John Dominy school exercise book [newspaper, The Spectator, March 18, 1801, used as covers] : surveying. 1810

Dominy, John
[s.l.]: [s.n.], 1810

[illegible] caused [illegible] with [illegible] dence [illegible] duties of the import- [illegible] which inclines [illegible] length yielded [illegible] his political [illegible] sense of [illegible] respectable [illegible] Republican [illegible] unanimously to nominate [illegible] at the ensuing election, as Gover-

[illegible] this, we shall not set the example of any [illegible] between that candidate [illegible] by our political opponents. It would [illegible] with our own sense of propriety, that [illegible] sentiments of the person who en- [illegible] to expatiate largely on [illegible] a single remark derogatory [illegible] competitor. We shall con- [illegible] (and in this we fear no [illegible]) the conduct of Mr. Van Rens [illegible] has given universal [illegible] the good sense [illegible] virtues, which dis- [illegible] sure titles to esteem and at- [illegible] it be deemed improper, that [illegible] the just tribute of ap- [illegible] election was paid to him by [illegible] opponents, who then in common with [illegible] him as Lieutenant Governor [illegible] we have with equal [illegible] the re-election of STEPHEN VAN RENSSELAER, the present Lieutenant Gov- [illegible] his private virtues, the like [illegible] and the same desire for our fel- [illegible] to our [illegible] the present [illegible] crisis in our public affairs, would be mere [illegible] reflections must have [illegible] truly [illegible] industry [illegible] languishing under the benumbing influence [illegible] by the efforts of the Federalists [illegible] national constitution [illegible] and by them [illegible] its purity have been [illegible] administered with [illegible] success [illegible] has taken place [illegible] national [illegible] credit has been established; a [illegible] of money has succeeded to a scarcity [illegible] every channel of business. Our [illegible] so long unjustly withheld [illegible] The navigation of the Miss- [illegible] to our commerce and

York, [illegible]

Com[illegible], Esq[illegible]

The Com[illegible] appointed [illegible] this place on the Evening o[illegible] reported that the Hon. Step[illegible] Esquire, had consented to be a candi[illegible] of- fice of Governor of this state, at the ensuing election,

Therefore, *Resolved Unanimously*, That this meeting will give to Mr. VAN RENSSELAER their [illegible]rdial suffrages and zealous support, for the office of Gov- ernor of this state at the approaching election.—

Resolved Unanimously, That this meeting approve of the nomination of JAMES WATSON [illegible] merchant, as a candidate for the office of Lieutenant Governor of this state, by the meeting of electors from different parts of this state, held at the Tontine Coffee-house, in the [illegible] of Albany, on the third day of February, instant, and that this meeting will hearti- ly unite with their fellow-citizens in the other parts of the state, in supporting Mr. Watson for the office of Lieutenant-Governor.

Resolved unanimously, That Cornelius Ray, Richard Harrison, Robert Troup, William W. Woolsey, James M. Hughes, Archibald Gracie, Daniel Hitchcock, Nathaniel Pendleton, John Murray, James Rosevelt, Nicholas Gouverneur, Jacob Sherred, Samuel Boyd, Peter Schermerhorn, John Crolius, Caleb S. Riggs, Nicholas Evertsen, Robert Bowne, Abraham Russel, Richard Furman and Benjamin Strong, be appointed a Committee; and that they be instructed to adopt and pursue all proper measures to promote the Elec- tion of the Candidates above mentioned.

By order of the meeting,

CORNELIUS RAY, Chairman.

SAMUEL BOYD, Secretary. feb 19

NOTICE— A BANKRUPTCY.

WHEREAS a Commission of Bankruptcy is issued against Hezekiah [illegible]ily, of the town of Norwich, in the district of Connecticut, merchant, and he being declared a bankrupt is hereby required to surrender himself to us, the undersigned Commissioners, on the 9th and 23d days of March next, and on the seventh day of April next, at two o'clock in the af- ternoon of each of said days, at Willoby's Hotel, in Norwich, in said district, and make full discovery of his estate, when and where the creditors of said bankrupt are notified to meet and prove their debts, and choose an assignee or assignees, and at the last meeting the bankrupt is required to finish his exam- ination, and the creditors to assent to or dissent from the allowance of his certificate. Dated at Norwich this 25th day of February, 1801.

Christian Leffingwell,
Elisha Hyde,
Jabez Perkins } Commis- sioners.

march 4 Sp 3w

twenty [illegible] feet [illegible] buildings a[illegible] advantages [illegible] and lot of ground [illegible] messuage or dwelling [illegible] which [illegible] mortgage contains a power at [illegible] to [illegible] John Lefferts or his assigns, in [illegible] failure [illegible] payment of the said [illegible] five hundred and sixty one dollars and twenty [illegible] cents, [illegible] whole or any part thereof, at the [illegible] time limited for the payment thereof, to sell and dis- [illegible] of [illegible] premises at public auction, agreeably [illegible] vide[illegible]—And the said John Lefferts having on the [illegible] day of March, one thousand seven hundred and ninety-nine assigned the said mortgage to Samuel Hallett, of Queen's county, and his assigns, and the said Samuel Hallet having on the eighteenth day of April, One Thousand Seven Hundred and Ninety- nine, assigned the said mortgage to Cornelius Tyson, of the city of New York, Grocer, and his assigns; and the said Cornelius Tyson having on the twenty- third day of May, one thousand seven hundred and ninety-nine, assigned the said Mortgage to Peter Onderdonk of Cow-Neck, in Queens's county afore- said, all which said assignments regularly executed are anexed to the said mortgage: and whereas the sum of Three Hundred and Forty-three dollars and Twenty-five cents, with interest still remains due on the same mortgage and unpaid, now therefore NOTICE is hereby given that pursuant to the power and authority aforesaid, and the statute in such case made and provided, all and singular the said mort- gaged premises will be sold on Saturday, the twenty- third day of May next, ensuing the date hereof at one o'clock in the afternoon of the same day on the Premises at Public Auction to the highest bidder or bidders, for the payment and satisfaction of the said sum of three hundred and forty-three dollars and twenty five cents, and of the interest due and to become due thereon; when the terms of sale will be made known and deeds of conveyance executed by the subscriber to the purchaser or purchasers of the said mortgaged premises. Dated the twenty se- cond day of November, 1800.

[illegible] Sp[illegible] PETER ONDERDONK.

NOTICE.

The Copartnership of Dunlap and Judah, was on the 5th inst. dissolved by mutual agreement—Persons having demands against the concern, will present them to the subscriber for settlement, and those in- debted are requested to make immediate payment to him on or before the 1st of April, as ALL accounts unpaid after that period, will be placed in the hands of an attorney for collection.

N. JUDAH,

march [illegible] Sp[illegible] no. 2[illegible] Nassau-street.

[illegible] WORK.

PIERSON & [illegible]MAN,

Continue to carry on the WIRE Manufactory at no. [illegible] Water-street, near the exchange slip, New-York, where they make and sell all kinds of Wire-Work, such as rolling screens and sieves, for cleaning flax- seed; double and single rolling screens and stand- ing for cleaning wheat; snuff and [illegible] sieves; short cloths, reeving sieves, [illegible] screens and sieves for brick layers, plas- terers, [illegible] windows, wire-work for safes and flax-se[illegible] [illegible]ks, and washers, dusters, &c. for pa- per mills. All which are done in the neatest and mo[illegible] [illegible] the shortest notice, and on the most reasonable terms.

Orders by post, or otherwise, are carefully attend- ed to.

New-York, May 1, 1800 Sep 3 Sp tf

FOR SALE,

BY the Subscriber in the town of Mount-Pleasant, fronting the main street leading from the landing to the Post-Office, a compleat NEW HOUSE, two stories high, with a good large room under, and a compleat cellar back of the room, and good stable back of the house, a good well of water within a few feet of the door—also, one equal half of an oil mill and turner's shop, the lath constructed to go by wa- ter, also constructed for paint grinding with two pair of stone by the said mill, which can be set to work with very little expence, the said mill is in complete order for making oil, at present gives exceeding well, all entirely new, built this present year—within 20 or 30 rods of the dock (which is a celebrated a land- ing as any on the Hudson river) the house stands in full view of the river and dock, and is as convenient- ly situated as any in said town for any kind of bu- siness which makes it an eligible stand for a man in business. Fee said premises will be sold reasonable. For further particulars inquire of the Subscriber on the premises, who will give *an indisputable title for the same.*

WILLIAM GREEN.

N. B. If the above House and Mill is not Sold by the 20th of April next it will then be let.

MOUNT-PLEASANT, December 22, 1800.

Dec. 24. Sp tf

BROKER'S OFFICE.

THE subscriber continues to purchase and sell on Commission, all kinds of United States Funded Debt, Shares of the different Banks, Insurance Shares, Bills of Exchange, Negociable Notes, &c. &c. He will also purchase and sell on the customary commission of Brokers almost every kind of merchandize.

Orders from the country as well as city will be faithfully attended to.

BENJAMIN,
No. 59 Pine-street.

feb 4—[illegible]2w

[illegible] ALBANY, [illegible]

[illegible] the night of the 9th inst. the following [illegible] under- [illegible] and the [illegible] viz—

[illegible] WHITEHOUSE, [illegible] years of age, [illegible] accountant, [illegible] complexion, dark brown [illegible]

GEORGE WHITE, a native of [illegible] years of age, a Blacksmith, usually resided in [illegible] town, (Mass.) dark complexion, dark brown feet 8 inches high, and has dark eyes.

RICKERT, alias RICHARD DAVISON, a na[illegible] of Albany, [illegible] years old, a carpenter, usually [illegible] at Albany, [illegible] complexion, [illegible] [illegible] ches high, and pitted with the small pox.

DAVID GREEN, alias ALEXANDER [illegible] an Englishman, 30 years old, an accountant, [illegible] resided at Albany, fair complexion, brown [illegible] 10½ inches high, and pitted with the small pox.

JOHN L. BUDDY, a native of Philadelphia, [illegible] years old, a painter, usually resided at [illegible] fair complexion, sandy hair, 5 feet 7 inches high.

ERASTUS HALL, native of Schoharie [illegible] years old, a farmer, usually resided [illegible] (Ver.) fair complexion, black hair, 5 feet [illegible] high, and has black eyes.

DAVID S. [illegible]FORD, a native of [illegible] (Con.) 43 years old, a shoemaker, usually [illegible] Paulet, (Ver.) dark complexion, black hair [illegible] inches high.

PRATT DURYEE, a native of Jerusalem, [illegible] 24 years of age, a taylor, usually resided in [illegible] York, fair complexion, light hair, 5 feet [illegible] high, and light eyes.

Also, Escaped on Tuesday night last,

PETER NOWLAN, a native of Dublin, 25 years of age, a cabinet maker, pale complexion, black [illegible] 5 feet 6 inches, has a down look.

GEORGE SMITH, a native of Bristol, aged [illegible] Shoemaker, ruddy complexion, dark brown hair, [illegible] feet high, black eyes.

JOHN HENRY B[illegible], a native of Hamburgh, [illegible] years of age, Seaman, light complexion, [illegible] 5 feet [illegible] inches high.

[illegible] GUNN, [illegible] [illegible] 30 years [illegible] complexion, grey hair, 5 feet 5½ inches [illegible] by leg-irons and sore back. Each has [illegible]

short.

Thirty Dollars will be paid for apprehending [illegible] delivering to this prison each of the above prisoners and all reasonable charges paid for conveying them [illegible] [illegible], Keeper.

New-York State-Prison March 10. [illegible]

☞ The different Printers in [illegible] and the ad- jacent States, are requested to insert the above.

NEW YORK, No. 40 Pine-street: PUBLISHED (WEDNESDAYS AND SATURDAYS) BY E. BELDEN & CO. PRINTERS OF THE LAWS OF THE UNITED STATES FOR THE DISTRICT OF NEW [illegible]
By whom PRINTING, in all its variety, is executed with Neatness and Expedition, and on reasonable Terms.
☞ SUBSCRIPTIONS for this Paper, (which has an extensive inland circulation) are received by the principal Post-Masters in the United States. ADVERTISEMENTS [illegible] inserted.

Whale,		50—		56
Spermaceti,		94—	1	
Pitch,	bbl.		—	none
Pork, Cargo,		16	50—	
Prime,		18	—	
Mess,		22	—	
Plaster of Paris,	ton.		—	none
Peas, black eyed,	bush.	1	25—	
Albany,		1	25—	
Rum Jam. 4th pr.	gal.	1	21—	1 25
Antigua, 3d pr.		1	6—	
Country, (N.E.)			72—	
Rice,	cwt.	6	75—	7
Salt, Liverp. blown,	bush.		56—	
Store { Cadiz,			62—	
Store { Lisbon,			65—	
Store { Turks Isl.			75—	71
Store { St. Ubes,			68—	
Sugar, Muscovado,	cwt.	9	—	14
India, 1st qu.		12	—	13
Lump,	lb.		25—	
Loaf,			27—	
Steel, German,			16—	17
English,			14—	15
Country blistered,			7—	8
Shot of all sizes,	cwt.	7	—	
Saltpetre, refin'd	lb.		30—	
Tea from India { Bohea,	lb.		35—	
Tea from India { Hyson,		1	18—	1 21
Tea from India { Hyson skin,			81—	84
Tea from India { Souchong,			83—	87
Tar,	bbl.	3	25—	
Turpentine,		3	—	
Tin, in plates,	box.	18	—	
Tobacco, Richmond,	lb.		6 —	66
Petersburgh,			5—	
Maryland,			—	none
North-Carolina,		5	—	
Georgia,		5	—	
Tallow, American	lb.		16—	
Bees Wax,			27—	
Wines, Madeira,	pipe	150	—250	
Lisbon,	gall.	1	9—	1 12
Teneriffe,			81—	
Sherry,		1	31—	
Fayal,			—	none
Port,		1	25—	
Malaga,			75—	
Claret,	doz.	4	50—	5

☞ *All dutied articles, imported into the United States not having been landed more than one year, are allowed Drawback of the Duties, subject to a deduction of* one and one-fourth per Cent. *except Spirits, which is* Half Cent *per Gallon.*

There was then no occasion that the resolution ought to be rejected. He wished not in this bye way to give effect to the resolution.

Mr. Bayard said there certainly was a difference between, discharging the committee and agreeing to the resolution. The committee after an investigation into the conduct of that gentleman, and after a confession that the laws were improper, summed up their opinions, from their collective view of the facts, that it flowed not from any criminal intention, and upon this view they thought there was not ground for farther proceeding. Their other report, he asked, could have been made upon facts, the grounds of which were all known, with certainty, but it was very probable, were as reported. A very good evidence of this he thought was in the confession and mitigation of the officer himself. Mr. B. proceeded to vindicate their conduct from the uncertainty of what laws it was, and what it was not proper to adopt from the codes of the different states, and from the different constructions which they put upon their powers, upon the question of making laws. He hoped the motion to discharge the committee would prevail, for certainly the examination would consume much time, and most probably amount to the same as the report stated.

Mr Nicholas was against discharging the committee: He hoped those extremely corrupt measures of that government would be examined into. What, he asked, could be adduced to justify a man who assumed to himself the power of demanding licences in a country where there was no commerce to enable the people to meet such an exhorbitant demand? To extort a half joe, a sum by no means inconsiderable in a country having no commerce, and where money is scarce, for a marriage licence, is beyond all precedent or possibility of justification, and the more unjustifiable in a place where population is desirable. As he believed the imposition was unprecedented, he at least wished to examine the subject before he could be prepared to exculpate in the way the resolution had done.

Mr. Livingston wished to express his most marked disapprobation of such conduct as was now exhibited to the house. This officer had far exceeded his powers, and he had acknowledged the fact, and yet the committee said they saw no cause for further proceedings! The man was to be exculpated from

of *adopt* laws: he did for the acceptance of fees. The only question remaining, then was whether he did this under bad motives or not. If his motives were bad, he was no doubt liable to impeachment for either of the acts. In vindication it appeared, that laws were made as well as adopted in the North-Western Territory, and therefore as the territorial government was the same, surely there might have been some reason to suppose they had the same power in this case.

Now what would be the effect of the impeachment? Why if the governor of the Mississippi territory was to be impeached, so must be the governor and judges of the North-western territory, whose laws although made and not adopted only, had been sanctioned by the general government. Now, could it be supposed, that men who had supported an unspotted respectability of character for 12 years, would wilfully exceed their powers and become tyrants over the people among whom they were placed? The governor of the North-Western Territory has received fees, as well as the other gentlemen. Why should he not be equally blameworthy? All of them have made laws, and to a greater effect, and yet the general government have not heretofore thought fit to supercede them! Mr. Goodrich agreed with gentlemen that these were errors, and that they were in the due assumption of power, but he believed them to be errors in judgment. These were errors that he thought ought to be prevented by law, but as no law had been made, the committee could report no otherwise than that there was no ground for further proceeding. If the house thought proper to institute a preventative, it was their province to do. As for the other proposition of sending the papers to the President, Mr. G. questioned whether it was in the power of the President to act upon them; for this governor being appointed for three years, he believed he could not be removed without impeachment. The committee were impressed with one excuse offered as a weighty one, which was the diffidence wherewith it appeared the governor used his power, and sanctioned as he was by the judges he certainly might have supposed he had ground whereupon to act, and particularly so, as the laws were not disapprove dot by Congress.

but the tendency which they have to *provoke a breach of the peace* which constitutes them public crimes.†

Think not, Sir, that I am prompted by the vanity of ostentation, or by the hope of terrifying you into silence, in thus stating to you the laws of my country. My views are more honorable and independent. I despise the man who will dastardly shelter himself under a legal advantage, but does he not also deserve to be despised, who wantonly insults the *spirit*, because he does not come with the *letter*, of the law, and who exults in the commission of the most cruel injuries, merely because he thinks he can commit them with impunity?

Your ignorance, however, may lead you to suppose that, to an *actor*, the law does not extend its protection of character. If this be your opinion, give me leave to correct one of the many errors which form the mystery of your mind, and give every thing that comes from it a sombre complexion. Pray, Sir, where does the *actor* differ from the *lawyer*? They both profess sciences, perhaps equally liberal and difficult, and equally demanding combined energies of industry and genius. They are paid for their exertions, the one by his client, the other by his auditors. If they fail through an inattention to their duty, they are both equally to blame in violating their contract; but if they exert their utmost ability, the ill success of both should be treated with every possible delicacy and indulgence.

Illiberal prejudices are incident to mean understandings—of course I should judge that your contempt for the profession, and the professors, of the stage, were profound and inveterate; and that you were obliged to seek relief against the inconvenience of the passion in the still *greater* tortures of your literary genius. But, Sir, although the passions may be pleaded in extenuation of a crime committed through their ungovernable violence, there is no excuse for those crimes contemplated with cool and calculating malice, and perpetrated amidst the fullest exercise of the reason.

Having allowed myself thus much, in general observations, I now beg leave to exa-

* Vide Blach. Com. vol. 3.

† Ibid. vol. 4.

lessons which were wi[illegible] and overbearing ignorance. There is a little maxim, replete with good sense, which is particularly deserving of your attention: **Ne Sutor ultra crepidam**: the proper consideration of which will save you from contempt as it will save you from notoriety.

W. C. WHITE.

* From the pen of Horace—the plain English of which is, *Let the Cobler stick to his last.*

THEATRICAL.

Last evening was performed a second time, the Abbe de L'Epee, or the Dumb made Eloquent. So well was this play supported in all its parts that there is scarcely any thing left to employ the pen of criticism. Where there are no material faults to correct, the principal motive of the critic ceases. Justice, however, seems to require us a second time to make if the subject of at least cursory remark. It can hardly be believed by any one who has not seen the two exhibitions, how much the play has been improved by the judicious amendment which has taken place in the cast of two characters. Hodgkinson has given to a fourth part an interest of which we thought it insusceptible, and Martin has exhibited a St. Alme of which we had no idea. Too much credit cannot be given to Mr. M. for his performance on so short a study. To take up a part in which another has failed, was a task delicate, arduous and necessarily embarrasing, but he went through and obtained more applause than perhaps he ever acquired in any one character before. He will doubtless improve in it, particularly in his manner of *exit*, he twice lost evening carried away his last sentence with him.

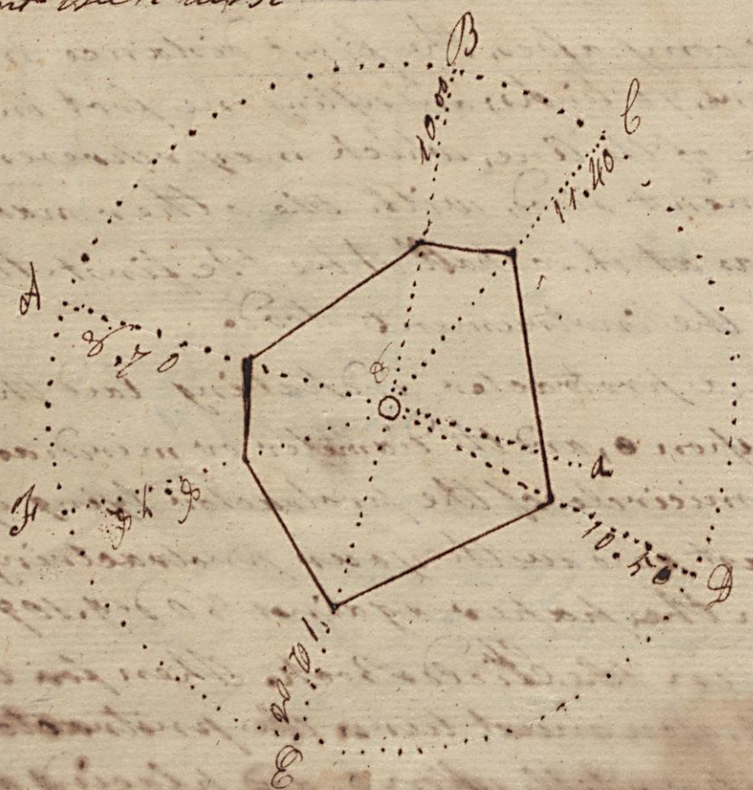
Perhaps this may be deemed a fit opportunity of expressing our regret at having so deeply wounded the feelings of Mr. [illegible] for his inability in this character. Our grief and vexation at seeing so charming a play ruined for want of just support in so principal a part, may perhaps have led us to use expressions too mortifying, when consider[illegible] regard to him personally, and could have been aware of the very modest per step he was about to take as manager, we should have passed [illegible] lence. We feel ourselves, however, [illegible] fail at this time to say, that

John Domiy,

Surveying. July 28th 1810.

To take the Plot of a field at one station in any place thereof, from whence you can see all the angles by the semicircle.

Admit ABCDEH to represent a field, of which you are to take a plot first set your semicircle upon the staff at any convenient place thereof as at O, and cause marks to be set up in every angle: direct your instrument, the flowerdeluce being from you, to any one angle: as for example to A; and espying the mark at A through the fixed sights screw fast the instrument then turn



the immoveable index about (the semicircle remaining immoveable) till through the sights thereof you espy the mark at B. See what degrees on the brass limb are cut by the index which suppose 60; write that down in your field book; so turn the index round to every one of the other angles putting down in your field book what degrees the index points to. As for example at C 105 degrees at D 180, but at E the end of the index will go off the brass limb, at the other end will come on; you must therefore consider what degrees the index cuts in the brass limb when it points to D and E; suppose 20

Plotting Continued. July 30th 1810

These observations you must note down in your field-book thus

Angles	Degrees	Minutes	Links Chains	
⊙ A	000	. 00.	8	.70
⊙ B	040	. 00.	10	. 00
⊙ C	107	. 00.	11	. 40
⊙ D	165	. 00.	10	. 50
⊙ E	260	. 00.	12	. 00
⊙ F	315	. 00.	8	. 78

To protract the former Observations taken.

First draw a line at pleasure as A a; then take from your scale with your compasses, the first distance measured. viz from ⊙ to A, 8 chains, 70 links; and setting one foot in any any conveniant place of the line, which may represent the place where the instrument stood, with the other make a mark upon the line as at A. so that A be the first Angle, and ⊙ the place where the instrument stood.

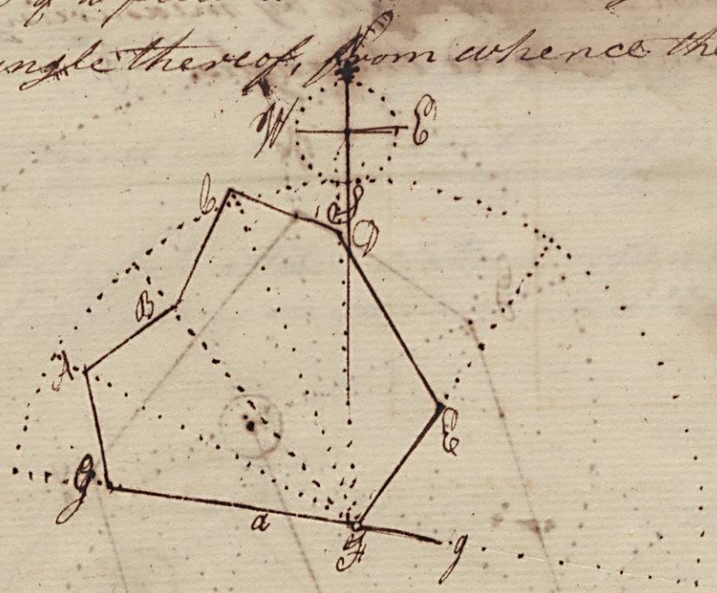
Secondly, take a protractor, and having laid the center hereof exactly upon ⊙, and the diameter or meridian upon the line A a, the semicircle of the protractor lying upwards; there hold it fast and with your protracting pen make a mark upon the paper against 60 deg. 107 deg. &c. as you find them in the Field Book. Then for those degrees that exceed 180, you must turn the protractor downward keeping the center still upon ⊙, and placing again the diameter upon a A. Mark out by the innermost circle of divisions the rest of your observations 165, 260, 315. Then applying a scale to ⊙ and every one of the marks, draw the dotted lines ⊙B, ⊙C, ⊙D, ⊙E, ⊙F.

