Newbury January 10th 1846

I thought I would send an answer to your Enigma with all the names in acrostic and wish you to insert the same in your next almanac

~~Malaga~~ the what is ~~Hastings~~
Antrim Marshalls
Riga Life of
Seine Washington
Himmalek
Aral from Elder
Lenxos
Lewistown Stephen George
Salem Newbury N H
Lima
Illinois
Formosa
Erie
Ohio
Lemon
~~Katelos~~
Argos
Siam
Hatteras
Iowa
Niagara
Georgia
Trent
Cesdeyo
Nile

The sum of the 2 sides of an isosceles $\triangle$, = the sum of the base & perpendicular.

Fluxions.

(1.) To divide a line (given pt. one) into 2 such pts. that their prod. may be the greatest poss.

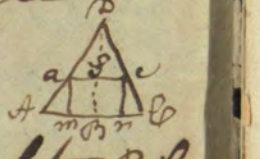
Let $AB = a$, & the pt. AC consid. as variable (by the mot. of C towards B) be denoted by x: Then BC being $= a - x$, we have ACx $BC = ax - x^2$, whose fluxion $a\dot{x} - 2x\dot{x}$ being put $= 0$, we get $a\dot{x} = 2x\dot{x}$, or $x = \frac{a}{2}$.

(2.) To find a fraction wh. shall exceed its cube, by the gr^{t} quan^{ty} poss.

Let x denote a variable quan^{ty}.; then [illegible] of x above x^3, being represent. its fluxion is $\dot{x} - 3x^2\dot{x} (= 0)$, or

$x^2 = \frac{1}{3}$, or $x = \sqrt{\frac{1}{3}}$.

(3.) To determine the gr^{t} rectangle pt. can be described in a given $\triangle$.



Put $AC = b$, & its alt. $BD = a$; let the alt. $BS = x$. (x being consid. a vari^{ble} quan^{ty}.) