}} - 1$ shall have the least possible arithmetical magnitude without regard to sign, for all values of xyz satisfying the proposed inequality. The solution gives the linear form for $[\varphi(xyz)]^{\frac{1}{2}} = \frac{2\sqrt{\Delta}A}{\sqrt{P}+\sqrt{\Delta}}x + \frac{2\sqrt{\Delta}B}{\sqrt{P}+\sqrt{\Delta}}y + \frac{2\sqrt{\Delta}C}{\sqrt{P}+\sqrt{\Delta}}z$, with a maximum relative error of $\frac{\sqrt{P}-\sqrt{\Delta}}{\sqrt{P}+\sqrt{\Delta}}$ in which P denotes the polar reciprocal, and Δ the discriminant, of $\varphi(A,B,C)$. If $\varphi(xyz) = c$ becomes the equation of a sphere the linear form is denoting $\sqrt{A^2+B^2+C^2}$ by \square

the linear form becomes $\sum x \frac{2A_i}{\square + 1} x$

by three points, whose coordinates are $(a, b, c), (a', b', c'), (a'', b'', c'')$ we shall have $A = \frac{F}{Q}, B = \frac{G}{Q}, C = \frac{H}{Q}$ in which

$$Q = \begin{vmatrix} a & b & c \\ a' & b' & c' \\ a'' & b'' & c'' \end{vmatrix}$$

and

$$F = (b''c - b'c') + (b'c - bc'') + (bc' - b'c)$$

$$G = (c'a'' - c'a') + (c'a - ca'') + (ca' - c'a)$$

$$H = (a'b'' - a'b') + (a'b - ab'') + (ab' - a'b)$$

If $\phi(x, y, z) = x^2 + y^2 + z^2$ the linear form will be, if we denote $\sqrt{F^2 + G^2 + H^2}$ by N , $\frac{2F}{Q+N}x + \frac{2G}{Q+N}y + \frac{2H}{Q+N}z$ with a maximum relative error of $\frac{N-Q}{N+Q}$.

The conditions of inequality are usually such as correspond to the limitation of the point (x, y, z) to an area contained within a spherical polygon, and the problem then arises, to determine the least circle that will cut off from a given sphere, a segment containing all of a given system of points lying upon it. The solution is precisely the same, substituting arcs of great circles for right lines, as the problem of drawing the least circle to contain a given system of points upon a plane.

This problem was proposed in 1855, by Professor Sylvester, and solved by Professor Peirce who proposed and solved the more general one, of finding the least sphere to contain a given system of points.

This solution and its application to Poncelet's method, were read by the former before the Mathematical Section of the British Association, at the Oxford meeting, July 1860.

The following observation which constitutes a veritable theorem is very important, and is presupposed in Prof. Peirce's solution. "Any circle being found which, either passing through three of the given points such that no two of their joining lines form an obtuse angle, or which described upon the line joining two of the given points as a diameter, includes all the rest, is the minimum circle which contains all the points of the given cluster; so that one, and only one, circle exists satisfying the above alternative condition."

Application to special cases. If the variable point be supposed to be limited (on the equilateral hyperboloid of two sheets) to a segment of one sheet cut off by the plane $Ax + By + Cz = 1$, the discriminant of $z^2 - y^2 - x^2$ being 1, and the polar reciprocal of the same form as itself, the linear form of the sum becomes $\sum x \frac{2A_i}{\delta} x$ in which $\delta = \sqrt{C^2 - B^2 - A^2} + 1$.

Since this course of Lectures began Mr. Merrifield has published a second memoir, in which he has recognized that his method was only a special form of Prof. Sylvester's; (Last volume of the Royal Society Transactions)

The application of this method to integrations, lies in the substitution for $\int_0^{\pi} \frac{M}{\sqrt{N}} dt$, of $\int_0^{\pi} \int_0^{\frac{\pi}{2}} \frac{2M \cos \lambda dt d\lambda}{r^2 + (N - r^2) \cos^2 \lambda}$ in which since λ and t are independent,

we may change the order of integration, so that the elliptic integral $\int \frac{d\varphi}{1 + n \sin^2 \varphi - c \sin \varphi} = \frac{1}{c} \sum_{k=1}^{i-1} \frac{2k}{n - c^2 \cos^2 k\pi} \cdot \frac{1}{1-n} \tan^{-1} \left\{ \frac{1-n}{c} \tan \varphi \right\} - \frac{2c^2 \cos^2 k\pi}{n - c^2 \cos^2 k\pi} \cdot (1 - c^2 \cos^2 k\pi)^{-\frac{1}{2}} \tan^{-1} \left\{ (1 - c^2 \cos^2 k\pi)^{\frac{1}{2}} \tan \varphi \right\}$

If $i = 8$ the value is correct to 8 places of decimals, besides, the most wonderful facility is thus afforded for the quasi-representation of the elliptic functions under circular forms.

Monsieur le Prof.

Le prof. Tega de l'université de
Bologne (Italy) m'a chargé de vous
demander la permission de se faire
ceder par le secrétaire de l'Académie
de sciences de l'Institut de Bologne,
un volume, que vous avez envoyé
en duplicate, dans le quel se trouve
Glossary of the letters greek by
Sophocles.

J'espère que vous pourrez accorder
ce faveur à mon collègue, et je
vous prie de me répondre une ligne
adressant la lettre chez le Prof.
Agassiz à Cambridge.

À la fin de la semaine je part
de nouveau pour l'Italie, et je serais
bien aise si je pourrais vous être utile
en quelque sorte. Je regrette vivement
ne vous avoir pas rencontré.

Doston 8. nov. 1863.

Votre très dévoué
Chev. J. Capellini
Prof. de géologie à l'université
de Bologne.

Prof. Capellini...
of
Bologna,
Nov. 1863.

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The Essex Institute

Organised for the promotion of
HISTORY, NATURAL HISTORY, AND HORTICULTURE,

Have, at their meeting, held at Salem.

on the Ninth day of December A.D. 1863.

electd William B. Rogers to be a
Corresponding Member of the said Institute.

In testimony whereof, the President and Secretary have
affixed their respective signatures, at Salem, Massachusetts,
U. S. A. this Ninth day of December A.D. 1863.

Henry Wheatland Sec^y

Asahel Huntington Pres^t