Thirdly, Take with your Compasses the length of the line ⊙B, which you find by the field-book to be 10 chains, which set off from ⊙ to B. The like to do for ⊙C, ⊙D, and the rest.

Lastly, Draw the lines AB, BC. CD, &c. which will inclose a figure exactly proportionable to the field before surveyed.

Plotting Continued.

To take the plot of a field at one station by the semicircle placed in any angle thereof, from whence the other angles can be seen.



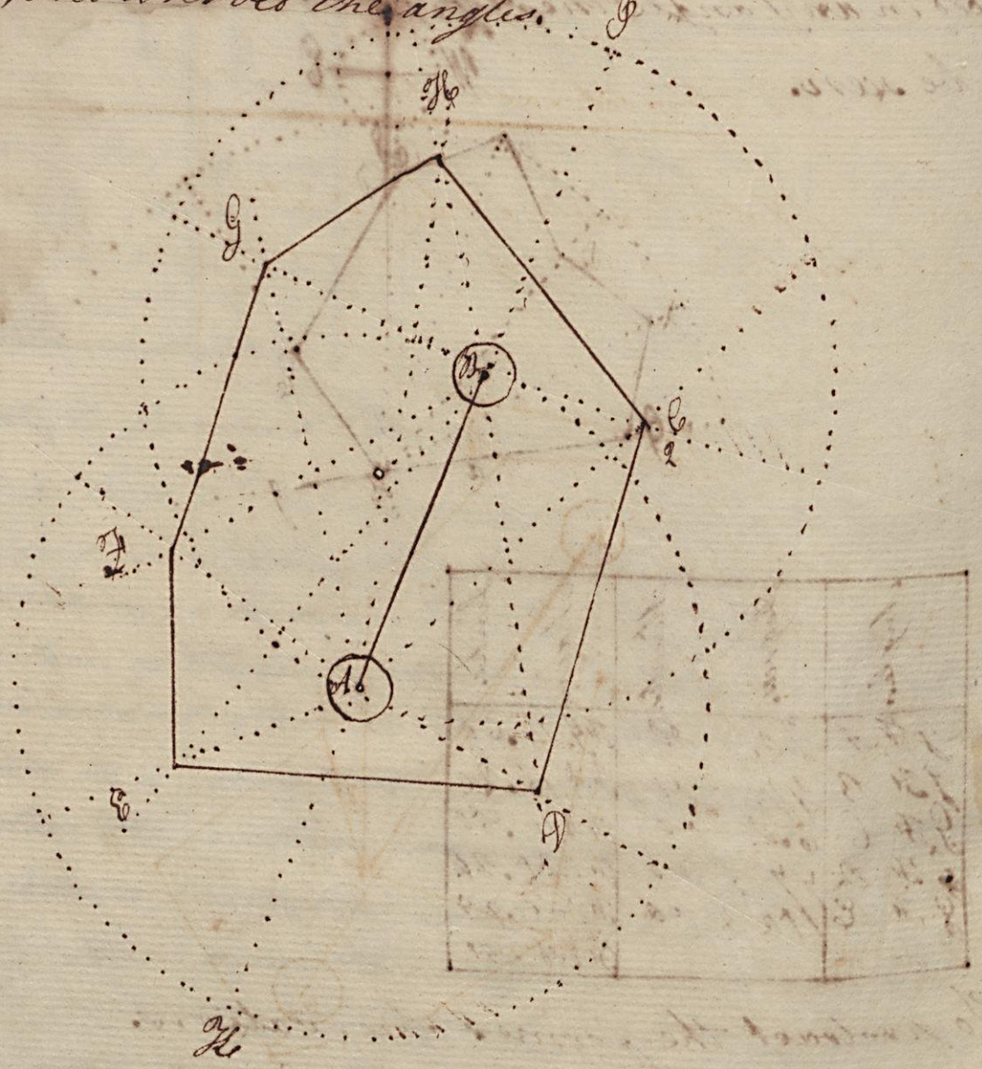
Angles.	Degrees.	Minutes.	Chains.	Links.
GFA	20.	00	FG.	14.60
GFB	40.	00	FA.	18.20
GFC	60.	00	FB.	16.80
GFD	77.	00	FC.	21.22
GFE	110.	00	FD.	16.99
			FE.	26.50

To protract the former observations.

Draw a line at adventure as Gg, upon any convenient place on which lay the center of your protractor as at F, keeping the diameter thereof right upon the line Gg. Then make marks round the protractor at every angle as you find them in the field book viz. against 20, 60, 60, 77, and 110; which done take away the protractor, and applying the scale or ruler to F, and each of the marks, draw the lines FG, FA, FB, FC, FD, and FE, Then setting off upon those lines the true distances as you find them in the field book thus for the first line FG, 14 chains, 60 links; for the second FA, 18 chains, 20 links &c. make marks where the end of these distances fall, which let be at G, A, B, C, &c. Lastly, Between these marks drawing the lines GA, AB, BC, CD, DE, EG, FG, you will have completed the work.

Continued. July 31st 1810.

To take the plot of a field at two stations provided from either station you can see every angle by measuring only the station any distance, and observed the angles.



Angles.	Degr.	Min.	
BAC	24	30	First station.
BAD	97	00	
E	225	00	
H	283	30	
G	325	00	
K	346	00	

Angles.	Degr.	Min.	
GBC	84	00	Second station.
GBD	149	00	
E	194	00	
H	215	00	
G	240	00	
K	322	00	

How to protract or lay down upon paper these following observations.

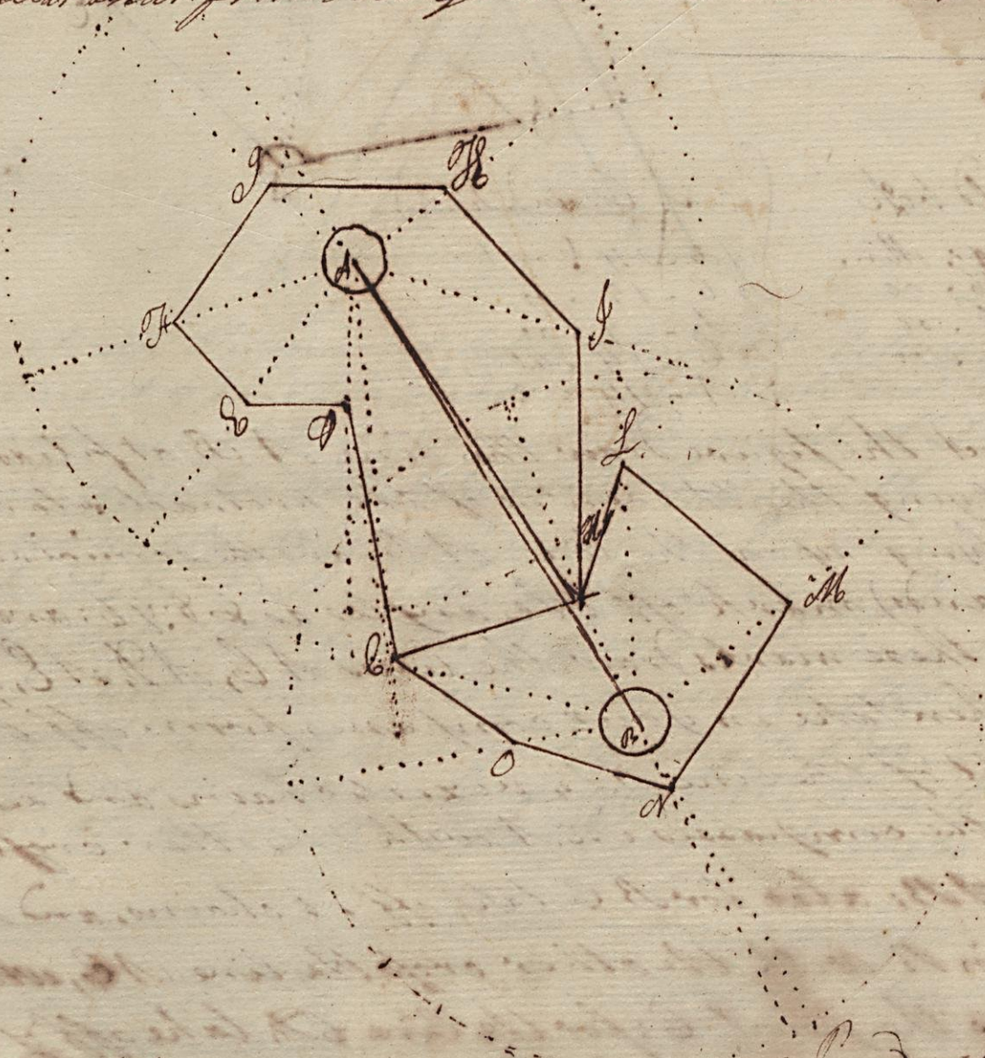
First draw a line across your paper at pleasure, as the line GB, then take off your scale the station any distance 20 chains and set it upon that line, as from A to B so shall AB represent the first station, BG the second.

Secondly, Apply the center of your protractor to the point B, the diameter lying straight upon the line BG, make and set the angle as you find them in your field book through those marks from A draw lines [illegible]

Plotting Continued. August 1st 1810.

Thirdly, Move your protractor to the second station B; and there mark out your angles, and draw lines as before, at the first station. Lastly, the places where the lines of the first station, and the lines of the second intersect each other are the angles of the field.

To take the Plot of a field at two stations, when the field is so irregular that from one you cannot see all the angles.



First station

Angles.	Degr.	Min.	Chains.	Links.
C A D	25	00	2	45
C A E	34	00	3	10
C A F	87	00	9	65
C A G	104	00	10	60
H	137	00	14	00
I	266	00	26	70
K	316	00	31	70
b	354	00	35	50

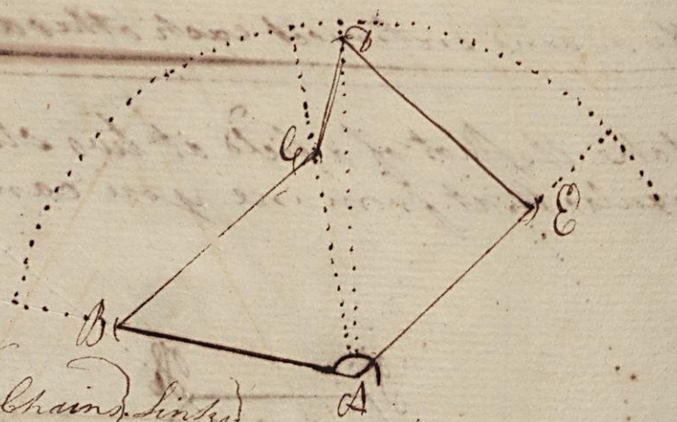
Second Station

Angles.	Degr.	Min.	Chains.	Links.
B B N	3	30	4	29
B B O	111	00	11	00
B B L	145	00	15	60
H	202	00	20	48
L	217	00	21	00
M	271	00	27	20

John Dominy. East-Hampton. 1810

Plot Continued. August 2d 1810.

To take the plot of a field at one station in an angle (provided that from that angle you can see all the other angles) by measuring round about the said field.



Field book		Links	Chains	Links
Angles.	Degr.	Min.		
B A C	6	6. 00	A B	14. 00
B A D	76.	00	B C	15. 00
B A E	124.	00	C D	7. 00
			D E	14. 40
			E A	14. 5

To protract the figure draw the line A B at pleasure; and applying the the center of the protractor to A (the diameter lying upon the line A B, and the semicircle of it upwards) mark off the angles as 6 8. 76: and 124: through these marks draw the lines A C, A D, & A E, of sufficient length. Then take in your compasses from off the scale the lenght of the line A B, viz. 14 chains and setting one foot of the compasses in A with the other cross the line as A B; also for B C take off 15 chains, and setting one foot in B with the other cross the line A C, which determines the point C; for the line C D, take off 7 chains, and setting one foot in C, cross the line A D, at D; then for D E, take 14 chains, 40 links, and setting one foot of the compasses in D & E with the other foot cross the line A E in E. Lastly take E A 14 chains 5 links in your compasses and set one point in E, then if the other will fall upon A, you have done the work truely if not you have erred: between the points of intersection draw straight lines, which shall be the bounds of the field, viz. A B, B C, C D, D E, E A.

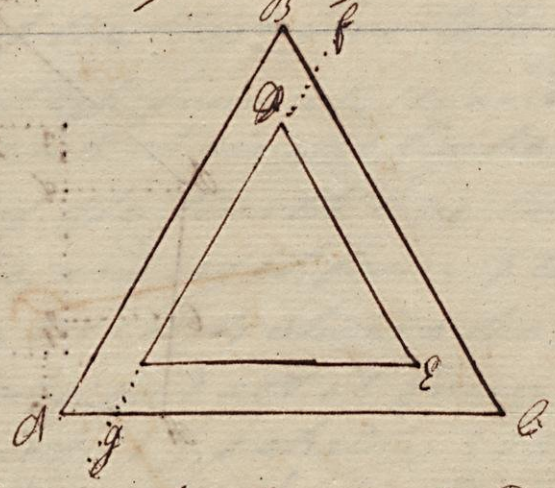
John

(7)

Plot Continued. August 2 1810

Directions to measure parallel with a hedge, (where you cannot go into the hedge itself;) and also in such a case, how to take your angles.

Suppose A B C to be a field. and for the Bushes, you cannot come nigher than o to plant your instrument. Let him



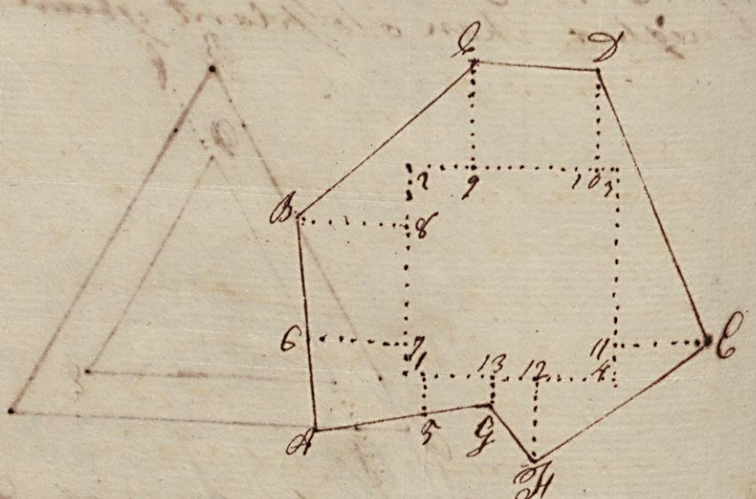
that sets up the marks take the dist. between the instrument o and the hedge at B; which dist. let him set off again nigh B, and set up his mark at D; likewise let him take the dist. between the o and the hedge at C, and accordingly set up his mark at E. Then taking the angle D o E, it will be the same as the angle B A C: so go for the rest of the Angles. But when the lines are measured they must be measured of the same lenght as the outside lines, as the line D measured from g to f, &c. The best way therefore, is for those who measure the lines to go round the field on the outside thereof although the angles be taken within.

To take the plot of a field or wood, by Observing near every angle and measureing the Dist. between the marks of observation, by taking in of every line, two offsets to the hedg

East Hampton. August 2 1810

Plotting Continued. August 3d 1810.

This way of surveying is made easier (though I cannot say truer) by taking only a great square in the field, from the sides of which the off-sets are taken.



The angles 4 right angles.
The sides 12 chains, 00 links each.
I went round cum Sole, on the hedges being on my left hand.

	C.	L.		
In the first line, at	1	50	Off set to a side line	5 40
	6	30	Off set to an angle	6 00
	C.	L.		
In the second line, at	3	50	Off set to an angle	6 00
	10	70	Off set to an angle	5 50
	C.	L.		
In the third line, at	10	00	Off set to an angle	5 30
	C.	L.		
In the fourth line at	4	33	Off set to an angle	4 40
	6	70	Off sets to an angle	1 50
	10	80	Off set to a side	2 20

Now to lay down upon paper the foregoing work make first a square figure as 1 2 3 4 whose side may be 12 chains. Then considering you went with the sun take 12 for the first line and taking from your scale 1 chain 50 links set it upon the line from 1 to 2; at 2 raise a perpendicular as 2 6, making it according to your field book 5 chains 40 links Cong. Also by the second off-set upon the same line take from your scale 7 equal parts 8 chains 50 links which set upon the line from 1 to 8 and upon 8 make the perpendicular line 8 B of the same length.

(97)

Plotting Continued. August 4th 1810.

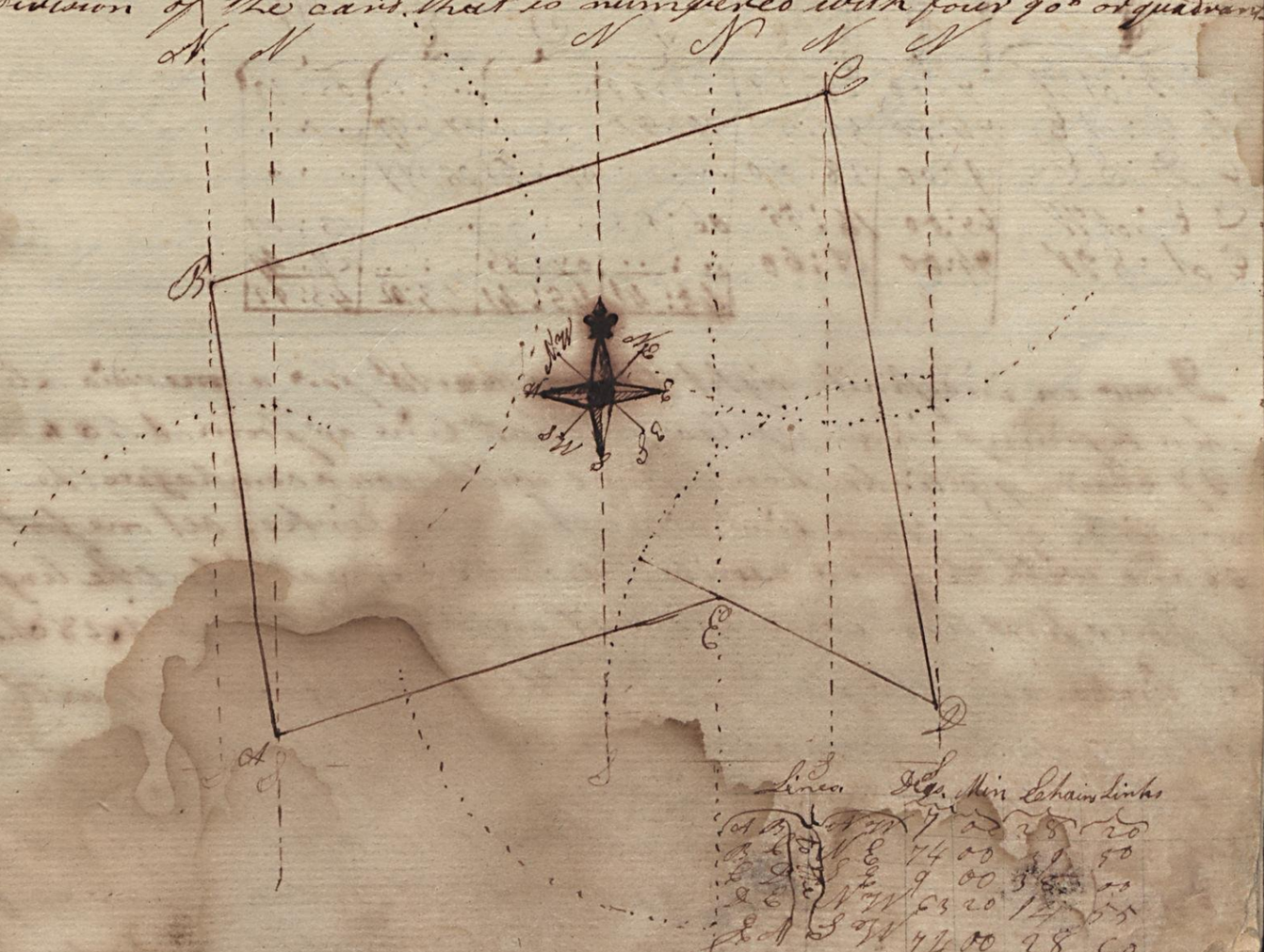
For the offsets of the second line, take 3 chains 50 links from the scale and set it from 2 to 9; at 9 make a perpendicular line 6 chains long viz. 9 6: also for the second offset of the same line, take 10 chains 70 links, and set it from 2 to 10; at 10 make the perpendicular 10 D, 5 chains 50 links in length.

For the offsets of the third line take from your scale 10 chains, and set it off from 3 to 11; and at 11 make the perpendicular 11 E 5 chains 30 links long.

For the offsets of the fourth line take from your scale 4 chains 30 links, and set it from 4 to 12; and at 12 make the perpendicular 12 F 4 chains 40 links long. Also take 6 chains 70 links and set it from 4 to 13; and at 13 make the perpendicular 13 G, 1 chain, 50 links long.

Lastly, Take 10 chains, 80 links and set it from 4 to 1; and at 1, make the perpendicular 1, 5, 2 chains 20 links long.

By the help of the needle to take the plot of a large wood; by going round the same, and making use of that division of the card that is numbered with four 90s or quadrants



Lines	Deg.	Min.	Chains	Links
A 1	74	00	2	20
1 2	74	00	3	50
2 3	9	00	3	50
3 4	63	20	1	50
4 5	74	00	2	80

Plotting Continued. August 6th 1810.

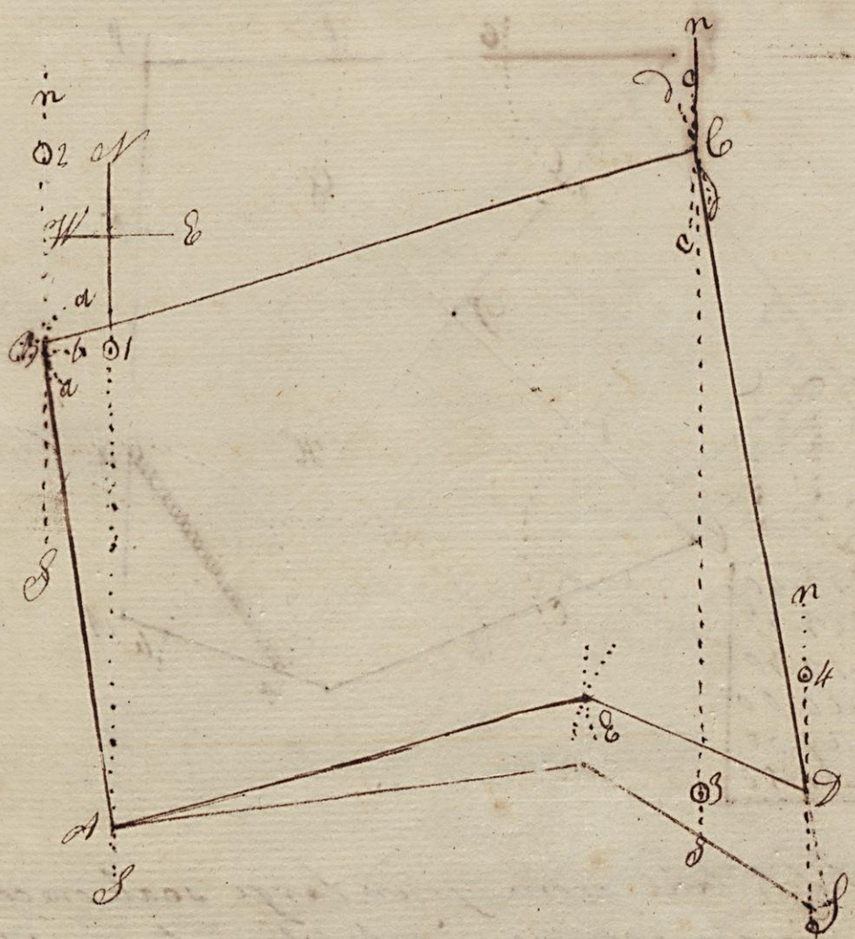
To lay down which upon paper, draw parallel lines as N. S. &c. do to represent meridians or north and south lines, then applying the protractor (which should be graduated accordingly with twice 90 degrees, begining at each end of the diameter, and meeting in the middle of the arch) to any conveniant place of one of the lines as to A, lay the meridian line of the protractor to the meridian line on the paper, and against 7 degr. make a mark through which draw a line and set off thereon the dist. AB 28 chains 20 links. Secondly, apply the center to the protractor to B, and turning the semicircle thereof the other way, because you see the course tends to the eastward) make the diameter thereof lie parellel to the meridian lines on the paper (which you may do by the figures at the ends of the parellelogram) and against 74 degrees make a mark and set off 39 chains 50 links and draw the line B C; and the like do by the other lines and angles until you come round to the place where you began.

The same done in another manner,

Lines	Degrees	Minutes	Chains	Links	N	S	E	W
A B : N W	7 :	00	28 :	20	27 : 99	.. : ..	.. : ..	03 : 43
B C : N E	74 :	00	39 :	50	10 : 66	.. : ..	37 : 97	.. : ..
C D : S E	9 :	00	38 :	00	.. : ..	37 : 53	05 : 99	.. : ..
D E : N W	63 :	00	14 :	55	06 : 53	.. : ..	.. : ..	13 : 00
E A : S W	74 :	00	28 :	60	.. : ..	07 : 85	.. : ..	27 : 99
					45 : 41	45 : 41	43 : 02	43 : 92

Draw an indefinite right line as N & S for a meridian line, then begining in any place of that line as from A to a viz 27 chains 99 links then taking with your compasses the wastings of the same line viz. 3 chains 43 links; set one foot in a, and with the other describe the arch a a, next take the lenght of your first line as you find it in the field book, viz. 28 chains 20 links, and setting one foot of the compasses in A, with the other cross the former arch a a with another arch B b, and in B the intersection of the arches is your second angle. Then through B draw another North and South line as B b parallel to the first A N & S; then take with your compasses the northing of the second line viz. 10 chains 66 links, and set it upon that line, from B to b; take the

Plotting Continued. August 6th 1810.

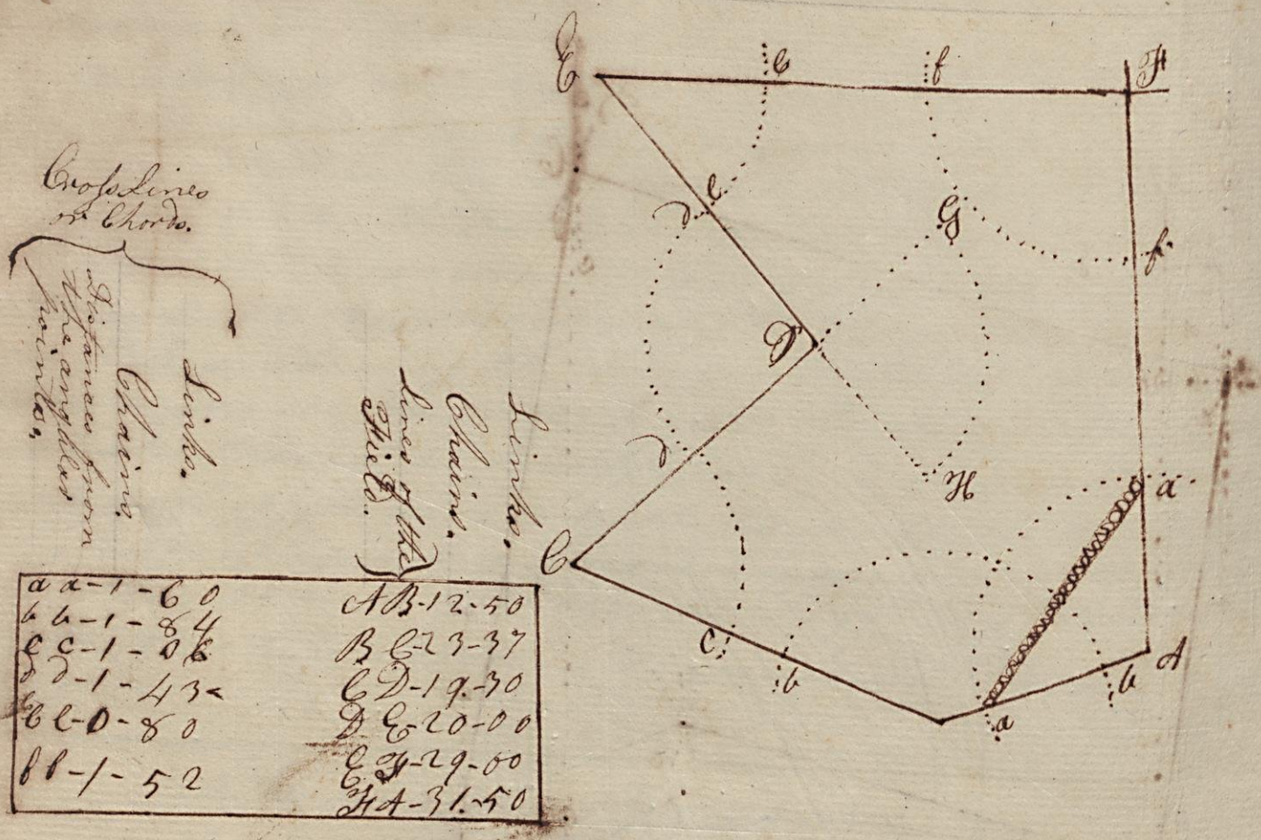


casting of the same line viz. 37 chains, 99 links; and setting one foot of the compasses in 02, with the other sweep the arch cc; and also take with your compasses the length of the second line viz. 39 chains 50 links; and setting one foot in B, cross the former arch with another; the intersection C is your third angle.

To survey a field with the chain only by going round the inside of it.

Plotting Continued. August 4th 1810.

To survey a field with the chain only, by going round the inside of it.

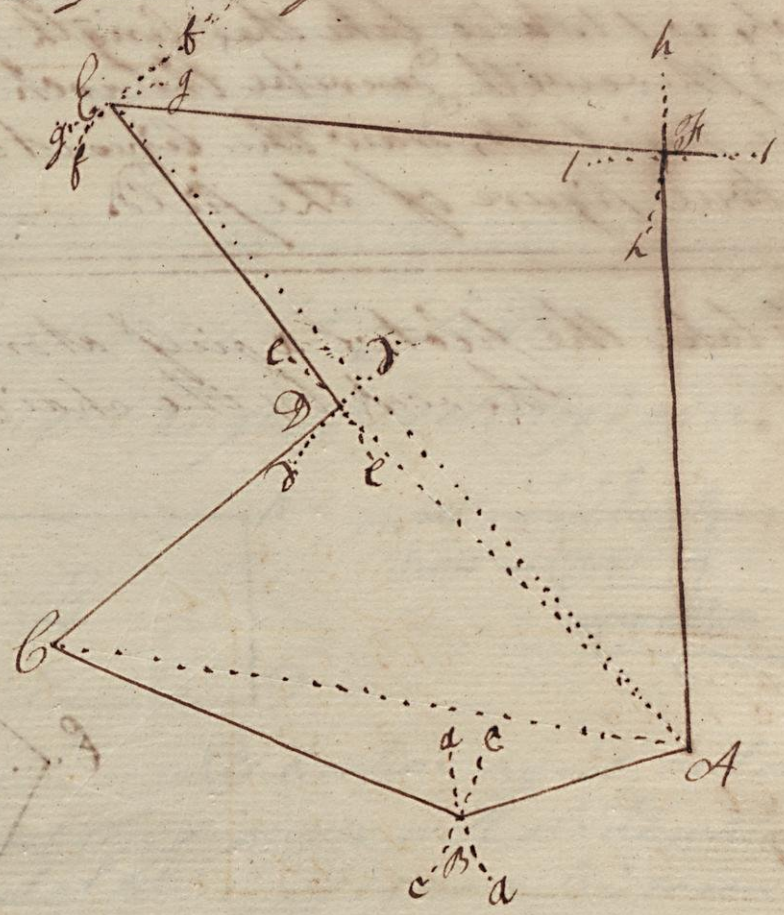


Now to begin to plot, take from your large scale one chain, with that distance in any conveniant place of your paper, as at a, sweep the arch a a; then from the same scale take off 1 chain 60 links and set it upon that arch, as from a to a; and draw through the point, a and a, the right lines A B, & A F; then repairing to your shorter scale, take from thence the first distance, viz. 12 chains, 50 links; and setting it from A to B, draw the line A B.

Secondly, Repairing to B, take from your large scale one chain and setting one foot of the compasses in B with the other describe the arch b b; also from the same scale take your chord line viz. 1 chain 84 Links and set it upon the arch b b, having one foot of the compasse in the point where the arch intersects A B, the other will fall at b; then through b draw the line B C; and from your smaller scale set off the distance 23 chains 37 links from B to C, where the next angle is made. After this manner proceed according to your field book till you have done.

Plotting Continued August 4th 1810

The common way taught by surveyors for taking the plot of the foregoing, or any other field.



	Links.
AC	33 70.
AD	25 70
AE	45 40

To plot a field, first draw a right line at C at pleasure, and set off thereon 33 chains 70 links according to your field-book for the first diagonal; then taking with your compasses the lenght of the line AB, viz. 12 chains 50 links, and setting one foot in A with the other describe the arch a a; also take the line BC, viz, 23 chains 37 links, and setting one foot in C, with the other describe the arch c c, cutting the arch a a, in the point B; then draw the lines AB, CB, which shall be the two bound-lines of the field.

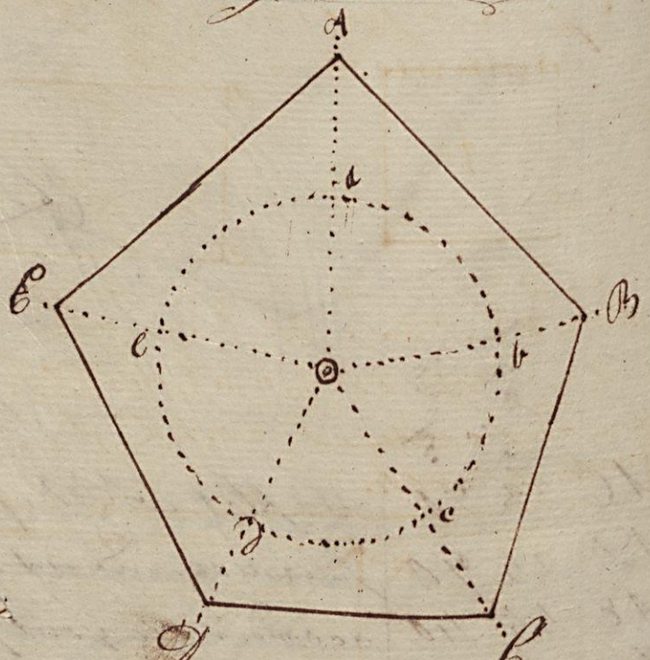
Secondly, Take with your compasses the length of the diagonal AD, viz. 25 chains 70 links and setting one foot of the compasses in A, with the other describe the arch d d; also taking the line CD, viz. 19 chains, 30 links, set one foot in C, and with the other describe the arch e e, cutting the arch d d in the point D, to this intersection draw the line CD.

Thirdly, Take with your compasses the length of the diagonal AE, viz. 45 chains, 40 links; and setting one foot in A, with the other describe an arch as f f, also take the line DE, 20 chains and therewith cross the former arch in the point E, and draw the line DE.

Plotting Continued. August 6th 1810.

Lastly, Take with your compass the length of the line AB, viz. 1 chain, 50 links; and setting one foot in A describe an arch as 11. Also take the length of the line CF viz, 2 chains and therewith describe the arch hh, to cut the arch 11 in the point H; draw the lines AH and CH, and you will have a true figure of the field.

To take the plot of a field at one station near the middle thereof, by the chain only.



	Ch.	Link.
Subtendent or chord lines	ab	1.26
	bc	1.06
	cd	1.00
	de	1.20

Diagonal or center lines.

	Chains	Links
○ A.	1	10
○ B.	1	00
○ C.	1	00
○ D.	1	00
○ E.	1	00

To plot the field by these observations.

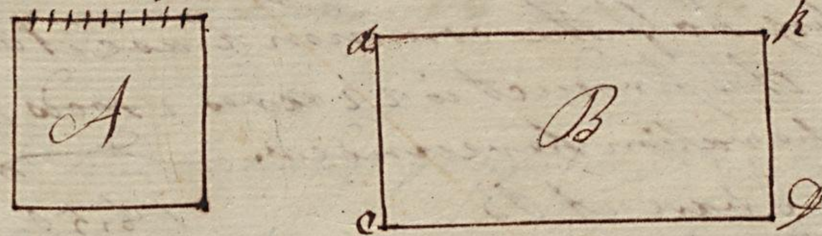
Take from a large scale 1 chain, and setting one foot of the compass in any convenient place of the Paper as at ○, make the circle a b c d e; then taking for your first subtendent, or chord-line 1 chain, 26 links, set it upon the circle, as from a to b. From ○ through a and b draw lines, as cd AB, which produce as far as may be convenient. Then take your second subtendent from the same large scale viz. 1 chain, 6 links, and set it upon the circle from b to c and through c draw the line ○C. When you have thus set off all your subtendents, and drawn lines through their several marks, take a smaller scale, and upon all the lines so drawn

To plot Continued. August 8th 1810.

set off the diagonal or center lines as you find them in the field-book: thus upon the line o a A set off 18 chains, 10 links, from o to A; upon the line o b B, 15, chains from o to B; and so by all the rest. Lastly, Draw the lines A B, B C, C D, &c. and the work is finished.

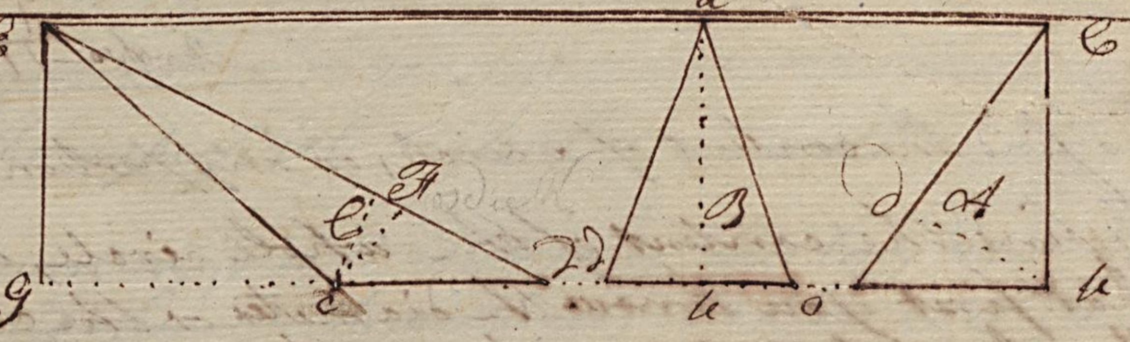
To find the Content of a Plot of Land.

Of the square and right angled parellelogram.



2 0 4 0
1 0 0 0
Acres — 2 0|6 0 0 0 0
4
Roods — 2|0 0 0 0 0
0
4 0
0|0 0 0 0 0

I need not have put down the multiplication by 40; but only to show you in what order the figures will stand when you have odd perches. The content of the long square B is 20 acres 2 roods, 00 perch.

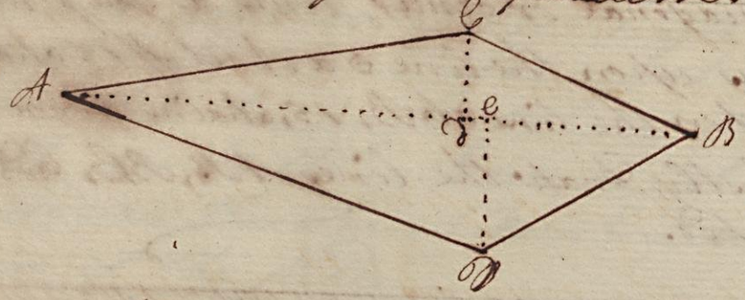


In the triangle A the base ab, is 10 chains the perpendicular ab 13 chains, 70 links the half of which is 6 chains 85 links; which multiplied by 10 chains facit 6|85000; from which cutting off five figures there is left 6 Acres. Then multiplying the remainder by 4 facit 340000; from which taking 5 figures remains 3 roods. Again the 5 figures cut off multiplied by 40, makes 1600000; from which taking 5 figures, leaves 16 perches. See the operation.

6, 85
10,00
Acres — 6|85000
4
Roods — 3|40000
40
Perches — 16|00000

To find the Content Continued. August 9th 1810.

~~To find the content of a trapezium.~~



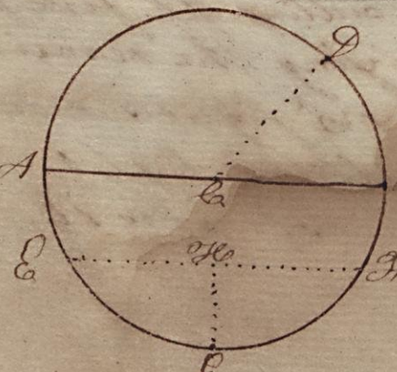
Take the length of the line A B, which let be 37 chains take also the length of the perpendicular De, which let be 7 chains, 40 links; and also Cd, 4 chains, 80 links; add the two perpendiculars together and they make 12 chains 20 links which multiply by half the common base A B, 18 chains 50 links, and the product is 22 acres 2 roods 11 perches as appears by the operation hereunder.

Half the common base A B 18,50
The sum of the two perpendiculars 12,20

		3	7	0	0
		3	7	0	
	1	8	5	0	
Acres	2	2	7	0	0
Roods		2	2	8	0
Perches			11	2	0

To find the content of a circle, or any portion thereof.

To find the content of the whole circle, it is convenient that first you know the diameter or the circumference thereof; one of which being known the other is easily found; for as 7 is to 22 so is the diameter to the circumference, and as 22 is to the 7 so is the circumference to the diameter.



By the diameter only to find the content.

As 14 is to 11, so is the square of the diameter to the content.

The square of the diameter is 40000, which multiply-

To find the Continued August 9th 1870

by 14, makes 44 0000; which, divided by 14, gives 3142 8
or 1 rood 14 perches, and something more for the content.

To measure the superficial content of a sector of a circle.

Multiply half the compass thereof by the semidiameter of the circle the product will answer your desire. In the foregoing circle I would know the content of that little piece D C B; the arch D B is 4 & links 4/5; the half of it 39 1/4; which multiplied by 1 chain, the semidiameter gives 3925 square links, or 6 1/4 perches.

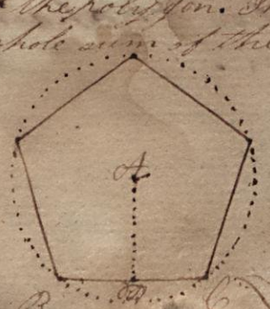
To find the content of a segment of a circle, without knowing the diameter.

Let E F G be the segment, the chord E F is one chain 4 links or 140 links; the perpendicular G H 50 links; now multiply 2/3 of the one by the whole of the other, the product will be the content nearly; the 2/3 of 140 is is the nearest 113, which multiplied by 50, produces 5650 square links, or 9 perches.

To find the superficial content of an oval.

The common way is to multiply the long diameter by the shorter, and observe the content; and then as if you were measuring a circle, say, as 14 is to 11, so is the said product to the content of the oval, but this is not exact. A better way is, as 1,750 is to the length of the oval so is the breadth to the content; or nearer, as 1,4142 to the length, so is the breadth to the content.

To find the superficial content of regular polygons, pentagons, hexagons, &c. Multiply half the sum of the sides by a perpendicular let fall from the center upon one of the sides, the product will be the area or superficial content of the polygon. In the following pentagon, the side B C is 84 links, the whole sum of the 5 sides, therefore, must be 420, the half of which is 210; which, multiplied by the perpendicular A D, 56 links gives 11760 square links for the content or 18 perches 5/10 of a perch, almost 19 perches.



Of laying out new lands.

A certain quantity of acres being given, how to lay out the same in a square figure.

Annex to the number of acres given, 5 cyphers, which will turn the acres into links; then from the number thus increased extract the square root which shall be the side of the proposed square.

Example.

Suppose the number given be 100 acres, which I am to lay out in a square figure, I join to the 100, 5 cyphers and then it is 10,00000 square links; the root of which is 316 nearest, or 31 chains 62 links the length of one side of the square.

Again,

If I were to cut out of a corn field one square acre, I add to 1 five cyphers, and then it is 100000; the root of which is 3 chains 16 links, and something more for the side of that acre.

To lay out any given quantity of acres in a right-angled paballelogram, whereof one side is given.

Turn first the acres into links, by adding as before five cyphers; that number thus increased divide by the given side, the quotient will be the other side.

Example.

It is required to lay out 100 acres in a parallelogram one side of which shall be 20 chains; first to the 100 acres I add five cyphers and it is 100,00000; which divide by 20 chains, or 2000 links; the quotient is 50 chains for the other side of the parallelogram.

laying out land Continued. August 11th 1810.

To lay out any given number of acres in a parellelogram one side of which shall be 4, 5, 6, or 7, &c. times longer than it is broad.

Example.

Admit it were required of me to lay out 100 acres in a parallelogram, that should be 5 times as long as broad: first to the 100 acres I add 5 cyphers and it makes 100,00000; which sum I divide by 5 the quotient is 200000; the root of which is nearest 14 chains 14 links; and that I say, shall be the short side of such a parallelogram; and by multiplying that 14 14 by 5. shews me the longest side thereof to be 70 chains 70 links.

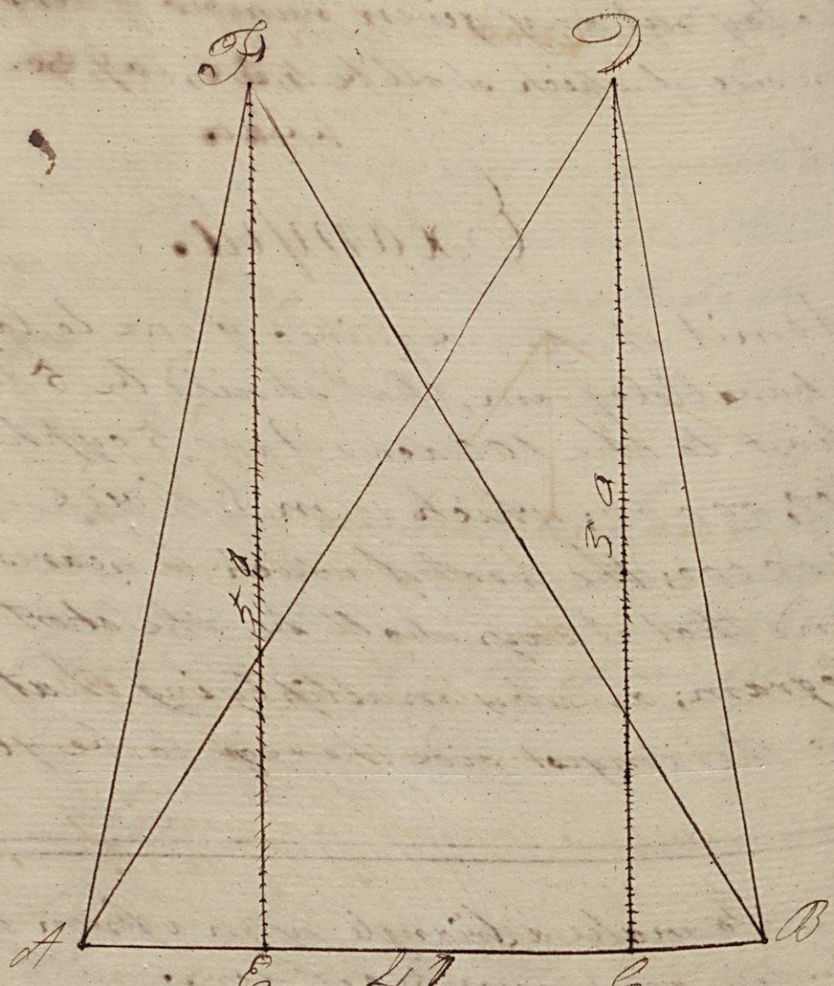
To make a triangle upon a given base that shall contain any number of acres.

To double the given number of acres, annex 5 cyphers, and divide by the base, the quotient will be the length of the perpendicular required.

Example.

Upon a given base whose length is 40 chains, I am to make a triangle that shall contain 100 acres, first, I double the 100 acres, and annexing 5 cyphers thereto it makes 20,000000; which I divide by 40 chains the given base; the quotient is 50 chains for the height of the perpendicular. As in this figure, A B is given base 40, or any part of it, as C, I make the perpendicular C D equal to 50 chains, and I draw the lines D A, D B, which make the triangle D A B, containing just 100 acres as required.

laying out land Continued. August 11th 1810.



To find the length of the diameter of a circle which shall contain any number of acres required.

Say as 11 is to 14 so will the number of acres given be to the square of the diameter of a circle required.

Example.

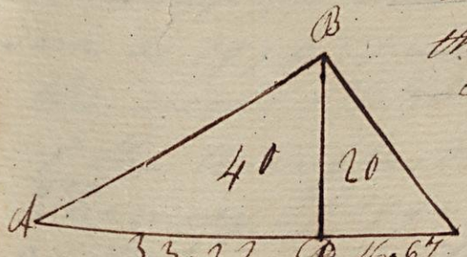
What is the length of the diameter of a circle, whose superficial content shall be 100 acres? Add 5 cyphers to the 100, and it makes 10,000000 links; which multiply by 14 facit 140000000; which divided by 11 gives for quotient 12727272 the root of which is 35 chains 67 links, and better almost 68 links; and so much shall be the diameter of the required circle.

Division of Lands. August 13th 1820.

To divide a triangle several ways.

Suppose 60 acres, 40 acres cut

A B C a triangular piece of land containing 60 acres, to be divided between two men, one to have 40 acres off towards A, and the other 20 acres towards C, and the line of division to proceed from the angle B. First measure the base A C, viz. 50 chains; then say by the Rule of three, if the whole content 60 acres give 50 chains for its base what shall 40 acres give? Multiply



and divide, the quotient will be 33 chains, 33 links; which set off upon the base from A to D and draw the line B D, which shall divide the triangle as was required

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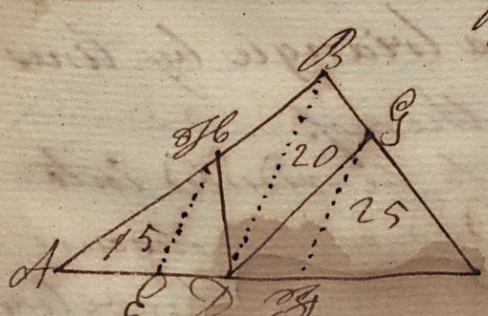
To divide a triangular piece of land into any number of unequal parts, by lines proceeding from any point assigned in any side thereof.

Let A B C, the triangular piece of land containing 60 acres, be divided between three men the first to have 15 acres the second 20 the third 25 acres and the lines of division to proceed from D; first measure the base, which is 50 chains; then divide the base into three parts as you have been before taught by saying if 60 give 50 what shall 15 give? ans. 12 chains, 50 links for the first mans base which set off from A to E. Again say, If 50 give 50 what shall 20 give? ans. 16 chains 66 links for the second mans base; which set off from E to H; then consequently the third man's base, viz. from H to C. must be 20 chains, 84 links. This done draw

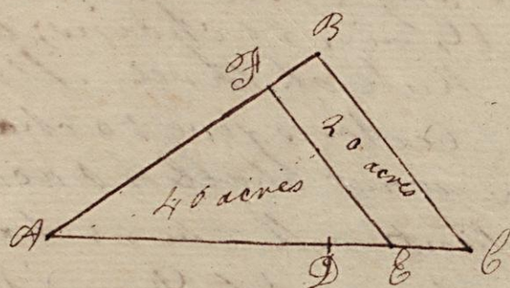


an obscure line from the point assigned D, to the opposite angle B; and from E and H draw the lines E F, H G parallel to B D. Lastly from D draw the lines D F, D G which shall divide the triangle into three such parts as were required.

Division of Lands Continued August 14th 1810.

To divide a triangular piece of land, according to any proportion given by a line parallel to one of the sides.

A B C is a triangular piece of land containing 60 acres the base A C is 50 chains. This piece of land is



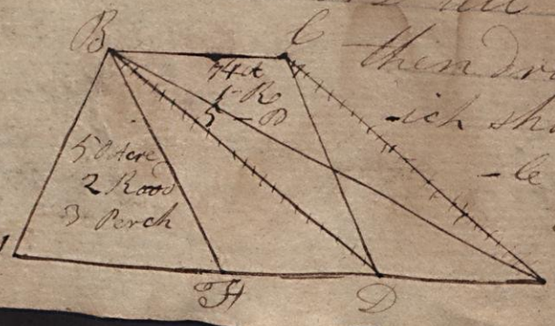
to be divided between two men by a line parallel to B C in such proportion that the one may have 40 acres and the other 20.

First divide the base as has been before taught and let the point of division fall in D. A D being 33 chains, 33 Links; and D C 16 chains 67 Links.

Secondly, Find a mean proportion between A D and D C by multiplying the whole base 50 by A D 33, 33, the product is 1666, 5000; of which the square root being extracted, gives 40 chains, 82 Links; set this off from A to E. Lastly, From E draw E F parallel to B C, which Divides the triangle as Demanded.

To reduce a trapesium into a triangle by lines drawn from any angle thereof.

Let A B C D be the trapesium to be reduced into a triangle, and B the angle assigned. draw the obscure line B D and from C make a line parallel thereto as C E extend also the line A D till it meet C E in E. Then draw the line B E, which shall make the triangle B C E equal to the trapesium A B C D.



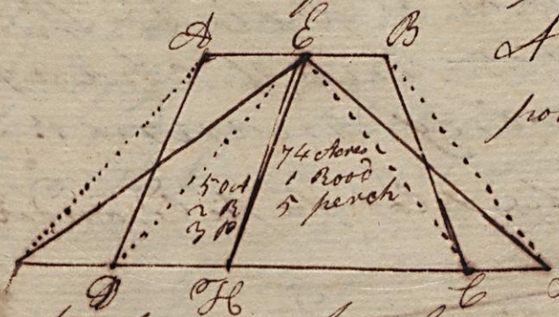
Division Continued. August 16th 1810.

Suppose the trapesium A B C D containing 74 acres, 3 roods, and 8 perches, is to be divided between two men the first to have 50 acres, 2 roods and 8 perches; the other 74 acres, 1 rood and 8 perches, and the line of division to proceed from B. First, Reduce all the acres and roods into perches, then will the content of the trapesium be 19968 perches; the first mans share 6083 perches the second 11885. Secondly, Measure the base of the triangle, viz. A E 78 chains:

Then say, If 19968 the whole content give for its base 78 chains, 00 links,
What shall 6083, the first mans part give? Answer 31 chains, 52 links;

which set off from A to F, and drawing the line F B you divide the trapesium as desired; the triangle A B F being the first mans portion and the trapesium B C D F the seconds.

How to reduce a trapesium into a triangle, by lines drawn from a point assigned in any side thereof

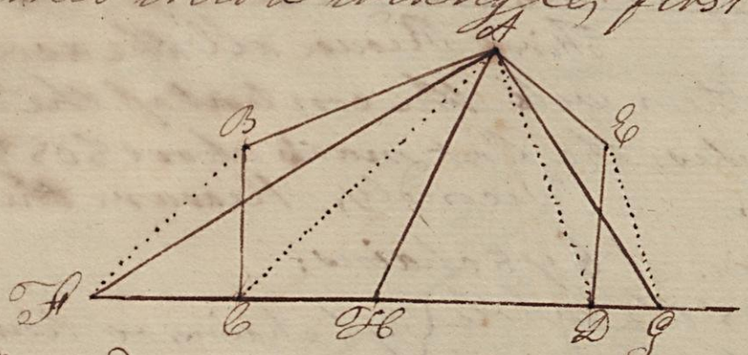


A B C D A the trapesium, E the point assigned from whence to reduce it into a triangle and run the division line. F The trapesium is of the same content as the former, viz. 19968 perches; and it is to be divided as before, viz one man to have 6083 perches, and the other 11885. First, for to reduce it into a triangle, draw the lines E D & C, and from A and B make lines parallel to them as A F, B G; then draw the lines E G - E F and the triangle E F G will be equal to the trapesium A B C D A which is to be divided as before therefore find, by the rule of proportion, what the first mans base must be viz 31 chains, 52 links, set it of from F to H and draw the line H E; so shall you divide the trapesium according to the former proportion.

Division Lands Continued August 17th 1810.

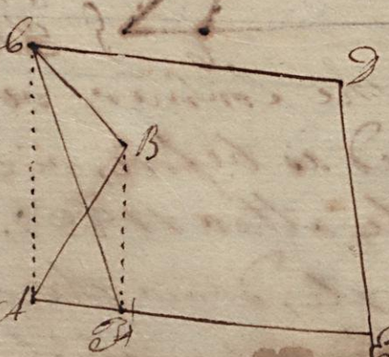
To reduce an irregular five sided figure into a triangle and to divide the same into any given proportion

Let A B C D E A be the five-sided figure; to reduce this into a triangle, first draw the lines A C,



A D; and parallel thereto B F, E G, extending the base from C to F, and from D to G; then draw the lines A F, A G, which will make the triangle A F G equal to the five-sided figure. If this were to be divided into two equal parts you must take F H, equal to half of the base of the triangle and from H draw the line H A, which divides the figure A B C D E into two equal parts.

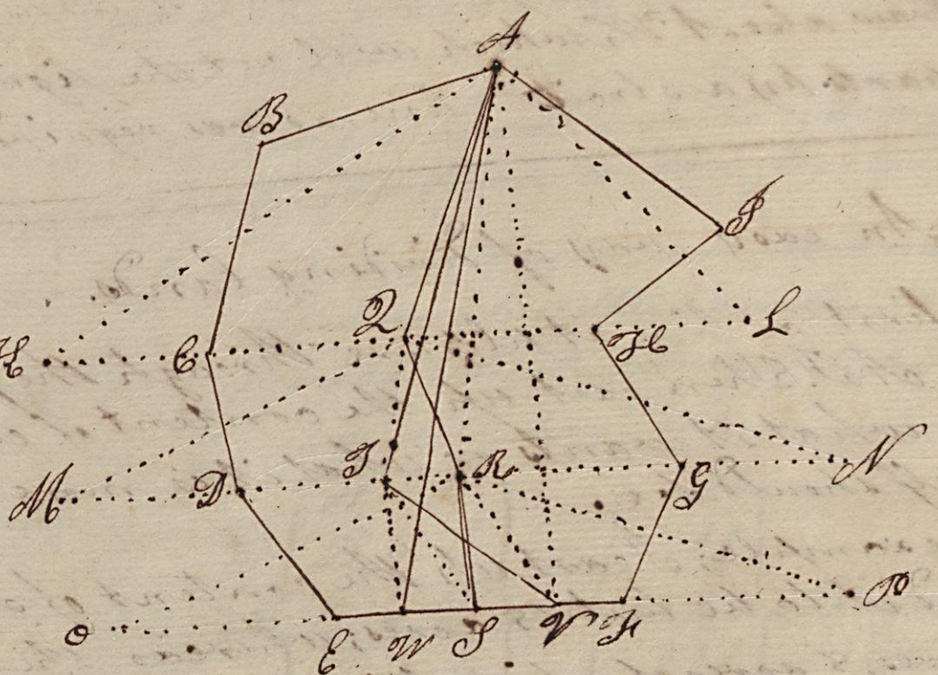
If in dividing the plot of a field, there be outward angles, you may change them after the following manner. Suppose A B C D E A be the plot of a field, and B the outward angle.



Draw the line C A; parallel thereunto draw also B F; join the points C, F, and the five-sided figure, having one angle, is now reduced into a four-sided figure or trapezium; which you may again reduce into a triangle, as has been [illegible] taught

Division Continued. August 20th 1810.

To divide an irregular plot of any number of sides according to any given proportion, by a strait line drawn through it.



A B C D E F G H I A is a field to be divided equally between two men, by a strait line proceeding from E. First Consider how to divide the field into five sided figures and trapezia, that you may the better reduce it into triangles, as by drawing the line E K &c, you cut of the five sided figure A B C E K, which reduce into the triangle A E L, and measuring half the base thereof, which will fall at Q draw the line Q A.

Secondly, Draw the line M N, and from the said Q reduce the trapezium C D G H into the triangle M N Q; which again divide into halfs, and draw the line Q R.

Thirdly, From the point R reduce the trapezium D E F G into the triangle R O P, and taking half the base thereof, draw the line R S; and then have you divided this irregular figure into two equal parts by the three lines A Q, Q R, R S.

Fourthly, Draw the line A R, also Q T parallel thereto, Draw also S T, and then have you turned two of the lines into one.

Division Continued. August 22d 1810.

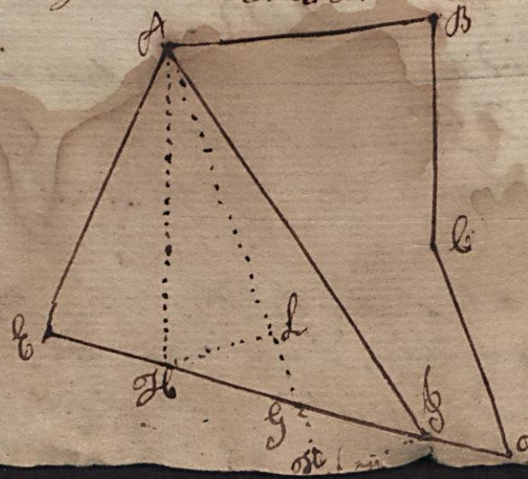
Fifthly, From D draw the lines DS. and parallel thereto the line RT. Draw also TV. Then is your figure divided into two equal parts by the two lines AT and TV. —— Lastly, Draw the line AW and parallel thereto TW. Draw also AW, which will cut the figure into 2 equal parts by a strait line, as was required.

An easy way of dividing lands.

Draw first a line at pleasure through the figure, as the line AF. Then cast up the content of either part and see what it wants or what it is more than the true half should be.

As for example; I cast up the content of AEG, and find it to be but 15 acres; whereas the true half is 23 acres; 8 acres of which being in the part ABCG more than AEG. Therefore I make a triangle containing 8 acres, and add it to AEG as the triangle AGI; then the line AI parts the figure into two equal parts.

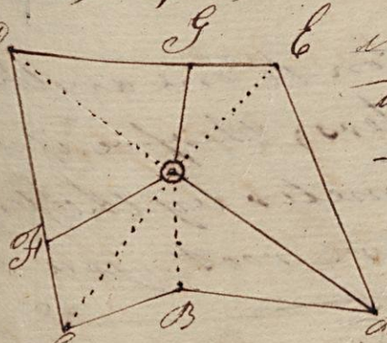
But more plainly to make this triangle: measure first the line AG, which is 23 chains 60 links. Double the 8 acres they make 16: to which adds cyphers to turn them into chains and links and then they make 160000; which divide by AG 2360 the quotient is 6 chains 77 links; for the perpendicular HI, take from your scale 6 chains, 77 links, and set it so from the base AGI; that the end of the perpendicular may just touch the line ED, which suppose at I. Then draw the line AI, which makes the triangle AGI just 8 acres and divides the whole figure as desired.



Division Continued August 23 1810.

Suppose a field containing 27 acres is to be divided between 3 men each to have 9 acres and the lines of division to run from a pond in the field so that each person may have the benefit of the water, without going over another's land.

First from the pond ○ draw lines to every angle as ○A, ○B, ○C, ○D, ○E; and then is the figure divided into 5 triangles; measure each of these and put their contents down severally which reduce into perches and you will have the



Triangle { A ○ B, B ○ C, C ○ D, D ○ E, E ○ A } be { 674, 390, 1238, 911, 1107 } Perches.

The whole content is 4320 perches or 27 acres, and each mans proportional part 1440 perches.

From ○ to any angle draw draw a line for the first division-line, as ○A, then consider that the first two angle A ○ B is but 674 perches, and the second B ○ C 390 both together but 1064 perches less by 376 than 1440 one mans portion. You must therefore cut off from the third triangle C ○ D 376 perches for the first mans dividing line; which you may do thus: the Base DC is 18 chains the content of the triangle 1238 perches: says then, if 1238 perches give the base 18 chains, what shall 376 perches give? Ans. 5 chains, 45 links; which set off from C to F, and drawing the line ○F you have the first mans part, viz. A ○ F C B A.

Secondly, Observe the remaining part of the triangle C ○ D, after 376 is taken out and you will find it to be 861 perches, which is less than 1440 by 579. Therefore from the triangle D ○ E cut off 579

Division. Continued August 23 1810

perches and in the point of division will fall in G. Draw the line o G which with o c and o F, divides the figure into 3 equal parts.

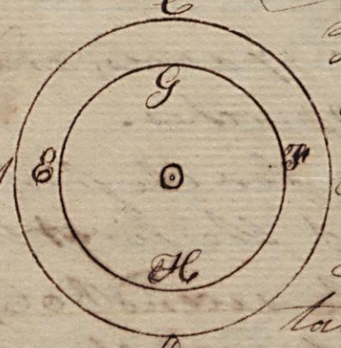
To divide a circle according to any proportion by a line concentric with the first.

The areas of circles are in proportion to one another as the squares of their semidiameters; therfore, if you divide the square of the semidiameter by the proportion given, and extract the square root, you will have your desire.

Example.

G 38

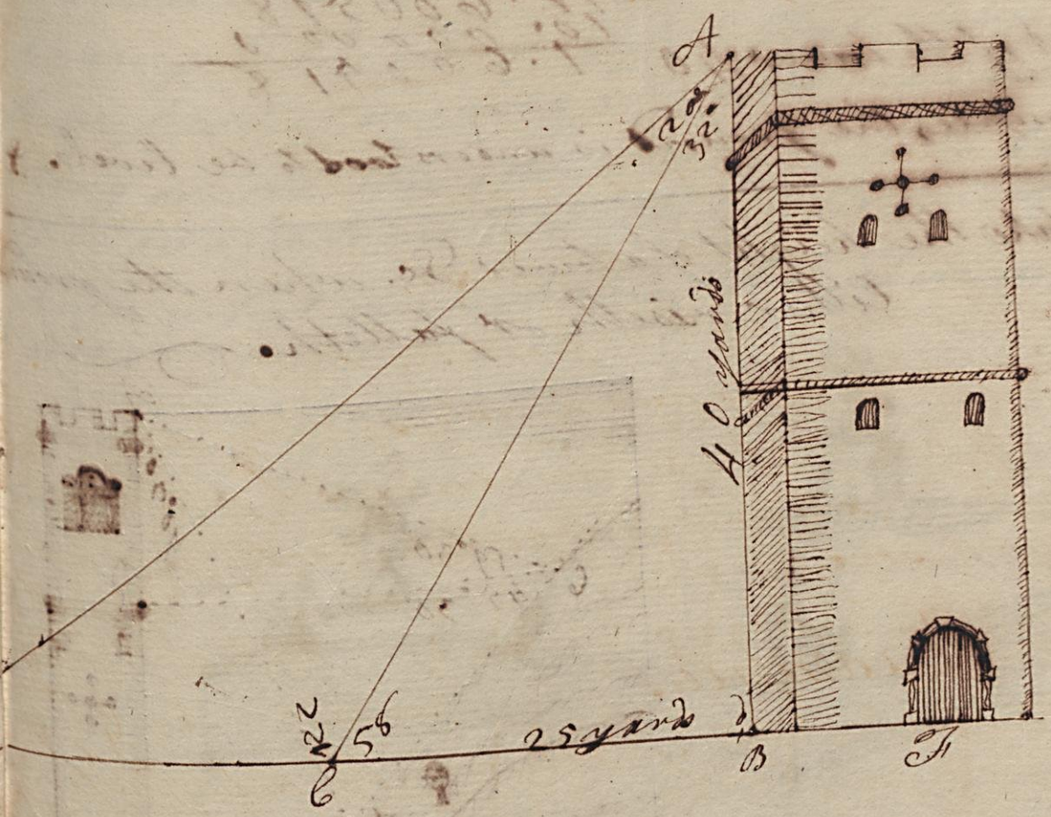
A B C D be a circle to be equally divided between two men.



The diameter thereof is 2 chains.
The semidiameter 1 chain or 100 links.
The square thereof 10000.
Half the square 5000.
The root of the half 71 links; which take from your scale, and upon the same center describe the circle G E H F, which will divide the circle A B C D into two equal parts.

Of Heights and Distances.

To take the height of a tower, steeple, tree, or any such thing.



As the angle sine of 32°	9.724210
So to the Base 25	1.397940
So is the sine angle 65 58°	9.928420
To the height of tower AB 40	1.602150

To take the height of a tower &c. when you cannot come near the foot thereof.

In the fore going figure, let A B represent the tower; and C B a moat, or some other hindrance that you cannot come nigher than C to take the height. Therefore at C place your instrument and take (as before) the angle at C B A 58° Then go backward any convenient distance as to G. there also take the angle at G B A 38° This done subtract 58 from 180, so have you 122 deg. the angle at C G. Then 122 and 38 being taken from 180 remain 20 for the angle G A C. the Dist. G C 260 yard.

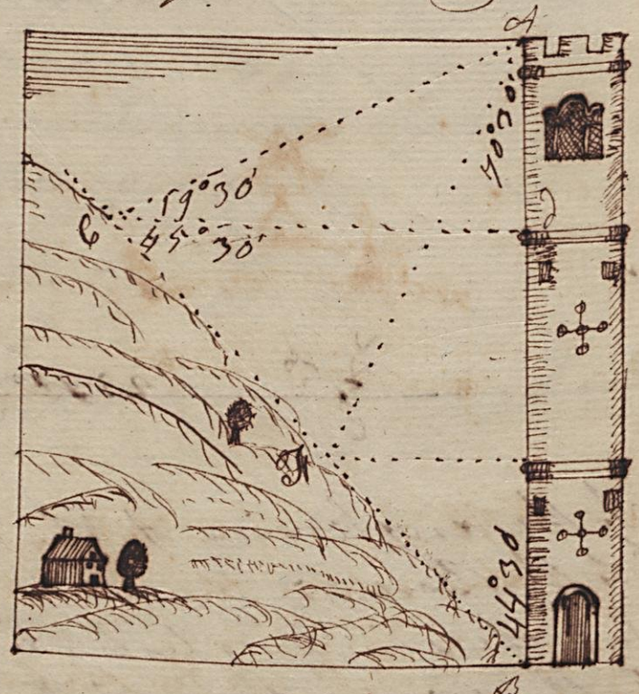
As sine angle at 20	9.534052
So to G C 260	2.414973
So is the sine angle G 38	9.789342
To line A C 479	2.679263

Heights Continued. August 24th 1810

As Radius 90	10. 000000
So is the line A C 49	1. 467209
So is the sine angle C 58	9. 928420
	1. 600518
	10. 000000
To the height of the tower 40	1. 600518

In this example, the ground is understood to be level.

How to take the height of a tower &c. when the ground either riseth or falleth.

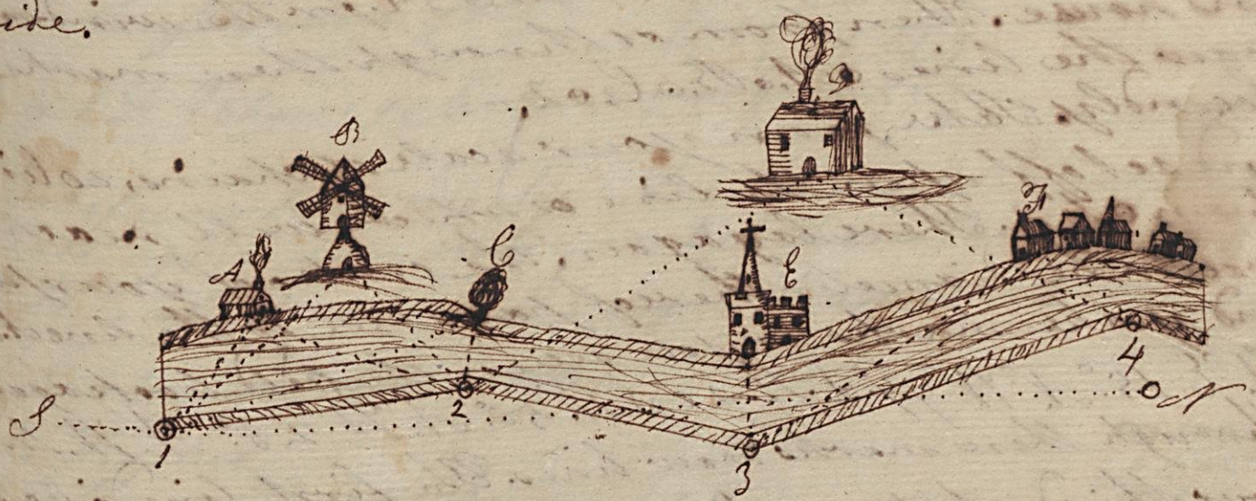


As the sine of angle A 44° 30'	9. 974346
So is the dist. C B 56 yards	1. 748188
So is the sine angle C 65°	9. 957296
	1. 705484
	9. 974346
To the height of tower 54 yards	1. 731138

To take this at 2 stations without approaching the foot of the tower you must proceed as before directed for if you take the angles at C and then measure to H and there in like manner as before take your angles again thereby you may find all the angles and the line A H then say, as the sine of the angle C B H
So is the log. of the line H A
So is the sine of the angle A H B
To the log. of the height of the
tower A B

Of Distance. August 27th 1810.

Having before shewed you how take the proper distances in surveying a field at two stations yet as it natura-lly occurs in this place I will give you one example the river I suppose the following figure to be part of a river, and you being measureing along on one side of it, all desireous to know the breadth of it as also to make a true plot thereof, by putting down what remarkable things are seen on the other side.



Observation ①

N. W. 6° and 16 chains, 20 links, equal to ⊙2.

A tree upon the brinke of the river bears N. W. 19° 00'.
A wind-mill up in the land N. W. 40° 00'.
A house upon the river bank N. W. 52° 00'.

⊙2 N. W. 15° and 18 chains, 10 links equal to ⊙3

These look back to the observation of ⊙1.

The tree N. W. 7°.
The house S. W. 20°.
The wind-mill S. W. 50°.

Forward observations.

A noted house far up in the land N. W. 28°.
A church upon the rivers bank N. W. 40°.

⊙3 N. W. 15° and 20 chains, 50 links equal to ⊙4.

These look back to the obs. of ⊙2 & forward observation

The church bears N. W. 88°.
The noted H. cannot be seen
The end of a little village N. W. 32.

Distance Continued. August 28th 1810.

⊙4 { The end of the little village S.W. 3½. / The house respecting ⊙2 the land S.W. 2¼. } These respect ⊙3 and ⊙2.

To protract this draw the line A.B. for a meridian and laying the protractor upon it the center thereof to 01; against N.W. 6° make a mark for the line that goes to 02: also against N.W. 19° make a mark for the tree and against 40° and 52° for the windmill and house. Then from 01 through these marks draw the lines 01.A.01.B.01.C.02.

Secondly. Take from your scale 18 chains, 20 lin. and set off upon the line 02 which will reach from 01 to 2. There lay again the center of your protractor the diameter thereof parallel to the line A.B; and make marks as you see in the field book against N.E. 15° N.W. 44° S.W. 20° S.W. 50° N.W. 28° N.W. 4° and through these marks draw lines. The first line directs to your third station, the second line N.W. 40° directs you to the tree C upon the rivers bank; for that line cutting the line 01.C. shews you by the intersection where the tree stood and also the breadth of the river. Also the line S.W. 20° cuts the line from the first station N.W. 52° in the place where the house stands upon the bank of the river. Therefore you draw a line from A to C, it will represent the farther bank of the river. ~~Therefore you draw a line from~~ And so you may proceed on plotting, according to the notes in your field book; and you will not only have a true plot of the river but also know how far the wind-mill B. and the house D, &c. stand from the water-side.

How to take the horizontal line of a hill

Suppose A B C a hill whose base you would know. Place your semicircle at A and cause a mark to be set up at B, as high above the top of the hill as your instrument stands from the ground at A; and with your instrument horizontal take the angle B A C 44 deg. Measure the dist. A B. 160 & 80 links; then say,

As Radius	10.000000
So to the line A B 160. 80.	3.225309
So is the sine comp. of A 58°	9.724210
To A D 8 chains, 90 links,	2.949519

But if you have occation to measure the whole hill, place again your instrument at B and take the angle C B D, which suppose 46 deg. Measure also the dist. B C 21 chains; then say

As Radius	10.000000
So to the line B C 21 ch.	1.322219
So is the sine of the angle C B D 46	9.856934
	11.179153
	10.000000
To the remaining part of the base A C 15 c. 11 l.	1.179153

Which added to 8.90 makes 24 chains 1 links, for the whole base of C; which is to be plotted, instead of A B or B C; although they were used in finding the content of the land.

I mentioned this way for your better understanding how to take the base of part of a hill; for it often happens your survey ends upon the side of a hill. But if you find you are to take in the whole hill you may facilitate the work by the former way. Thus: take, as before the angle at A 58 deg. Measure also A B. Then at B take the whole angle A B C 44°. Subtract the sum of these angles from 180 deg. remain 78 for the angle at C. Then say,

As the sine of the angle C
So the side A B
So is the sine of the angle A B C
To the Log. of the base A C.

August 31st 1810

(351) Sept. 5th 1812.

Miscellaneous Questions.

In an Orchard of fruit trees 1/2 of them bear apples 1/4 Pears, 1/6 Plumbs 60 of them Peaches and 40 Cherries How many trees does the Orchard contain?

$\frac{1}{2}+\frac{1}{4}+\frac{1}{6}=\frac{11}{12}$, and $\frac{12}{12}-\frac{11}{12}=\frac{1}{12}$, therefore, as $\frac{1}{12}:\frac{60+40}{1}::$

$\frac{12}{12}$: 1200 Ans.

A person who was possessed of 2/5 of a vessel, sold 5/8 of his interest for £375; what was the ship worth at that rate? $\frac{5}{8}$ of $\frac{2}{5}=\frac{1}{4}$. As $\frac{1}{4}:\frac{375}{1}::\frac{1}{1}:$ £1500 Ans.

If 5/7 of 3/8 of 4/5 of a ship be worth 2/9 of 7/8 of 13/13 of the cargo valued at 1200 £: what did both ship and cargo cost?

$\frac{5}{7}$ of $\frac{3}{8}$ of $\frac{4}{5}=\frac{6}{28}$, and $\frac{2}{9}$ of $\frac{7}{8}$ of $\frac{13}{13}$ of $\frac{1200}{1}=\frac{7000}{39}$, then,

as $\frac{6}{28}:\frac{7000}{39}::\frac{28}{28}:\frac{28\times7000\times28}{6\times39}=$ £ 837, 12 s 1 $\frac{25}{39}$ the cost of the ship and £1000 + £837 12 s 1 $\frac{25}{39}$ = 1837 £ 12 s 1 $\frac{25}{39}$ Value of the Ships and cargo, Ans.

Two ships A and B sailed from a certain port at the same time; A sailed north 8 miles an hour, and B East 6 miles an hour Required, by an easy method, their Distance asunder at every hours end?

$\sqrt{8\times8+6\times6}=10$ miles distant in 1 hour, and $10\times2=20$ miles in 2 hours, &c. Answer.

If a body be weighed in each scale of a balance, whose Beam is unequally divided, and those different weights of the body be multiplied together the square root of the Product will be the true weight of the body.

Suppose the weight of a bar of silver in one scale be 10 oz. and in the other scale 12 oz.; Required the true weight of the bar?

oz.	oz.	pwt.	gr.
$\sqrt{12\times10}=10,954=$	10	19	1,92 Ans.

N.2. Continued. September 6th 1810.

A younger brother received 1560 £, which was just 7/29 his elder brothers fortune; and 5 5/6 times the elder's money was 2/3 as much again as the Father was worth; Pray what was his estate valued at?

As 7 : 1560 :: 12 : 2674 3/7 the elder brothers fortune, then 2674 3/7 × 5 5/6 ÷ 2/3 = £ 19165 14s 3 3/7 dns. Ans.

A Gentleman divided his fortune among his sons giving 4 £ 9 as as B 5, and to C but 3 £ as often as to B 7; and yet C dividend was £ 1537 5/8; what did the whole Estate amount to?

As 7 : 5 :: 3 : 2 1/7 then As 2 1/7 : 1537 5/8 :: 9 + 5 + 2 1/7 : £ 11583 8s 1d Ans.

A Gentleman left his son a fortune; 5/16 of which he spent in 3 months; 3/4 of 5/6 of the remainder lasted him 9 months longer when he had only £ 537 left; Pray what did his Father bequeath him?

1/16 = whole legacy 1/16 − 5/16 = 11/16 left at 3 months, then 3/4 of 5/6 of 11/16 = 165/384, and 11/16 + 165/384 = 1584/6144 = £ 537, therefore as 1584/6144 : 537/8 :: 1/1 : £ 2082 18s 2 3/11 Ans.

A gay young fellow soon got the better of 2/3 of his fortune; he then gave £ 1500 for a commission and his profusion continued till he had but 450 £ left which he found to be just 1/6 of his money after he had purchased his Commission, what was his fortune at first?

As 6 : 450 :: 16 : 1200, and 1200 + 1500 = £ 2700 = 5/9 of his fortune, and as 5 : 2700 :: 9 : £ 5780 Ans.

No 2. Continued. Sept 13th 1810. 6

A has £100 of B's money in his hands for the remittance of which B allows him 9 per Cent.: What sum must he remit to discharge himself of the 100 £?

As 100+9 : 100 :: 100 : £91 $\frac{9}{109}$ or $\frac{100\times100}{100+9}$ = 91£ $\frac{9}{109}$ to be remitted, and $\frac{100\times9}{100+9}$ = £ $\frac{9}{109}$ his Commission.

If 15 men can perform a piece of work in 4 days: How many men will it require to complete another piece of work 4 times as large in $\frac{1}{5}$ of that time?

Work. Men. Work. Men. Time. Men. Time. Men.

As 1 : 15 :: 4 : 60 As 4 : 60 :: $\frac{1}{5}$: 300 Ans.

If A can do a piece of work in 7 days and B in 12; set them both about it together; in what time will they finish it?

Days. Work. Day. Work.

As 7 : 1 :: 1 : $\frac{1}{7}$
12 : 1 :: 1 : $\frac{1}{12}$

Work. Work. Work. Day. Work. Day.

Then $\frac{1}{7}+\frac{1}{12}=\frac{19}{84}$ As $\frac{19}{84}$: 1 :: 1 : 4 $\frac{8}{19}$ Ans.

A and B together can build a Boat in 20 Days; with the assistance of C they can do it in 12; In what time would C do it by himself?

D. W. D. W.

20 : 1 :: 1 : $\frac{1}{20}$

D W D W

12 : 1 :: 1 : $\frac{1}{12}$

$\frac{1}{12}$ $\frac{1}{20}$
$\frac{20}{240}$ $\frac{12}{240}$

W D W
6 : 1 :: 240
6 240
30 Ans.

A can do a piece of work alone in 13 days, and A & B together in 8 Days; In what time can B do it alone?

D. W. D. W.

13 : 1 :: 1 : $\frac{1}{13}$

D W D W

8 : 1 :: 1 : $\frac{1}{8}$

$\frac{1}{13}$ $\frac{1}{8}$
$\frac{8}{104}$ $\frac{13}{104}$

W D W
5 : 1 :: 104
5 104
20 $\frac{4}{5}$ Ans.

N. 2. Continued. Sept. 13th 1810.

A Cistern for water has 2 Cocks to supply it by the first it may be filled in 45 minutes and by the second in 55 minutes; it has likewise a discharging Cock by which it may when full be emptied in 60 minutes; now if these Cocks be all left open when the water comes in In what time will the Cistern be filled?

Min. Cist. Min.
45 : 1 :: 60
45) 60,0000 (1,3333
45
150
135
150
135
150
135
15

Min. Cist. Min.
55 : 1 :: 60
Cist. Hour. Cist.
As 4242 : 1 :: 1
4242) 10,0000 (2
8484
1516
60
9096 (21
4484
6129
4242
1887
60
11220 (26½
8484
27360
25452
1908
4242

H. M. S.
2 21 26½ Ans.

A Water-tub holds 73 Gallons; the pipe which conveys the water to it wally admits 4 Gals. in 5 Min.; and the Tap discharges 20 Gals. in 17 Min.; now supposing these both to be carelessly left open, and the water to be turned on at 4 o'clock in the morning; a Servant at 6 finding the water running puts in the Tap; In what time after this accident will the Tub be full?

As { Min. Gal. Min. Gal. } 84 − 70 10/17 × 2 = 29 14/17 gal. & 73 − 26 14/17 =
{ 5 : 4 :: 60 : 84 }
{ 17 : 20 :: 60 : 70 10/17 } 46 2/17 gal. which now remains to be filled

Therefore, As Gal. Min. Gal. H. M. H. M.
7 : 5 :: 46 2/17 : 32 4 6 18/119 and therefore the Tub will
be full at 32 4 8 11/119 after 6.

The hour and minute hand of a watch are exactly together at 12 o'clock; when are they next together? The velocities of the two hands of a watch or clock are to each other, As 12 to 1; therefore, the difference of velocities is 12 − 1 = 11.

11 : 1 :: 12
11) 12,0000 (1 h.
11
10
60
55
5 m.
11) 300 (27 sec.
22
80
77
3

11 : 1 :: 24
11) 24,0000 (2 h.
22
20
11
9 m.
11) 540 (49 sec.
44
100
99
1

11 : 1 :: 36
11) 36,0000 (3 h.
33
30
22
8 m.
11) 480 (43 sec.
44
40
33
7

11 : 1 :: 48
11) 48,0000 (4 h.
44
40
33
7 m.
11) 420 (38 sec.
33
90
88
2

11 : 1 :: 60
11) 60,0000 (5 h.
55
50
44
6 m.
11) 360 (32 sec.
33
30
22
8

11 : 1 :: 72
11) 72,0000 (6 h.
66
60
55
5 m.
11) 300 (27 sec.
22
80
77
3

No. 2. # Continued. Sept. 17th 1810.

A hare starts 12 rods before a hound; but is not perceived by him till she has been up 45 seconds; she scuds away at the rate of 10 miles an hour, and the dog, on view, makes after, at the rate of 16 miles an hour; How long will the course hold, and what space will be run over, from the spot where the dog started?

16
6
16 = 3/8 or as 8 to 3 against the Hare. 1 hour = 3600 sec.

feet 2288 run over by the dog.

sec. feet. sec.
3600 : 52800 :: 45
45
264000
211200
3600)2376000(660
21600
21600
21600

97½ seconds.

Add 12 rods = 660
198
858
8
6864
2288 = the distance of the hare when the dog started.
= the ground run over by the dog.

feet. sec. feet.
8448 0 : 3600 :: 2288
3600
1372800
6864
84480)8236800(97½
760320
633600
591360
42240
84480

16 Miles
8
128
40
5120
5½
25600
2560
28160
3
84480 feet

A Fellow said that when he counted his nuts 2 by 2, 3 by 3, 4 by 4, 5 by 5, 6 by 6, there was still an odd one; but when he told 7 by 7 they came out even; How many had he?

2
3
6
4
24
5
120
6
720
1
721 Ans.
103 even.

2, 3, 4, 5, 6, respectively will leave an odd one.

M. Questions **Continued** Sept. 18th 1820.

There is an Island, 60 Miles in circumference and 3 men start together to travel the same way about it: A goes 7 miles per day B 8 and C 9; when will they come together again, and how far will each travel?

$\frac{5}{350}$ $\frac{5}{400}$ $\frac{5}{450}$ $\frac{5}{24}$

24)120(5 days A 350 Miles B 400 and C 450 Miles
120
0

Suppose A leaves Newburyport at 6 o'clock on Monday morning, and travels towards Providence at the rate of 4 miles per hour without intermission, and that at 3 in the afternoon B sets out from Providence for Newburyport and travels constantly at the rate of 5 miles hour; Now suppose the distance between the two Towns to be 90 Miles; where about on the road will they meet?

$\frac{6}{9}$ hours the time A had travelled before B started

$\frac{4}{36}$ miles the Distance

$\frac{90}{54}$ miles remain to be travelled by both

$\frac{1}{11}$ miles an hour

$\frac{1}{11}$ of 54 + 36 = 5.5 $\frac{7}{11}$

$\frac{54}{11)594(}$

$\frac{36\ 7/11}{5\ 5\ 7/11}$ miles from Newburyport which is near Dedham

If during Ebb-tide a sloop should set out from Haverhill to come down the river, and at the same time another should set out from Newburyport to go up the river allowing the distance to be 18 miles Suppose the current towards the sea runs one and a half mile per hour; the boats are equally laden the powers are equally good and in common way of working in still water, would proceed at the rate of 4 miles per hour; where in the river will the two boats meet?

M. Questions **Continued.** Sept. 19th 1810.

$\overset{M}{4} + \overset{M}{1\tfrac{1}{2}} = \overset{M}{5\tfrac{1}{2}}$ and $\overset{M}{4} - \overset{M}{1\tfrac{1}{2}} = \overset{M}{2\tfrac{1}{2}}$ then $\overset{M}{5\tfrac{1}{2}} + \overset{M}{2\tfrac{1}{2}} = \overset{M}{8}$ in 1 hour by both

As $\overset{M}{8} : \overset{H}{1} :: \overset{M}{18} = \overset{H}{2\tfrac{1}{4}}$ then $\overset{M}{5\tfrac{1}{2}} \times \overset{H}{2\tfrac{1}{4}} = \overset{M}{12\tfrac{3}{8}}$ from Haverhill

and $\overset{M}{2\tfrac{1}{2}} \times \overset{H}{2\tfrac{1}{4}} = \overset{M}{5\tfrac{5}{8}}$ from Newburyport.

Three Persons purchase a vessel in company, towards the payment of which A advanced $\frac{2}{5}$ B $\frac{3}{7}$ and C £256; what did A and B pay each and what part of the vessel had C?

$\frac{2}{5} + \frac{3}{7} = \frac{14+15}{35} = \frac{29}{35}$ and $\frac{35}{35} - \frac{29}{35} = \frac{6}{35}$ C's part of the vessel.

As $\frac{6}{35} : \frac{256}{1} :: \begin{cases} \frac{14}{35} : £597\tfrac{6}{8} \text{ A advanced.} \\ \frac{15}{35} : £640 \text{ B advanced.} \end{cases}$

$\frac{35}{6} : \frac{256}{1} :: \frac{14}{35}$ — £597 6/8

$\frac{35}{6} : \frac{256}{1} :: \frac{15}{35}$ — £640

M. Questions **Continued.** Sept. 21st 1810.

A, B, and C are to share 100£ in the Proportion of 1/3 1/4 and 1/5 respectively; but C dying it is required to divide the whole sum properly between the other two?

As $\frac{1}{3}+\frac{1}{4}+\frac{1}{5} : 100 :: \begin{cases} \frac{1}{3} : 42\frac{26}{47} \text{ A's} \\ \frac{1}{4} : 31\frac{43}{47} \text{ B's} \\ \frac{1}{5} : 25\frac{25}{47} \text{ C's} \end{cases}$

$\frac{1}{4}+\frac{1}{5} = \frac{4+5}{20} = \frac{9}{20}$

$\frac{60}{47} : \frac{100}{1} :: \frac{1}{3}$

$\frac{60}{47} : \frac{100}{1} :: \frac{1}{4}$

$\frac{60}{47} : \frac{100}{1} :: \frac{1}{5}$

$\frac{1}{3}+\frac{1}{4} = \frac{7}{12}$

As $\frac{1}{3}+\frac{1}{4} : 25\frac{25}{47} :: \frac{1}{3} : 14\frac{582}{987}$

$\frac{12}{7} : \frac{1200}{47} :: \frac{1}{3}$

	S.	D.	Qrs.
£ 57	2	10	1/4

£100 · 0 · 0 · 0
57 · 2 · 10 · 1/4
42 · 17 · 1 · 3/4

£ 57 - 2 - 10 - 1/4 A's share

£ 42 - 17 - 1 - 3/4 B's share

John Downing Easthampton

Miscellaneous 2. Continued. Sept. 22d 1810.

There are 3 horses, belonging to different men employed as a team to draw a load of salt from Newburyport to Boston for £2 10. A and B are supposed to do 3/11 of the work; A and C 5/13 and B and C 4/14 of it; they are to be paid proportionably; can you divide it as it should be?

$A+B=\frac{3}{11}=,2727$
$A+C=\frac{5}{13}=,3846$
$B+C=\frac{4}{14}=,2857$
Sum ,9430

And 943 ÷ 2, the number combined

2)9430
4715

=,4715=A+B+C
=,2727=A+B
=,1988=C

Then, as, 4715 : 50 :: 1988 : £1 1s 0 3/4

4715)99400(21s
9430
5100
4715
385
12
4620(0
4
4715)18480(3/4
14145
4335

£1:1:0 3/4 = C

In the same manner proceed for the rest

Being about to plant 5292 fruit trees in rows the length of the grove is to be 3 times the breadth; how many of the shortest rows will there be?

$\sqrt{\frac{5292}{3}}\times 3=126$ rows. Ans. 1/3 of the trees are to form an exact square the side whereof being 42, shews how many come into a short row.

3)5292
$\sqrt{1,764}$(42
16
82)164
164

126 126

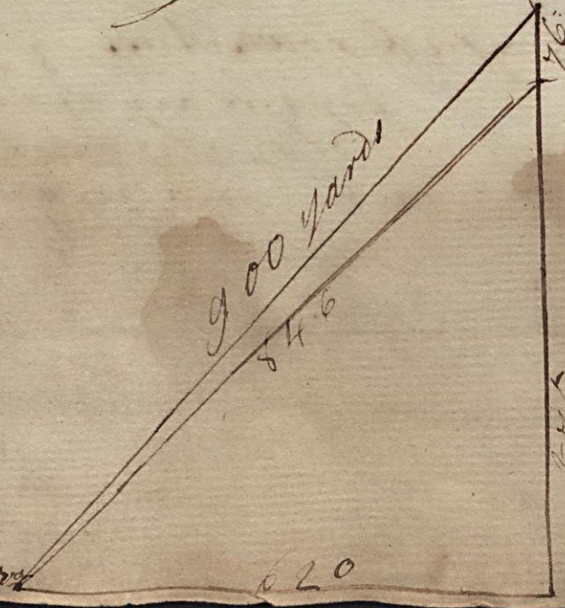
M. Questions Continued October 4th 180

A Genelal, disposing his army into a sqiuare battalion found he had 231 over and above; but increasing each side with one soldier he wanted 44 to fill up the square; How many men did his army consist of? o

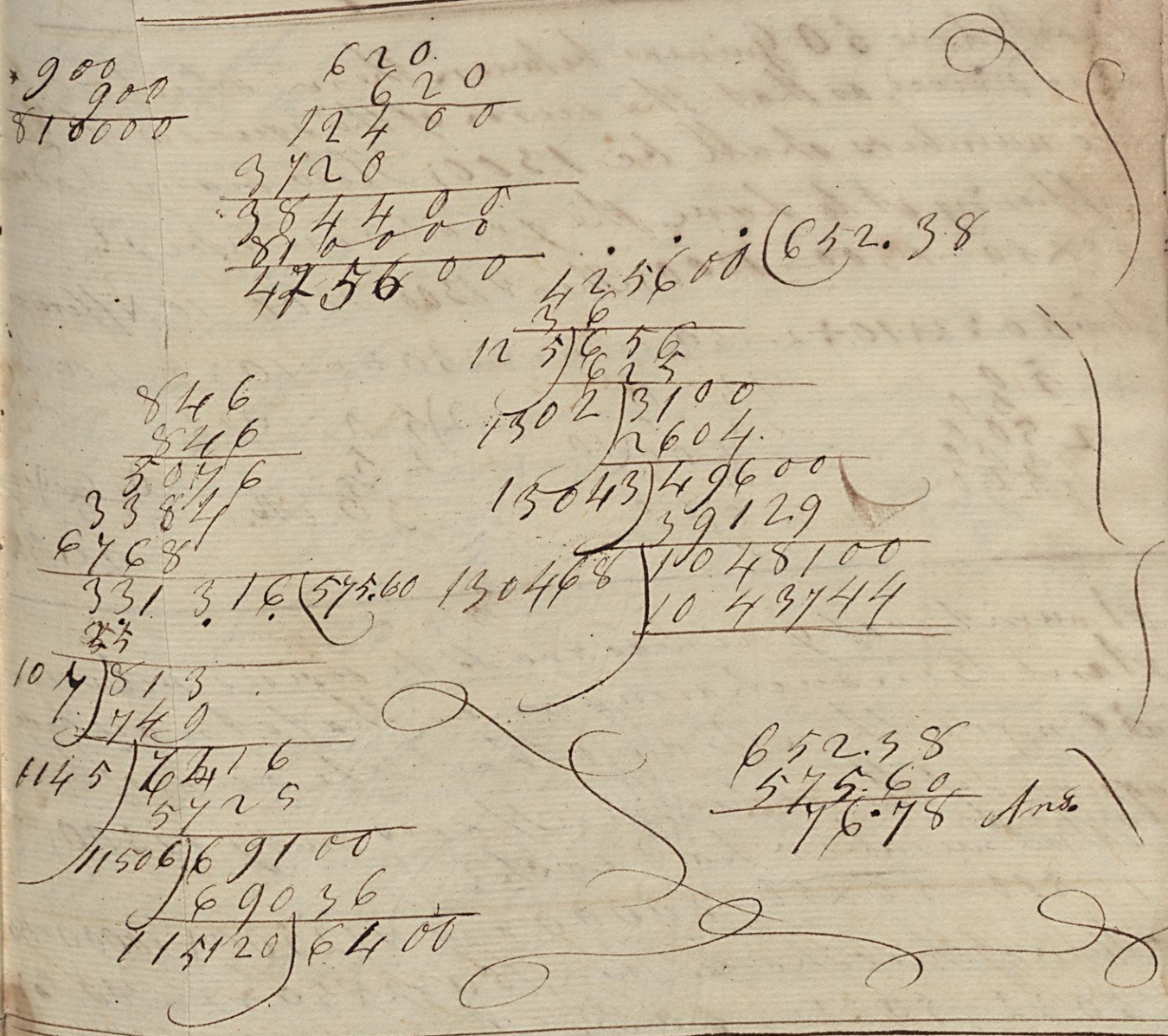
231+44=275, and 275-1÷2=137, then 137×137 +231=19000 Answer:

$$\begin{array}{r} 231 \\ 44 \\ \hline 275 \\ 275 \\ \hline 2)275 \\ 137 \\ 137 \\ \hline 959 \\ 411 \\ \hline 18769 \\ 19000 \end{array}$$ Ans.

Suppose a light house built upon the top of a rock; the distance between the place of observation and that part of the rock level with the eye 600 yards; the distance from the top of the rock to the place of observation 846 yards and from the top of the light house 900 yards; The height of the light house is required?

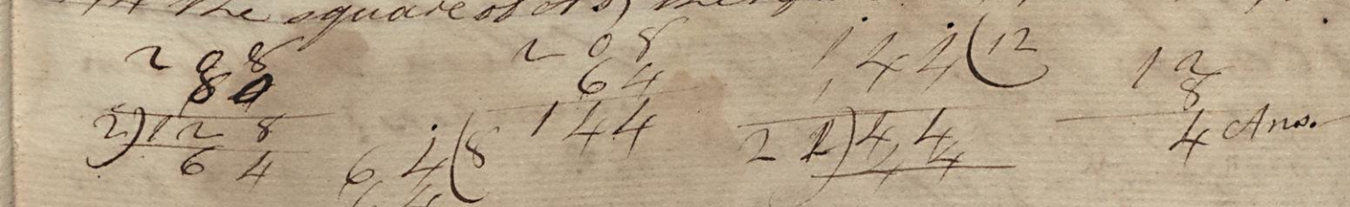


Continued. October 8th 1810.



A and B have between them a number of Guin- -eas which are to be so divided that the sum of their squares may be 208, and the differen- -ce of the squares 80; supposing A to the greater number, how many has he more than B.

208 − 80 ÷ 2 = 64 the square of B's, and 208 − 64 = 144 the square of A's; therefore √144 − √64 = 4 Ans.



M. Questions continued. Oct.r 9th 1810.

A and B have 50 Guineas between them which are to be so divided, as that the sum of the squares of the two numbers shall be 1300; How many had each supposing A to have the greater number?

50×50−1300=1200; Then √1300−1200=10 difference

Now 50÷2+10÷2=30=A's. And 50÷2−10÷2=20=B's. Ans.

1300 | 1200 | 100 (10 | 00

50 | 50 | 2500 | 1300 | 1200

2)50 | 2)10 | 25 | 5 | 30 A's.

25 | 5 | 20 B's.

A number of Guineas are to be divided betwixt A and B in such a manner that A may have 50 more than B and that the sum of the squares of the respective Shares may 12500; What number had each?

12500−50×50=10000, and √12500+10000=150 = sum of their shares. Then, 150÷2+50÷2=100 A's;

150÷2−50÷2=50 B's, Ans.

12500 | 10000 | 2500 (150 | 00

50 | 50 | 2500 | 12500 | 10000

2)150 | 2)50 | 25 | 25 | 100 A's share

75 | 25 | 50 B's Share

Let the sum of the squares of two numbers be 3161 and the square of their Half sum 1560,25; Required those numbers?

3161−1560,25×2=40,5 40,5÷2=20,25, and

√20,25=4,5=½ difference and √1560,25=39,5=½ sum.

Then, 39,5+4,5=44 the greater, and 39,5−4,5=35 the less.

15 | 60 | 25 | 20 | 25 (4,5 | 39,5 | 15 | 60,25 (39,5

3 | 1 | 20 | 5 | 5 | 85 | 4 | 25 | 69 | 6 | 00

3 | 1 | 60 | 25 | 4 | 25 | 39,5 | 35,0 the less | 65 | 39 | 25

2)40,5 | 20,25 | 39,5 | 4,5 the greater

Continued. Oct.r 9th 1810.

Suppose the battering ram of Vespation weighed 60000 lb; that it was moved at the rate of 24 feet in one second and that this was sufficient to demolish the walls of Jerusalem; with what velocity must a Cannonball which weighs 42 lb. be moved to do the same execution?

The velocity of the ram being 24, and the weight of the ball 42, compounded, will make a fraction = 24/42 = 4/7, and 4/7 × 60000 = 34285 5/7 feet in a second, Ans.

60000
4/7
7)240000
34285 5/7

24/42 (1
18)24(1
6)18(3

24 4/7
4/7

A Body weighing 30 lb. is impelled by such a force as to send it 20 rods in a second; with what velocity would a body weighing 12 lb. move if it were impelled by the same force?

30 × 20 / 12 = 50 Ans.

320
12)600
50 Rods in a second, Ans.

Of Gravity.

Suppossing a body to weigh 400 lb. at 2000 miles above the Earths surface; what would it weigh at the Surface, estimating the earths Semidiameter at 4000 miles?

From the Center to the given height being 1½ semidiameters — answer

multiply the Square of it by the weight and the product will be the

1,5 × 1,5 × 400 = 900 lb. Ans

1,5
1,5
75
15
2,25
400
900,00

M. Questions Continued. Oct.r 10th 1810.

If a Body weigh 900 lb. at the Surface of the Earth; what will it weigh at 2000 miles above the surface?
1,5 = 1,5 and 900 ÷ 1,5 X 1,5 = 400 lb. Ans.

1,5
1,5
75
15
225) 900,00 (400 lb Ans.
900
00

A certain Body on the Surface of the Earth weighs 180 lb how high must it be carried to weigh 20 lb?
√180 ÷ 20 = 3, Answer, 3 Semidiameters from the Earth's Centre, that is 8000 above its surface.

How high must a ball be raised to lose half its weight?
As 1 : 4000 X 4000 :: 2 : 32000000, and √32000,00 = 5656,85 miles, And 5656,85 − 4000 = 1656,85 miles, Ans.

1 : 16000000 :: 2
32000000 (5656,85
25
106) 700
636
1125) 6400
5625
11306) 77500
67836
113128) 966400
905024
1131365) 6137600
5656825

4000
4000
16000000

5656,85
4000
1656,85

If the attraction of the Moon raise a Tide on Earth 3 feet high: what will be the height of a Tide, raised by the Earth on the surface of the Moon under similar circumstances?
The attraction of one of those Bodies to the other's surface is directly as its quantity of matter and inversely as its diameter; therefore,
As 2182 X 2182 X 2182 X 494 : 5 :: 8000 X 8000 X 8000 X 400
: 199,5 feet ans.

M. Questions — Continued. Oct.r 15th 1810.

2182
2182
4364
17456
2182
43664
476112 4
2182
9522248
380899 2
47611 2 4
9522248
10388771256 8
494
4155509027 2
9349895312
feet.
4155509027 2
513205364859 2 : 5 :: 2048000000000 0
5

513,205,364,859 2) 1024000000000 0.0 0 (199.5
5132053648592
5107946351408
4618848283728
489098067671520
461884828373728
27213239301920
25660268242960
1552971058960

8000
8000
64000000
8000
512000000000
400
2048000.000.000.00

Of the fall of Bodies.

Heavy bodies near the surface of the Earth fall one foot the first Quarter of a second; three feet in the second Quarter; five feet in the third, and seven feet in the fourth Quarter; that is 16 feet in the first second. The velocities acquired by Bodies in falling are in proportion to the squares of the Times in which they fall. For instance Let go three bullets together; stop the First at one second and it will have fallen 16 feet. Stop the next at the end of the second second and it will have fallen (2X2=4) 4 times 16, or 64 feet and stop the last at the end of the third second and the distance fallen will be (3X3=9) 9 times 16 or 144 feet, and so on.

Or which is the same, the space fallen through (in feet) is always equal to the square of the Time in 4ths of a second.

Or by multiplying 16 feet by so many odd numbers, beginning at unity as there are seconds in the given time; by one for the first second; for the second by 3, for the third and so on these several products will give the spaces fallen

M. Questions Continued. Oct.r 18th 1810.

through, in each of the several seconds, and their sum will be the whole distance fallen.

The Velocity given to find the space fallen through.

Rule 1. The square root of the feet in the space fallen through will ever be equal to 1/8 of the velocity acquired at the end of the fall; Therefore,

2. Divide the velocity by 8 and the square of the Quotient will be the distance fallen through to acquire that velocity.

Suppose the velocity of a cannon ball to be about 1/8 of a mile or 660 feet per second; from what height must a body fall to acquire the same velocity per second?

660 ÷ 8 = 82,5 and 82,5 × 82,5 = 6806 1/4 feet, = 1 37/528 miles, ans.

8)660
82,5
82,5
4125
165 0
660 0
6806,25 = 1/4
1100

The Time given to find the space fallen through.

Rule 1. The square root of the feet in the space fallen through, will ever be equal to 4 times the number of seconds the body the body has been falling, therefore

2 Multiply the Time by 4 and the square of the product will be the space fallen through in the given time.

How many feet will a body fall in 5 seconds?

5 × 4 = 20 and 20 × 20 = 400 feet, ans.
20 20
400

A Bullet is dropped from the top of a building, and found to reach the ground in 1 3/4 of a second; Required its height? 1,75 × 4 = 7 and 7 × 7 = 49 feet, ans. Or 1 3/4 = 7/4
and 7 × 7 = 49. ans. 1,75
7,00
49 feet, Ans.

1 3/4
7/4
7/4 7/4
49 feet, ans.

Continued. Oct.r 19th 1810.

What is the difference between the depth of 2 wells into each of which should a stone be dropped at the same instant one would reach the bottom in 5 seconds and the other in 3?

5 × 4 = 20 and 20 × 20 = 400 feet.
3 × 4 = 12. and 12 × 12 = 144 feet.
Answer, 256 feet.

5	3
4	4
20	12
20	12
400	144
144	
Ans. 256 feet.	

Ascending Bodies are are retarded in the same ratio that Decending Bodies are accelerated; therefore If a ball discharged from a gun returned to the Earth in 12 seconds; How high did it ascend? I The ball being half of the Time or 6 seconds in its ascent, therefore,

6 × 4 = 24 and 24 × 24 = 576 feet, ans.

6
4
24

24
24
96
48
576 feet, Ans.

The Velocity per second given, To find the Time.

Rule. 1. Four times the number of seconds in which a body has been falling is equal to ⅛ of the velocity, in feet per second acquired at the end of the fall; Therefore,
2. Divide the given velocity by 8 and 1 fourth part of the Quotient will be the Answer.

How long must a bullet be falling to acquire the velocity of 160 feet per second?

8)160 ÷ 8 = 20 and 20 ÷ 4 = 5 seconds, Ans.
20

4)20
5 seconds, Ans.

How high must a ball be raised [illegible] fa-ces, to begin to decend with a velocity of 5,22449 feet per second?

As 16 : 4000 × 4000 :: 5,22449 : 49000000, and √49000000 = 7000; Wherefore, 7000 − 4000 = 3000 miles, Answer.

16 : 16000000 :: 5,22449
96000000
16000000
5,22449)2560000000(49000000
2089796
4702041
4702041
0

4000
4000
16000000

49000000(7000
49
00|00|00

M. Questions Continued. Oct. 19th 1810.

The space through which a body has fallen given to find the Time it has been falling.

Rules. 4 times the number of seconds in which the Body has been falling will ever be equal to the square root of of the space in feet through which it has fallen; therefore, 2. Divide the square root of the space fallen through by 4 and the Quotient will be the time in which it was falling.

In how many seconds will a bullet fall through a space of 10125 feet?

$\sqrt{10125} = 100,6$ and $100,6 \div 4 = 25,15$ seconds, $= 25'' 9''' 0^{ths}$.

10125 (100,6
2 00 01,25 00
2006 1,2500
1,2036

4) 100,6
25,15 = 25" 9"' 0ths
15 / 100 / 60
10 / 25 / 60
5 / 10 / 0

9) 6,06
6,74
6,66
3,62

5) 15 / 5) 100 / 20
3 / 20
20

3) 9 / 3 / 20
3) 6,20
15
100

In what Time would a musket-ball, dropped from the top of a Steple 484 feet high come to the ground?

$\sqrt{484} = 22$ and $22 \div 4 = 5\frac{1}{2}$ seconds, Ans.

484 (22 seconds, Ans.
4
42) 84
84

How many feet will a body fall in 5 seconds?

$5 \times 4 = 20$ and $20 \times 20 = 400$ feet, ans.

A Bullet is dropped from the top of a building, and found to reach the ground in $1\frac{3}{4}$ of a second; Required its height? $1,75 \times 4 = 7$ and $7 \times 7 = 49$ feet, Ans. Or $1\frac{3}{4} = 7^{ths}$.
Ans $7 \times 7 = 49$. Ans.

1,75
7,00
49 feet, Ans.

1 3/4
7/4
7/4
49 feet, ans.

Continued. Oct.r 20th 1810

To find the velocity per second with which a heavy body will begin to decend at any distance from the Earths surface.

Rule. As the square of the Earths Semidiameter is to 16 feet: so is the square of any other distance from the Earths center inversely to the velocity with which it begins to decend per second.

With what velocity per Second will an iron ball begin to decend, if raised 3000 miles above the Earths surface?

As $4000 \times 4000 : 16 :: \frac{4000 + 3000}{3000} \times \frac{4000 + 3000}{7000} : 5,22449$ feet, Ans.

$4000 \times 4000 = 16000000$

$7000 \times 7000 = 49000000$

Miles. Feet. Miles.

$16000000 : 16 :: 49000000$

$16 \times 6 = 96$

96000000

16000000

$49000000 \overline{)256000000} (5,22449$ Ans.

245000000

11000000

9800000

1200000000

980000000

220000000

196000000

24000000

19600000

4400000000

4410000000

How high must a Ball be raised above the Earths surface, to begin to decend with a velocity of 5,22449 feet per second?

As $16 : 4000 \times 4000 :: 5,22449 : 49000000$, and $\sqrt{49000000} = 7000$. Wherefore, $7000 - 4000 = 3000$ miles, Answer.

$16 : 16000000 :: 522449$

$16 \times 6 = 96$

96000000

16000000

$522449 \overline{)256000000} (490$

2090796

4902041

0

$4000 \times 4000 = 16000000$

$49000000 \overline{)7000}$

49

0000000

M. Questions — Continued. October 23d 1810.

To find the mean velocity of a falling Body.

Rule. Divide the space fallen through by the number of seconds it was falling, and the Quotient will be the mean velocity.

A musket-Ball dropped from the top of a steple 484 feet high in 5½ Seconds; required its mean velocity.

484 ÷ 5,5 = 88 feet per Second, Ans.

5,5)4840.(88
440
440
0

To find the velocity acquired by a falling Body per Second, (or by a stream of water, having the perpendicular ascent given) at the end of any given period of Time.

Rule. 1. The velocity acquired at the end of any Period is equal to twice the mean velocity with which it passed during that Period.

Or 2. Multiply the perpendicular space fallen through by 64, and the square root of the product is the velocity required.

If a ball fall through the space of 484 feet in 5½ seconds; with what velocity will it strike?

By the first part of the rule
484 ÷ 5,5 = 88, and 88 × 2 = 176

5,5)4840.(88
440
440
0

88
176 Ans.

By the last part without the Sine
√484 × 64 = 176 Ans.

484
64
1936
2904
30976 (176 Ans.

27)209
189
346)2076
2076

Continued. Oct.r 24th 1810.

There is a sluice (or flume) one end of which is 2½ feet lower than the other; what is the velocity of the stream per second? 2,5 × 64 = 160 and √160 = 12,649 feet, Ans.

$$
\begin{array}{l}
1\dot{6}\dot{0}\,(12,649\text{ feet Ans.}\\
22)\,60\\
\,44\\
246)\,1600\\
\,1476\\
2524)\,12400\\
\,10096\\
25289)\,230400\\
\,227601\\
\,\,2799
\end{array}
\qquad
\begin{array}{r}
2{,}5\\
64\\
\hline
100\\
150\\
\hline
160{,}0
\end{array}
$$

The velocity with which a falling body strikes given to find the space fallen through.

Rule. Divide the square of the velocity by 64, and the Quotient will be the height required.

If a ball strike the ground with a velocity of 56 feet per second from what height did it fall? 56 × 56 ÷ 64 = 49 feet, Ans.

$$
\begin{array}{r}
56\\
56\\
\hline
336\\
280\\
\hline
3136
\end{array}
\qquad
\begin{array}{l}
64)\,3136\,(49\\
\,256\\
\,\,576\\
\,\,576
\end{array}
$$

The mean velocity of a Fluid or stream is 12,649 feet per second; what is the perpendicular fall of the stream

12,649 × 12,649 ÷ 64 = 2½ feet, Answer.

$$
\begin{array}{r}
12{.}649\\
113841\\
50596\\
75894\\
25298\\
12649\\
\hline
\end{array}
\qquad
\frac{2{,}499956}{1000000} = 2\tfrac{1}{2}\text{ nearly}
$$

$$
\begin{array}{l}
64)\,159997201\,(2{,}499956\\
\,128\\
\,\,319\\
\,\,256\\
\,\,\,639\\
\,\,\,576\\
\,\,\,\,637\\
\,\,\,\,576\\
\,\,\,\,\,612\\
\,\,\,\,\,576\\
\,\,\,\,\,\,360\\
\,\,\,\,\,\,320\\
\,\,\,\,\,\,\,401
\end{array}
$$

…600 seconds therefore 3600×3600
…018 miles and 96 feet, for towe…

Continued. Oct. 25th 1810.

M. Questions

The weight of a body and the space fallen through given to find the force with which it will strike.

Rule. The momentum or force with which a falling body strikes is equal to its weight multiplyed by its velocity therefore find the velocity by Problem 7 0th and multiplyit by the weight, which will Produce the force required.

If the rammer used for driving the Piles of Charlestown Bridge weighed 2½ tons or 4500 lb. and fell through a space of 10 feet, with what force did it strike the Pile?

10 × 64 = 25,3 = velocity & 25,3 × 4500 = 113850 lb. force, Ans.

64 (25,3
4
45)240
225
503)1509

4500
2 5 3
13500
22500
9000
113850,0 Answer.

The weight and Momentum or striking force given to find the space fallen through.

Rule. Divide the Momentum by the weight and the Quotient will be the velocity, then divide the square of the velocity by 64 and the Quotient will be the space fallen through

If the aforementioned rammer weighed 4500 lb. and struck with a force of 113850 lb. From what height did it fall? 113850 ÷ 4500 = 25,3 & 25,3 × 25,3 ÷ 64 = 10 feet, Ans.

4500)113850(25,3
9000
23850
22500
13500
13500

25,3
25,3
759
1265
506
64)640,09(10,00 = 10 feet, Answer.
64
009

Continued. Oct.r 25th 1810

Of Pendulums

The Time of a vibration in the Cycloid is to the Time of a heavy Body's decent through half its length as the circumference of a circle is to the Diameter, that is, as 3,1416 to 1; Therefore as a Body decends freely, by gravity through about 193,5 Inches in the first second) To find the length of a Pendulum, vibrating seconds.

Rule. As 3,1416 X 3,1416 : 1 X 1 :: 193,5 : 19,6 Inches the ½ length, and 19,6 X 2 = 39,2 Inches, the length.

3,1416
3,1416
18496
31416
25664
31416
94248
9,869650 56 : 1 :: 193,500000000 (
193,500000000 (19,6
9,869650 56
948031940
88268550 4
5976639 36
9,869650 56 = 1 6/10

19,6
39,2 Inches, Ans.

To find the length of a pendulum, that will swing any given time.

Rule. Multiply the square of the seconds in any given Time by 39,2 and the Product will be the length required in Inches.

Required the lengths of several Pendulums, which will swing respectively ¼ Seconds, ½ seconds seconds, minutes and hours? ,25 X ,25 X 39,2 = 2,45 Inches for ¼ seconds. 5 X 5 X 39,2 = 9,8 Inches for ½ seconds. 1 X 1 X 39,2 = 39,2 Inches for seconds. 60 X 60 X 39,2 = the Inches in 2 miles and 120 feet, for Minutes; and 1 hour = 3600 seconds therefore 3600 X 3600 X 39,2 = 4 the Inches in 8018 miles and 96 feet, for hours Ans.

M. Questions Continued Oct.r 29th 1810

What is the Difference between the length of a Pendulum which vibrates Half-seconds and one which swings 3 seconds?

3 × 3 × 39,2 − ,5 × ,5 × 39,2 = 28 7/12 feet, Ans.

3 / 9 — 39,2 — 5 / 25 — 25 / 7960 — 352,8 — 9,8 — 784 / 9,800

12) 94 3,0

28 7/12 Ans.

To find the Time which a Pendulum of any given length will swing.

Rule. Divide the given length by 39,2 and the Quotient will be the square of the time in seconds.

Or, as 6,2696 (the square root of 39,2) is to the square root of the given length; so is 1 second, to the time of 1 oscillation; that is, divide the square root of the given length by 6,2696 and the Quotient will be the time of one vibration of that Pendulum.

How often will a Pendulum of 9,8 Inches vibrate in a second

By the former part of the rule 9,8 ÷ 39,2 = ,25 of a second and √,25 = ,5 of a second, the time of one vibration, that is, it vibrates half-seconds or 60 ÷ ,5 = 120 times in a minute.

By the latter part. √9,8 = 3,13, and √39,2 = 6,2696 therefore 3,13 ÷ 6,2696 = ,5 of a second.

I Observed that while a stone was falling from a Precipice a string (with a Bullet at the end) which measured 25 Inches, (to the middle of the Ball) had made 5 vibrations; what was the height of the precipice?

25 ÷ 39,2 = ,6377 and √,6377 = ,7985 of a second, the Time of one vibration, and ,7985 × 5 = 4 seconds, nearly, the Time of the stones decent, then 4 × 4 = 16, and 16 × 16 = 256 feet, Answer

39,2) 25,000 (6377 — 2352 — 4760 — 3920 — 2744 — 2760

6377 (7985 — 49 — 1477 — 1588 — 12764 — 15965 — 89600 — 79825

,7985 — 5,9925 = 4 nearly

4 — 4 — 16 — 96 — 16 — 256 feet, Ans.

Continued. Oct.r 30th 1810.

To find the true depth of a well by dropping a stone into it also the time of the stone's decent, and of the sound's accent. Rule 1. Take a line of any length and by the last Problem find the time from the dropping of the stone 'till you hear it strike the bottom.

2. Multiply 7308 (=16×4×1142; 1142 feet being the distance, which sound moves in a second) by the number of seconds 'till you hear the stone strike the bottom.

3. To this product add 1304164 (= the square of 1142) and from the square-root of the sum take 1142.

4. Divide the square of the remainder by 64 (=16×4) and the quotient will be the depth of the well in feet.

5. Divide the depth by 1142 and the quotient will be the time of the sound's ascent, which being taken from the whole time will leave the time of the stone's decent in seconds.

Suppose I drop a stone into a well, and a string with a plummet which measured to the middle of the Ball 25 Inches made 5 vibrations before I heard the stone strike the Bottom; Required the Depth, Time of the stone's decent, and of the sound's ascent?

25 ÷ 39,2 = ,6377, and √,6377 = ,7985, and ,7985 × 5 = 4 seconds to the leaving of it strike, then √7308×4+1304164 − 1142 = = 121,53 and 121,53 × 121,53 ÷ 64 = 230,77 feet, the depth, and 230,77 ÷ 1142 = 2 of a second, the time of the sound's ascent, and 4 − ,2 = 3,8 second, the time of the stone's decent.

M. Questions Continued. Oct. 30th 1820.

Of the Lever or Steelyard.

It is a principal in Mechanics that the Power is to the weight as the velocity of the weight, to the velocity of the Power. Therefore, To find what weight may be raised or balanced by any given power, say;
As the Distance between the body to be raised or balanced and the Fulcrum or Prop, is to the distance between the Prop and the Point Where the power is applied; So is the Power to the weight it will balance.

If a man weighing 160 lb. rest on the end of a lever 10 feet long; what weight will be balance on the other end, supposing the prop one foot from from the weight?
The distance between the weight and prop being 1 foot the distance from the prop to the Power is 10 — 1 = 9 feet, Therefore

	ft. ft.	lb	lb		ft. ft.	lb
As	1 : 9 ::	160	: 1440 Ans.		1 : 9 ::	160
						9
					lb	1440 Ans.

If a weight of 1440 lb. were to be raised with a lever of 10 and the prop fixed 1 foot from the weight, what Power or weight, applied to the other end of the Lever, would balance it?

As	9 : 1 ::	1440 :	160 lb	Ans.
	9 : 1 :: 1440			
	9) 1440 (160 lb Ans.			

If a weight of 1440 lb. be placed 1 foot from the prop at what distance from the prop must a power of 160 lb be applied to balance it?

As 160 : 1440 :: 1 : 9 feet, Ans. 160 : 1440 :: 1

160) 1440 (9
1440

At what distance from a weight of 1440 lb. must a prop be placed, so as that a power of 160 lb. applied 9 feet from the prop, may balance it?

As 1440 : 160 : 9 : 1 foot, Ans. 1440 : 160 :: 9

1440) 1440 (1 foot, Ans.
1440

Continued. Oct. 20th 1810.

In giving directions for making a chaise the length of the shafts between the saddletree and back-band, being settled at 9 feet, a dispute arose whereabout on the shafts the center should be fixed. The Chaisemaker advised to fix it 30 Inches before the axle-tree; others supposed 20 Inches would be a sufficient Incumberance for the Horse; Now supposing 2 passengers to weigh 3 Cwt. and the Body of the Chaise 3¼ Cwt. more; what will the least in both these cases bear, more than his harness?

Weight of the Chaise and Passengers 3¾ Cwt. = 420 lb.

and 9 feet = 108 Inches. Then, As 108 : 420 :: { 30 : 116⅔ / 20 : 77⅞ } Ans.

108 : 420 :: 30
108) 12600 (116⅔ Ans.
108
180
108
720
648
72
108 = ⅔

108 : 420 :: 20
108) 8400 (77⅞ Ans.
756
840
756
84
108 = 7/9

Of the Wheel and Axle.

The proportion for the wheel and axle (in which the Power is applied to the circumference of the wheel and the weight is raised by a rope which coils about the axle as the wheel turns round) is, As the Diameter of the axle is to the Diameter of the wheel; so is the Power applied to the wheel, to the weight suspended by the axle. A Mechanic would make a windlass in such a manner as that 1 lb applied to the wheel, should be equal to 10 lb. suspended from the axle; Now, supposing the axle to be 6 Inches diameter; Required the Diameter of the Wheel?

lb. in. lb. in.
As 10 : 6 :: 1 : 60 Inversely the Diameter required

10 : 6 :: 1
6
60 Ans.

Suppose the Diameter of the wheel to be 60 Inches required the Diameter of the axle so as 1 lb. on the wheel may balance 10 lb. on the axle?

lb in lb in
Inversely, As 1 : 60 :: 10 : 6 Diameter required.

1 : 60 :: 10
10
60 Ans.

M. Question Continued. Oct. 31st 1810.

Suppose the Diameter of the axle 6 Inches and that of the wheel 60; what Power at the wheel will balance 10 lb at the Axle? Inversely As 6 in. : 10 lb :: 60 in. : 1 lb 6 : 10 :: 60 : 1 Ans.

60)60(1 Ans.

Suppose the Diameter of the wheel 60 inches and that of the Axle 6 Inches; what weight at the axle will balance 1 lb at the wheel? Inversely, As 60 in. : 1 lb :: 6 in. : 10 lb, Ans.

60 : 1 :: 6
6)60(10 lb. Ans.

Of the Screw.

The Power is to the weight which is raised as the distance between two threads of the Screw is to the circumference of a Circle Described by the Power applied at the Lever. Rule. Find the circumference of the circle described by the end of the Lever; then as the circumference is to the distance between the spiral threads of the Screw; So is the weight to be raised to the Power which will raise it abating the friction which is not proportional to the Quantity of surface; but to the weight of the Incumbent part; and at a medium ⅓ part of the effect of the machine is destroyed by it sometimes more and sometimes less.

There is a Screw whose threads are an inch asunder & the Lever by which it is turned 30 Inches long and the weight to be raised a ton, or 2240 lb. what Power or force must be applied to the end of the Lever sufficient to turn the Screw - that is, to raise the weight?

The Lever being the Semidiameter of the circle the Diameter is 60 Inches; then 3,1416 × 30 = 188,496 inches, the circumference: Therefore, As 188,496 in. : 1 lb :: 2240 : 1,188, Ans.

Continued. Oct. 31st 1810.

Let the Lever be 30 Inches, (the circumference of which is found to be 188,496) the Threads 1 each asunder and the Power 1,88 lb. Required the weight to be raised?

in. in. lb. lb.
As 1 : 188,496 :: 1,88 : 2240 nearly

1 : 188,496 :: 1,88
1,88
150796 8
150796 8
188496
188496
22895 3 2 48

Let the weight be 2240 lb. the Power 1,88 lb. and the Lever 30 Inches, Required the distance between the threads?

lb. lb. in. in.
As 2240 : 1,88 :: 188,496 : 1 nearly, Ans.

Let the Power be 1,88 lb. the weight 2240 lb. and the threads an inch asunder, to find the length of the Lever?

lb. lb. in. in.
As 1,88 : 2240 :: 1 : 188,5 Then as 355 : 113 :: 188,5 : 60 inches nearly the diameter and 60 ÷ 2 = 30 inches, Ans.

Suppose one of those Meteors called Fire-balls to move parallel to the Earths surface and 50 Miles from it at the rate of 20 miles per second; in what time would it move round the Earth?

Suppose the Earths Diameter 8000 miles, then 8000 + 50 x 2 = 8100 the diameter of the circle described by the Ball Then, as 113 : 355 :: 8100 : 25446 miles nearly its circumference, and 25446 ÷ 20 = 1272 6 Seconds = 21′ 30″ 3‴ Ans.

8000
100
8100

52
100

113 : 355 :: 8100
8100
3550
2540
1130
2420
1130
2900
2260
6400
5650
7500
6780
7200
6780
420

20)25446(
20
1272 6 = 21′ 30″

M. Questions. Continued. Oct. 31st 1810.

Sound uninterrupted, moves about 1142 feet in a second; how long then after the firing of a cannon at Newbury port before it will be heard at Ipswich estimating the Distance at 10 miles in a right line?

10 miles = 52800 feet, and 52800 ÷ 1142 = 46 134/571 Seconds Ans.

1142)52800(46
4568
7132
6852
2680
1142

In a thunderstorm I observed by my Clock that it was 6 seconds between the lightning and the thunder; at what distance was the explosion?

1142 × 6 = 6852 feet = 1 13/20

6852

2)6852
2)3426
3)1713
40)570 3 = 5
11 2/40
1 = 4/40

Tubes may be made of gold weighing not more than at the rate of 1/625 of a grain per foot; what would be the weight of such a Tube, which would extend across the Atlantic, from Boston to London estimating the distance at 3000 miles? 3000 × 5280 = 15840000 feet,

and 15840000 × 1/625 = 9744 69/100 grains = 2 oz. 6 pwt. 3 69/100 gr. Ans.

5280
15840000

The mean distances of the Planets from the Sun in English miles are as follows, viz. Mercury 36842468. Venus 68891486. The Earth 95173000. Mars 145814448. Jupiter 494990976. Saturn 907956130. The Moon 240000 from the Earth. How as a Cannon ball at its first Discharge flies about a mile in 3 seconds and sound 1142 feet per Second; How long would a Bullet at the aforementioned rate be in passing from the Earth to the Sun, and Sound in moving from the Sun to Saturn?

Continued Novr 1st 1810

95173000 × 8" = 24 Years, 52 days, 8 hours, 33, minutes, 20 sec
for the passage of the Ball; and 90795613 0 × 5280 =
= 479400836 6400 feet, and 4794008366400 ÷ 1142 =
= yrs. 133, d. 41, h. 20, m. 55, s. 49 521/571; So long would sound be in passing
from Sun to Saturn.

Light passes from the Sun to the Earth in about 8 minutes.
How long would it be passing from the Sun to Herschell's
Planet, or the Georgium Sidus, supposing it to be 5000000000
miles? As 95173000 : 8' :: 5000000000 : h. 7, m. 0, s. 17, "' 7 Answer.

The Diameter of the Sun is 890000 miles. — Mercury's
Diameter 3000, Venus's 7924, the Earths 7970, Mars 5338, Jupi-
ter's 156446, Saturn's 114172, and the Moon's 2182; what is the
comparative magnitude between the Sun and the Earth,
and between the Earth and all others?
The Sun = 890000 × 890000 × 890000 ÷ 7970 × 7970 × 7970
= 1392499,52 times larger than the Earth. — The Earth =
7970 × 7970 × 7970 ÷ 3000 × 3000 × 3000 = 18,75 larger than
Mercury. = 7970 × 7970 × 7970 ÷ 7924 × 7924 × 7924 =
1,0175 times larger than Venus. = 7970 × 7970 × 7970
÷ 5400 × 5400 × 5400 = 3,21 times larger than Mars. =
7970 × 7970 × 7970 ÷ 2182 × 2182 × 2182 = 48,82 times larger
than the Moon. Jupiter = 94000 × 94000 × 94000 ÷ 7970 ×
7970 × 7970 = 1640,62 times larger than the Earth. — Saturn
= 78000 × 78000 × 78000 ÷ 7970 × 7970 × 7970 = 937,36
times larger than the Earth.

Spiritous Liquors

The Four following Problems relating to Spiritous Liquors
are wrought by alligation.
What proportion of rectified Spirits of wine must be mixed
with water to make proof spirit; the specific gravity
of the rectified spirits being 850, that of proof spirit
925, and of water 1000?

grs { 1000 : 75 ; 850 : 75 } or equal measures

(66)

M. Questions Continued. Nov. 1st 1810.

What proportional weight of rectified spirits of wine and water must be mixed, to make proof spirit the specific gravities as before?

Ans $\frac{1000}{850} = \frac{20}{17}$ or as 20 to 17.

What is the specific gravity of best French Brandy consisting of 5 parts, measure, of rectified spirits of wine, and 3 parts water?

$850 \times 5 = 4250$

$1000 \times 3 = 3000$

$5 + 3 = 8) 7250$

$906,25$ = Specific gravity.

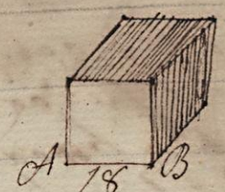
A Retailer has 30 gallons of Rum, whose specific gravity is 900. How much water must be added, to reduce it to standard proof?

$$\text{as } 25 \left\{ \begin{matrix} 1000 \\ 900 \end{matrix} \right\} \begin{matrix} 25 \\ 75 \end{matrix} \left\} \begin{matrix} \text{G. Rum} \\ \text{to} \end{matrix} \right. \begin{matrix} \text{G. Wat.} \\ 75 \end{matrix} \begin{matrix} \text{G. Rum} \\ :: 25 \end{matrix} :: \begin{matrix} \text{G. Wat.} \\ 30 \end{matrix} : 10 \text{ to be added.}$$

Of Solids. Nov. 5th 1810.

Multiply the side by itself and that product by the same side and this last product will be the solid content of the cube

Example. The side of a cube A B, being 18 inches or 1 foot and 6 inches to find the content?



1 Foot 6 inches = 1,5 Feet

1,5
1,5
2,2 5
1,2 5
2,7 5
3,3 7 5

In this operation the inches are changed into the decimal parts of a foot.

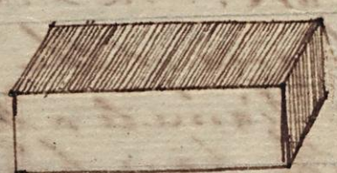
To measure a Parallelopipedon.

Definition. A Parallelopipedon is a solid of 3 dimentions, length, breadth, and thickness; as a piece of timber square squared whose length is more than the breadth and thickness. The ends are called Bases, which are equals.

Rule. Find the area of the Base, then multiply that by the length and it will give the solid content.

Example. 1. The side of B is 1,5 foot and the length 9,5 feet to find the solid content?

1,5 = 1 foot 6 inches.
1,5
7,5
12,25
3,0625 = area of the base.
9,5
15312,5
27562,5
29,09375 = Solid Content.



Exam. 2. A Vessel 3,5 feet each side within, and 5 feet deep to find the Content?

3,5
3,5
17,5
10,5
12,25
61,25 = the Content

Of solids. Continued. Nov. 7th 1810.

If a peice of timber or any other thing be of an equal bigness throught its whole length though there be a difference between the breadth and thickness are multiplied together and that product multiplied by the length this last product will be the solid content.

Examp. 1. A peice of timber being 1 foot and 6 inches or 18 inches broad, 9 inches thick, and 9 feet 6 inches or 114 inches long, to find the content?

1 foot 6 inches = 1,5 Foot
9 inches = ,75 Foot

1,5
,75
75
105
1125

9 feet. 6 inches 114
95
5625
10125
10,6875 = Content

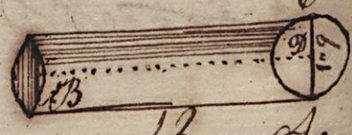
In this operation the inches are changed into the Decimal part of a foot.

To measure a Cylinder.

Definition. A Cylinder is a round Body whose Bases are circles like a round Column, or a roling Stone of a garden.

Rule. The Diameter of the base being given find the area of the end by multiplying the square of the Diameter by ,7854 then multiplying the area of the base by the length and that product will be the content of the cylinder.

Example. The Diameter of the Base AC being 1 foot and 9 inches, and the length BD 12 feet, 6 inches, to find the content?



12
2,405 = area of Base
12,5 = Length
12025
4810
2405
30,0625 = Content

Continued. Nov. 8th 1810.

To find how much a cylindric or round tree, that is equally thick from end to end, will hew to, when made square.

Rule. Multiply twice the square of its semidiameter by the length then divide the product by 144, and the quotient will be the answer.

If the diameter of a round stick of Timber be 24 inch. from end to end and its length 20 feet; how many solid feet will it contain when hewn square; and what will be the content of the slabs which reduce it to a square?

24
24
7854
31416
62832

12
12
144
288
144) 5760 (40
576
0

40 the solid feet of the slabs.

To measure a Prism.

Rule. Prisms of all kinds, whether square, triangular or polygonal, are measured by one general rule viz. Find the superficial content or area at the base (or end) by the proper rule and this multiplied by the length or height of the Prism, will give the soled content.

Examp. The side of a stick of Timber, A B, hewn square, is 10 inches, and the length A C, is 12 feet; to find the content?

Side = 10 inches
½ perp. = 4½ inches
4½ area at the end.
12 feet = length
144 504 (3,5
432
720
720

Artificers, When they set off the corner of a building usually measure 6 feet on one side and 8 on the other then laying a ten feet pole across it makes the corner a true right angle.

Of solids Continued. Nov. 9th 1810.

To measure a Pyramid.

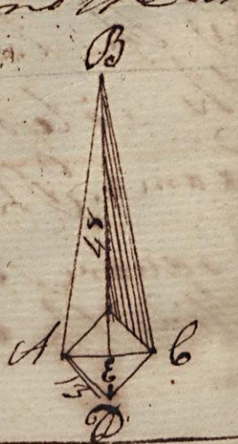
Rule. Find the area of the base whether triangular square, polygonal, or circular, by the Rules in superficial measure; then multiply this area by one third of the height, and the product will be the solid content of the Pyramid.

Examp. 1. In a triangular pyramid the height BE being 48 and each side of the base 13; the base being a triangle let the perpendic. height DE be 11; to find the content?

5,5 = Half CD
13 = Base AC
165
55
71,5 = Area of the base,
16 = ⅓ of the height EB
429
71 5
1144,0 Content.

Examp. 2. In a quadrangular Pyramid, the height BE being 48 and each side of the base 13, to find the content.

13
13
39
13
169 = area of the base.
16 = ⅓ of the height EB
1014
169
2704 = Content.



Examp. 3. To measure a Cone.— The diameter AC being 13, and the height BD 48 to find the content.

13
13
39
13
169 = area base.
16 = ⅓ of height
1014
169
2704 = Content.

Continued. Nov. 9th 1810.

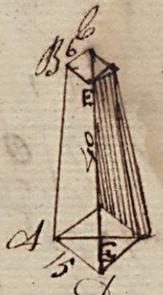
Note. the superficial content of all Pyramids is found by taking the sum of the several areas, which compose them. That of a cone by multiplying the circumference of the base into half the line joining the vertex and any point in that circumference, and adding the area of the base to the product.

To measure the frustrum of a Pyramid.

Examp. 1. In the frustrum of a square Pyramid the side of the greater base AD = 15, the side of the less BE = 6, and the height CF = 40, to find the content.

15 = AD
6 = BE
Prod = 90
Add 27
117
× 40
4680 = Content.

15
6
9 = Difference.
9
3 6 1
2 7 = 1/3 of the square.



If there be a tapering square stick of timber, take the girth of it in the middle; square 1/4 of the girth then say as 144 (inches) is to that product; so is the length taken in feet, to the content in feet.

Examp. 2. In the frustrum of a triangular pyramid the side of the greater base AC = 15, as before the side of the less BD = 6, and the height CF = 40, to find the content.

15 = AC
6 = BD
9 = Diff. of the sides.
3 8 1 = square of diff.
2 7 = 1/3 of the square.

15
6
a 1 2 2 9
117
433 Multiplier.
351
351
2166 = Mean area.
40 = Height.
20826,40 = Content.

(7.2)

Solids Continued. Nov. 10th 1810.

To measure the frustrum of a cone.

The Former cone being cut off in the middle, the greater diameter A C is 13 the less B D 6½ and height E F 24, to find the content of the frustrum.

A C = 13 inches
B D 6,5 inches
65
78
645
Add 14083
98583
7854
39 4332
49 29155
78 8664
69 00681
77,427 | 0882 = Mean area.
24 Feet = Length.
309708
154854
1858,248 = Content.

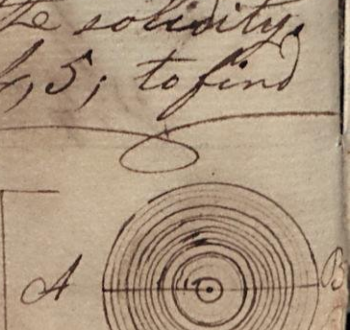
13
65
65 = Difference.
65
325
390
3)422 5 = {Square of the diff.
14,083 = ⅓ of square.

144)1858,248(1397 3 feet content.
144
418
288
1302
1296
1064
1008
568
432
136

To measure a Sphere or Globe

Rule. Multiply the cube of the diameter by ,5236 and the Product will be the solid content.
Or multiply the Circumference by the Diameter which will give the superficial content, the multiply the surface by ⅙ of the diameter, and it will give the solidity.
Or Multiply the cube of the diameter by 11, and the product divided by 21, will give the solidity.
Examp. The diameter A B of a Globe is 4,5; to find the solid content.

4,5
4,5
225
180
20,25
4,5
10125
8100
91,125
,5236
546750
273375
182250
455625
47,7130500



Continued. Nov. 12th 1810.

To measure the solidity of a frustrum or segment of a Globe.

Rule. To three times the square of the semidiameter of the Base, add the square of the height; then multiply that sum by the height and the product by ,5236, you will have the solid content.

Examp. The height BD being 9 inches and the diameter of the Base AC 24 inches: to find the content.

12 = Semidiam.
12
144 = Square
× 3
432 = Square of
81 = the height
9 = height
4617

4617
,5236
27702
13851
9234
23085
2417,4612 = Solid content.

To measure a Spheroid.

Rule. Multiply the square of the diameter of the greatest Circle viz the diameter of the middle (DB in the figure) by the length AC and that product by ,5236 and you will have the Solidity.

Examp. The diameter BD being 20 and the length AC 30 to find the content.

20
20
400
30
12000

12000
,5236
72000
36000
24000
6000
6283,2000 ans.

To measure the segment of a spheroid.

Rule. To four times the square of the middle diameter add the square of the base diameter, then multiply that sum by ,7854, and that product by one sixth of the altitude and it will give the solidity of the base-diameter of the end-frustrum of a

Solids — Continued. Nov. 13th 1810.

a Spheroid be 36, diameter at the middle of the height 30, and the height 20 inches; Required the solidity!

$30 \times 30 \times 4 + 36 \times 36 \times ,7854 \times 3,3 = 12817,728$ Ans. No.

$20 \div 6 = 3,3.$

To measure a Parabolic Conoid.

Rule. As a Parabolic Conoid is half of its circumscribing Cylinder, of the same base and altitude; multiply the area of the base by half the height for the solidity.

If the Diameter of the base of a parabolic Conoid be 40 inches; and its height 42 inches the solidity? $40 \times 40 \times ,7854 \times 21 = 26,3944$ Ans.

To measure the lower Frustrum of a Parabolic Conoid.

Rule. Multiply the sum of the squares of the diameters of the bases by ,7854 and that product by half the height for the solidity.

If the diameters of a frustrum of a parabolic Conoid be 40 and 30 inches and its height 20 inches; Required its solidity?

$40 \times 40 + 30 \times 30 \times ,7854 \times 10 = 1963,5$ Ans.

To measure a parabolic Spindle

Rule This Solid being eight fifteenths of its least circumscribing Cylinder multiply the area of its middle or greatest diameter by $\frac{8}{15}$ of its perpendic. length and it will give its solidity.

Continued. Nov. 13th 1810.

If the Diameter at the middle of a parabolic Spindle be 20 Inches, and its length 60; Required the solidity.

20×20×,7854×32(=60×8÷15) 10053,12 Ans.

To measure the middle zone or middle Frustrum of a parabolic spindle.

Rule. To the sum and half the sum of the squares of the two diameters add $\frac{3}{10}$ of the difference of their squares which multiply by a third of the length, and the product will be the Solidity.

If the middle and end diameters of the middle frustrum of a parabolic Spindle be 40 and 30 inches, and its length 60, what is the Solidity.

40×40=1600 — 1600+900=2500 the sum of the squs.
30×30=900 — 2500×3=2100=$\frac{3}{10}$ of ditto, then
Sum=2500 — 2500+1250+2100×20(=⅓ of 60 =)79200 Ans.
Half Sum=1250

To measure a Cylindersoid or Phiorvid.

Rule. The same as for the frustrum of a pyramid or Cone.

To measure a Solid Ring.

Rule measure the internal diameter of the ring and its girth or circumference, then multiply the girth by 31831, and the product will be the Diameter of the wire, which add to the internal diameter; multiply this sum by 3,1416 and the product will be the length of a Cylinder equal to the Ring of the same base. Then the area of the section of the Ring multiplyed by the length of the said Cylinder will give the Solidity of the Ring.

If an Iron ring be 12 inches in girth and its internal diameter be 20 Inches, what is its Solidity?

31831×12=3,8=Ring Diameter. 20×3,8+3,1416=74,76 the length of a Cylinder equal to the Ring. Ans. 3,8×3,8×,7854×74,76=842,86=Solidity

Solids Continued. Nov 14th 1810.

To measure the Solidity of any irregular body, whose dimentions cannot be taken.

Take any regular regular vessel either square or round and put the irregular body into it; Pour as much water into the vessel as will exactly cover the body and measure the dry part from the Top of the vessel to the water; - Then take the body out and measure again from the Top of the vessel to the water and subtract the first measure from the second and the difference is the fall of the water; Then if the vessel be square multiply the side by itself and that product by the fall of the water and you will have the content of the body; but if you have a long square multiply the length by the breadth and that product by the fall of the water; - Or lastly if it be a round vessel multiply the square of the diameter by ,7854, and that product by the fall of the water and you will have the Content.

Examp. 1. A Body being put into a vessel 18 inches square, on taking out the Body, the water sunk 9 Inches; Required the Content of the Body?

18 Inch. = 1,5 foot.
9 Inch. = ,75 foot.
1,5 × 1,5 × ,75 = 1,6875 foot Content.

Examp. 2. A Body put into a cistern 4 feet by 3 or, taking out the water fell 6 inches; Required the Content of the Body?

4 × 3 × ,5 = 6 feet, Content.

Examp. 3. A Body being put into a round Tub, whose diameter was 1,5 foot on taking out the Body the water fell 1,5 foot; what is the Content of the Body?

1,5 × 1,5 × ,7854 × 1,5 = 2,65 feet, Content.

Of Cask Gauging.

Among the many different canons, drawn from Stereome for gauging casks the following is as exact as any.

Take the dimentions of the cask in inches, viz. the diameter at bung and head and length of the cask; Subtract the head diameter from the bung-diameter, and note the difference.

If the staves of the cask be much curved or bulging betweeen the bung and head, multiply the difference by ,7; if not quite so curve, by ,65; if they bulge yet less, by ,6; and if they are almost or quite strait, by ,55, and add the product to the head diameter; the sum will be a mean diameter by which the cask is reduced to a cylinder. Square the mean diameter, thus found, then multiply by the length; divide the product by 359 for ale or beer-gallons, and by 294 for wine-gallons.

By the sliding Rule.

On D is 18,94, the gauge-point for ale or Beer Gallons marked thus AG, and 17,4, the gauge-point for wine Gallons marked WG; set the gauge-point to the length of the cask on C, and against the mean-diameter on D you will have you will have the answer in ale or wine gallons accordingly as which gauge-point you make use of.

By the Scale

Take the extent from the gauge-point to the mean diameter, set one foot of the dividers in the length and turning them twice ove they will point out the content.

Required the Content of a cask in wine and ale-gallons, whose bung diameter is 35 inches, Lead-diam 27 inches and length 45 inches?

Bung Diameter = 35
Head diameter = 27
Diff. = 8
,55 = 4,4
Add Head diam = 27
Mean diam = 31,4

Square of Diam 1062,76
Length 45
53138 0
42510 4
359)47824,2(
359
1192
1077
1154
1077
77

Gauging. Continued. Nov. 14th 1810.

1 Round Mash-Tub is 42 Inches diameter at the Top within and 36 inches at the bottom and the perpendicular height 48 Inches. Required the content in beer and wine gallons.

This being the Lower frustrum of a cone to the product of the diameters add one third of the square of their difference; multiply this sum by the length, and it will give the solidity in such parts as the dimentions are taken in. If they be taken in inches divide by 359 for beer and 294 for wine gallons.

$$42\times36+\frac{42-36\times42-36}{3}\times48\div\begin{cases}359=203\frac{3}{4}\text{ale Gallons}\\294=248\frac{3}{4}\text{Wine Gallons.}\end{cases}$$

Let the Diff. of diameters of this Tub be 6 inches, the height 46 inches, and the content 203 3/4 gallons to find the diameters.

Multiply the content if beer measure by 359; if wine measure 294 and divide the product by the length; from the quotient subtract 1/3 of the square of the diff. of the diameters; to this remainder add the square of 1/2 the difference of diameters and extract the square root of the sum; from the square subtract 1/2 the diff. of the diameters, and it will give the least diameter to great exactness, to which add the difference of the diameters, and the sum is the greatest diameter.

$$\sqrt{\frac{203,75\times359}{48}-\frac{6\times6}{3}}+3\times3-3=36, \text{ and } 36+6=42.$$ The diameters are 36 and 42.

The Content of any vessel, in gallons, &c. may be found: Measure the inside of the vessel according to the rule of the figure, and find the content in cubic inches, then,

Divide by	and the Quotient will be the Content in
1728	Cubic Feet.
282	Ale or beer Gallons.
231	Wine Gallons.
2150,4	Bushels.

Continued. Nov: 16th 1810.

To ullage a Cask, lying on one side by the Gauge-Rod when the Bung Diameter and the content over both are greater or less than the Table on the Rod is made for.

Rule. As the bung diameter of the cask to be measured: is to the bung diameter that the Table is made for:: so are the dry Inches of the Cask: to a fourth number, which find in the Table on the Rod and note the number of gallons answering to it. Then as the Content of the Cask that the Table is made for: is to the Content of the Cask to be measured:: so is the number of gallons answering to the aforesaid fourth number: to the number of gallons your Cask wants of being full.

To find a Ships Burthen Or to Gauge a ship.

There is such diversity in the forms of ships that no general Rule can be applied to answer all varieties; however the following Rules are practiced.

Rule. 1. Multiply the breadth at the Main beam, half the breadth and length together: divide the product by 94 and the Quotient is the Tuns.

Rule. 2. Divide the Continued product of the length breadth and depth in feet by 100, for Ships of war and 95 for Merchant Ships, in which nothing is allowed for guns, &c. and the Quotient is the Tuns.

Rule. 3. Take the length from the Stern-post to the upper part of the Stem; subtract two thirds of the breadth from that length: multiply the remainder by the by the whole breadth, and that product by half the breadth in feet and divide by 100 for war, and 94 for Merchant Tonnage.

Rule. 4. The weight of a Ships burthen is half the weight of Water she will hold.

What is the tonnage of a ship whose length is 100 feet breadth 31 feet and depth

Ships Gauging Continued. Nov: 16th 1810.

By Rule 1.st

Breadth 15,5
Breadth 31

155
465
480,5
Length 97
3363 5
4324 5
94) 46608,5 (495,43 Tons. Merchant
376
901
846
550
470
780
752
280
282
48

100) 46608,5 (466 Tons. for Ships of war
400
660
600
608,5
600
8,5

By Rule 2.d

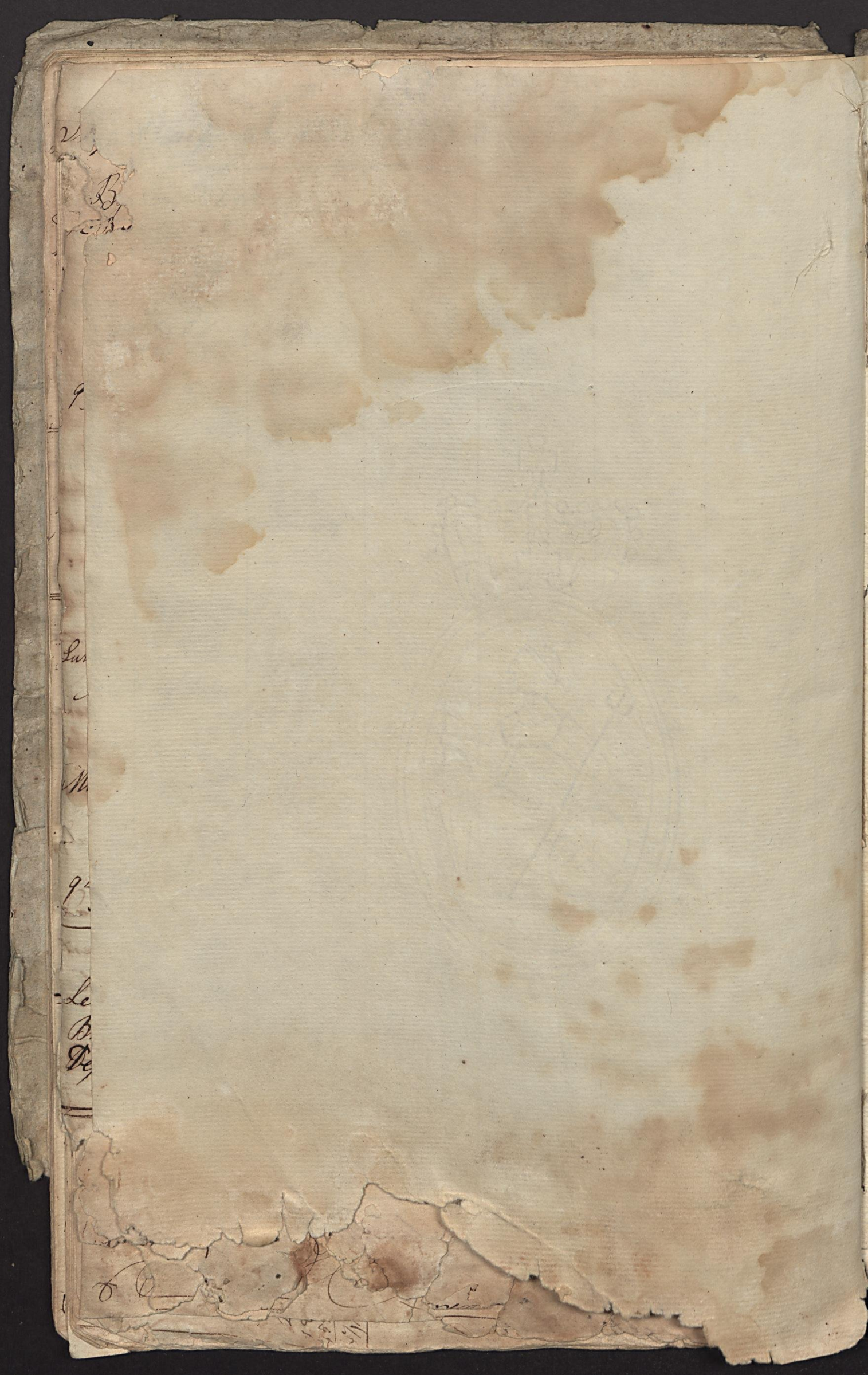
Length 97
Breadth 31
97
291
3007
½ Breadth = 15,5
15035
15035
3007
95) 46608,5 (490,61 Tons. Merchant
380
860
855
585
570
150
95
55

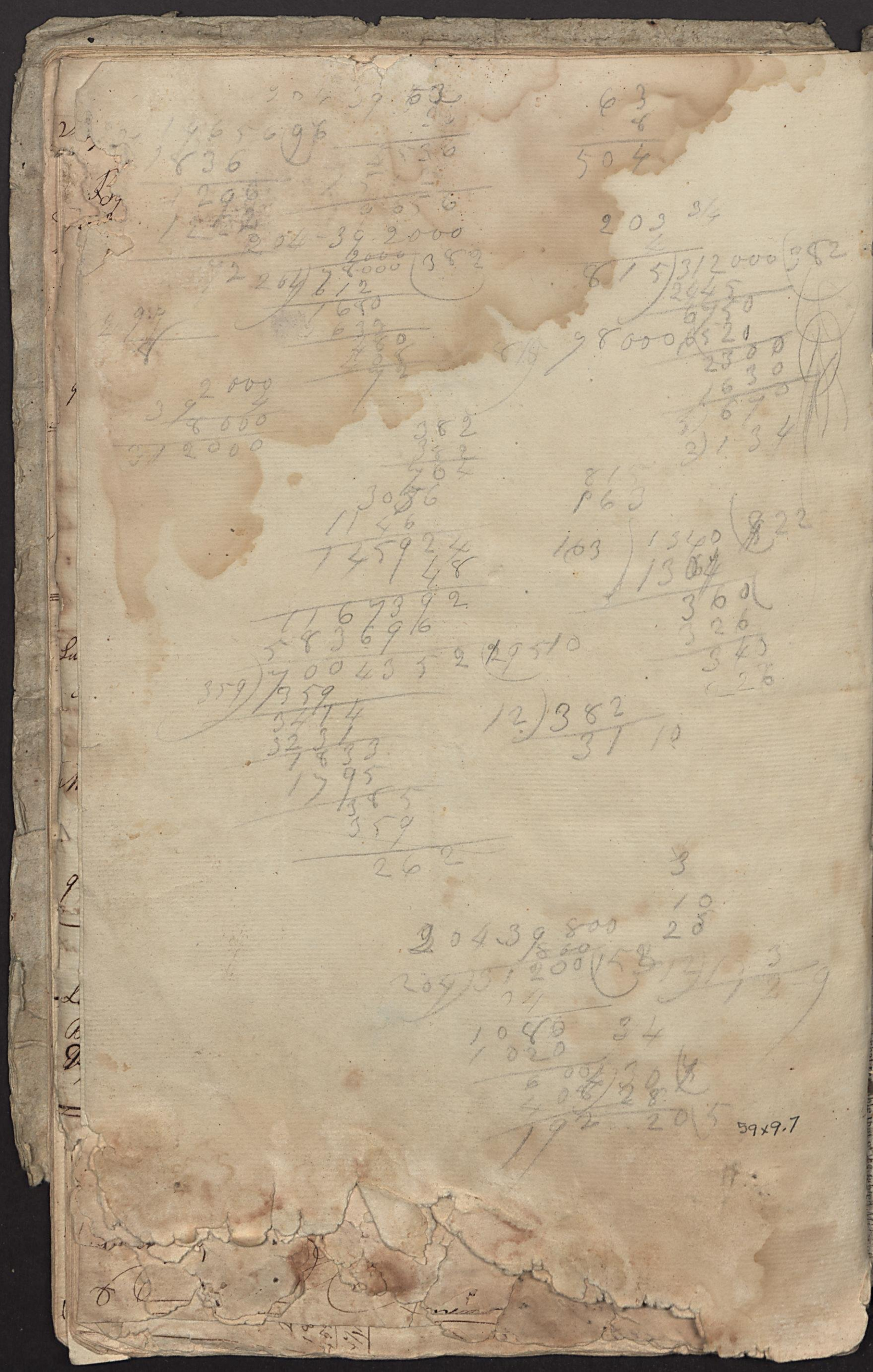
By Rule 2.d

Length = 97
Subt.c ⅓ of Breadth = 20,66
76,33
Mult by the breadth 31
76,33
2289 9
33666,23
Mult by ½ breadth 15,5
16833 15
16833 5
33666 23
94) 522176,56 (5550,693 Tons. Merchant.

The Proportions of Noah's Ark were as follows, viz.

Length of Keel. 300 Cubits } Its Burthen as a Man of War
Breadth By Mid-Ship-Beam. 50 } 45000 Tons.
Depth in Hold. 30 Cubits. } as a Merchant-Ship 47360 80/95 Tons.





Rye,	cwt.		1	—
Furs, Beaver, north,	lb.	1 25	— 2	87
Geneva,				
Holland 1st proof	Gall.	1 25	— 1	31
Grain,				
Wheat, N. R,	bush. (new)	2 44	— 2	47
Rye,		1 25	—	
Barley,		1 12	—	
Corn, North,		1	— 1	6
Hemp, Russia,	ton,	320	—330	
Hams,	lb		14—	
Indigo, Spanish		1 50	— 2	
French,			—	
Carolina,		1	— 1	18
Iron Pig,	ton	32	— 35	
Country Bar,		105	—	
do. Refined,		115	—120	
Russia,		115	—	
Swede's, best		125	—	
Roll'd,		150	—155	
Lumber, boards oak,	M ft.	17 50	—	
N. Riv. Pine,		17 50	—	
Alsany Boards, ps.			20—	
Staves, wh. oak. pip.	M.	60	—	
hhd.		45	—	
bbl.		27 50	—	
red oak hhd.		25	—	
bbl.		35	—	
Hoops, hhd. best		45	—	
Logwood, bay,	ton			
Leather, soal,	lb.		14—	19
Molasses, Surrinam,	gal.		54—	58
Martinique,			50—	55
Havannah,			50—	56
Port-au-Prince,			54—	57
Nail rods,	ton	115	—120	

territory."

Mr. S. Smith moved to discharge the committee of the whole, to whom the report had been referred, from the farther consideration of it, on the ground of want of time to proceed in it.

Mr. Gallatin hoped the motion would not prevail, because it would be precisely the same (virtually) as agreeing to the resolution which he was by no means prepared to do. The history of the proceedings of congress upon this subject, he thought, must give a coloring of guilt to his conduct: after the business had been brot before the house in a report, a resolution passed the house, it must be recollected, annulling two of the laws in question, but for some reason or other it was not agreed to by the senate. From this postponement, in the plain face of the truth of the allegations, the gentleman from Kentucky (Mr. Davis) introduced a resolution grounded upon the laws complained of, in order to procure a report to be laid before the President, that he might take the proper measures which the occasion might require. Nothing was then done, but this session the business was before a committee who reported upon the facts in the manner now before t. He presumed the house might as well take up the business and dispatch it, having little or nothing else to do. Though he acknowledged the truth of the reasons that the subject could not be fully entered into, and therefore he was for taking up the resolution proposed by the committee, for unless such a be taken was to reject the resolution, because it was at war with the facts. The most proper resolution he thought would be to adopt one similar to that which was proposed by the gentleman from Kentucky, which was that the whole of the documents relating to the charge should be laid before the executive. It was impossible for this house to do any thing in the business: it could not impeach the officer for mal-administration or corruption; it would be therefore most proper for the executive to examine into it, and proceed according to his power and impressions.

Mr. C. Goodrich said one mistake of the gentleman who had spoken, appeared to arise from the incorrect view they had taken of the subject referred to the committee, when they undertook to say that the committee had not reported right. The only orders under which the committee were authorised to act were, whether Winthrop Sargent had been guilty of such conduct as was stated in the resolution of the gentleman from Kentucky or not, and whether upon that view, he was liable to impeachment or not. To this view and this alone the committee attended, and upon the facts which appeared; upon a fair and full examination into the motives, as far as was possible, the committee reported: they reported clearly upon the facts, and as to motives, they were obliged to be confined by circumstances, amongst which they thought proper to take the confession and excuse of the man himself. Unhighest and most important nature; and so valuable is it in the contemplation of law, that it receives from it the most vigilant protection. Without it, no man can live in society, with it few can be so miserable as to be destitute of friends. Without reputation there can be no credit, and without credit there cannot be that interchange of services which is essential to the very existence of Society. No man will employ another whose skill or honesty he cannot confide in. Every one not being able to judge of the former, and not having an opportunity of ascertaining the latter, there are many who bestow and withhold their confidence upon the mere authority of reputation. These propositions are resolvable into this grand principle, that every man depends for his bread upon reputation. Hence it is a rule of law, that words which tend to affect a man in his business, by withdrawing from him the confidence of society, as by calling a Merchant a *Bankrupt*, a Physician a *Quack* or a Lawyer a *Knave*, are in themselves actionable and make the speaker liable to damages, altho none can be actually proved. In this case the presumption of law supplies the place of evidence, and there is no other way for the defendant to clear himself but by proving the *truth* of the words spoken.*

As to *libels*, that is, such abusive and irritating compositions, as tend to violate the public tranquility, by exciting the passions of those who are the objects of their ridicule; these come as well under the denomination

me the justice to say,
ceived the part till I
uncommon anxiety a
That, owing to the e
department which it q
suggested to him my
should not be able to d
me such encouragemen
voted myself to the cha
Considering these circ
of Arouet's invective is
with the Billingsgate phr
quire any extraordinary de
tion to discover throughout th
of this vain and unworthy disci
Kaims, a mind not only destitute of geni
but pre-eminently base. Unfortunately f
Arouet, he lives in a country, the people
which are too enlightened to mistake ill n
ture for wit, or indiscriminate censure for
ticism; and well able to distinguish betwe
the superficial pretender of literary merit
the man of erudition.
And now, Arouet, having done my duty
by the public, by you, and by myself, let
part upon terms as amicable as is consiste
with the nature of your aggression, and
defence. Think not that I bear any furth
resentment towards you; rather be assured
my forgiveness and even commiseration.
But beware how you fall a second time in
to disgrace. Should you be so unfortunate
—Should the shallow imposture which co
vers the nakedness of your literature be ge
erally detected, your humiliation would s

... While, as to the past, we have much matter for ... and may cherish the pleasing ... exertions have not only ... to be no cause for despondency. The ... to make, is encouraged by ... that in the election last year ... aggregate throughout the State shews ... of Federal votes—and we discover ... that an equally favorable result will ... exertions at the next election. Under ... all that are requisite to ensure success. ... at the same time to combine your ... in favor of JAMES WATSON, of the city of New-York, merchant, as Lieutenant Governor. On mature reflection, we have, with equal unanimity, agreed upon him as an eligible and fit candidate ... many of you he is known personally, or by reputation; and to others it will be only necessary to say, that he served as an officer during our revolutionary war, that he has been several times a member of one and the other house of our Legislature, that he lately represented this State in the Senate of the United States, and that in every private and public station he has given proofs of integrity, fidelity and intelligence.

February 4, 1801.

Southern District.

Richard Hatfield, Robert Troup, Selah Strong, John B. Coles, Paul I. Micheau, John E. Hicks, Lewis Cornwall, Samuel M. Hopkins.

Middle District.

Ebenezer Foote, Philip Eltinge, Conrad ... John ... William W. Van Ness, Elisha W... Benton, Leonard ... D. Gardiner, Daniel Ludlow, Andrew N. Heermance, Elisha Gilbert, jun. Asa Douglas.

Eastern District.

... John Lovett, G. G. Lansing, H. ... Van Vechten, Dirck Ten ... Alden, ... Ross, Ebenezer Clark, Joseph ...

Western District.

Frederick Gettman, William Beekman, ... Kent, Michael Myer, Matthew Brown, jun. Jedediah ... Sanger, Thomas Morris, Seth Phelps, Lem. Chip... Edwards, Thomas R. Gold, Ethan Lewis ... John Forman, ... nuel King, ... Tillotson, Joseph Bort, ...

feb 10

TO THE ELECTORS OF THE STATE OF NEW-YORK.

... Newtown, 28th Jan, 1800. JACOB'S RIKER. JOHN R. PELYE. feb 4—SpWtf

BY order of Jacob Sand, Esq. first Judge of the Court of Common Pleas, in and for the county of Columbia—NOTICE is hereby given to Phineas Chase, late of the town of Hillsdale, and all others ... on application ... estate ... and discharge his debts ... all his estate real ... the payment and satisfaction of his debts.

JACOB FORD.

E. WILLIAMS, Attorney.

Jan 14 SpWed3m

BY order of Richard Harrison, Esquire, Recorder of the city of New-York—NOTICE is hereby given to all the creditors of Alexander V. Pfister and John N. Macomb, of the same city, merchants and copartners in trade, under the name, style and firm of Pfister & Macomb, insolvent debtors, to shew cause, if any they have, before him the said Recorder, at his office in Broadway in the said city, by the sixth day of April next at 10 o'clock in the forenoon, why an assignment of the estate of the said insolvents should not be made, and they be discharged pursuant to the act of the legislature of the people of the state of New-York, entitled "an act for giving relief in cases of insolvency." Dated this 14th day of February, 1801.

ALEXANDER V. PFISTER, JOHN N. MACOMB, Insolvents.

Thomas Delue and others, Petitioning Creditors.

Beaumont, *Attorney.*

Feb 18—Sp W 6w

NOTICE.

WHEREAS ... O'Conner of the City of New-York ... his wife, and Robert ... and Eleanor his wife ... Hundred and Ninety- ... for securing the payment of the sum of Five Hundred and ... Dollars and Twenty-Five ... of the United States of America, ... of Kings county, Farmer, his Executors, Administrators or assigns, on or before the first day of November, in the year of our Lord, One Thousand Seven Hundred and Ninety-Nine, ... mortgage unto the said John Lott, his heirs and assigns, all that certain messuage or dwelling house and lot of ground ...

Rhinebeck, Wm. Freeman,
Poughkeepsie, Nicholas Power,
Wardsbridge, (N. J.) J. Miller,
Stratford, Victor Wetmore,
Princeton, John Harrison, do
Norwich, (Con.) Gardner Carpenter, do
Providence, William Wilkinson, do

☞ Persons who wish to subscribe for the Spectator, will please to call on any of the abovementioned gentlemen.

DRUGS, MEDICINES, & GLASS.

JACOB SCHIFFELIN, Druggist,

No. 195 Pearl street, late

LAWRENCE & SCHIEFFELIN,

In addition to the extensive stock of Medicines in store, has just received from Leghorn, London, and Bristol, the following articles, which he will sell low for cash or credit:

10,000lb Glauber Salts	400lb patent yellow
6000lb Crem. Tartar	600lb Orpiment
4000lb. red & pale bark	1,900lb flour sulphur
40lb Ipecacuanha	300lb sugar of Lead
90lb do. in powder	500lb Oil of Vitiol
56lb. Hay Saffron	50 doz. choice Castor Oil
10 cases flake manna	400lb Ess. Bergamot
6 —— common	200lb —— Lemon
1 ... cantharides	200lb —— Orange
500lb gum opium, Turkey	50lb —— Lavender
400lb refin. camphor	500lb ... root,
800lb gum assafoetida	300lb Valerian,
8000lb liquorice ball	150lb Torment l,
36 crates assort. vials	500lb Gum Myrrh,
3600lb Red Lead in kegs	250lb Gum Sandrach,
	900lb Lapis. Calam.
350lb Verdigrease	300lb Sem. Fenugreck,
800lb white Vitriol	500lb —— Caru,
600lb blue do.	200lb Fir. Camomile,
80lb Prussian Blue No. 1, 2 & 3	4000lb India Salt Petre
	1000 refined ditto
300lb Ceylon Cinnamon	200lb Balsam Capius
240lb Rad. Ipecacuana	3000lb Pink Root

And 12 crates shop Furniture, with a general assortment of Patent Medicines and Surgeon's instruments, Medicine chests for ships with the most approved directions, and every article in the Drug Line will be sold low for *CASH*, or credit.—Orders from the Country executed with dispatch and on moderate terms.

Dec 1 Sptf

NOTICE—A BANKRUPTCY.

WHEREAS a commission of bankruptcy is issued against Elias Lord, of the town of Norwich, in the district of Connecticut, merchant, and he being declared a bankrupt; is hereby required to surrender himself to us the undersigned commissioners, on the ninth and twenty-third days of March next, and on the seventh day of April next, at ten o'clock in the forenoon on each day, at Willoby's Hotel, in Norwich, in said district, and make full disclosure of his estate and effects; when and where the creditors ... to prove their debts and choose an assignee or assignees, and at the last meeting the Bankrupt is required to finish his examination and the creditors to assent to or dissent from the allowance of his certificate. Dated at Norwich this 25th day of February, 1801.

ELISHA HYDE,
CHRIST'R. LEFFINGWELL, } Commissioners.
JABEZ PERKINS,

March —Sp3w.

... been ... of the ... trustee ... that could be. ... the business to ... than to persons ... now. ...

H..., Long-Island, ... miles from New-York, the passage boats ply between almost every day in the week. ... about 14 acres of land including ... and 4 of Wood-land, ... house, containing six rooms, ... Barn, ... level for Cattle ... This land is in a high state of cultivation, ... perhaps one of the most productive Farms ... the township; it is situate in the main street of the town, nearly adjoining the Church. ... extensive front on the main street, and ... divided into several country seats; there is on the premises an apple orchard of choice grafted ... and abounds in a great variety of fruit trees of the best kind procured from the nurseries ... few places offered for Sale ... either as ... the profitable pursuits of ... will be made very easy ... particulars, apply to ... Pearl-street, the subscriber.

feb 18 Sptf

By order of Richard ... the city of New-York ... the creditors of William Armstrong, ... New-York, merchant, an insolvent debtor, ... shew cause, if any they have, before the said Recorder, at his chambers, situate in the Broadway ... city of New-York, by the sixteenth day of ... next, at ten o'clock in the forenoon, why an assignment of the said insolvent's estate should not be made, and he discharged, according to the act entitled, "An act for giving relief in cases of insolvency," passed 21st March, 1788. New-York, this 16th day of January, 1801.

WILLIAM ARMSTRONG, Insolvent.

David Auchinvole, petitioning creditor.

jan 17 Sp 6w

NOTICE is hereby given that the subscriber residing in the City and state of New-York, has been duly appointed Assignee of the estate and effects of Jacob Hallet, of the said city, Merchant, under the act entitled, "An act to establish an uniform system of Bankruptcy throughout the United States"—All persons, therefore, who are indebted to the said Jacob Hallet, are hereby required to pay the said debts to me—And all such persons as may have in their custody or possession, any part of the estate and effects of the said Jacob Hallet, are hereby requested to deliver up the same to me without delay.

JOHN P. RYERSS, Assignee.

dec 19 ...

TO BE SOLD,

And possession given whenever required.

A large two story, well built and ... finished dwelling house, with two chimnies, ... way compleated in the modern style ... with a barn and ... ing the same, situate in the port of ... Long-Island.

The above premises if not sold ... April next, will on that day be ... Public Vendue, at 2 o'clock, P. M. ...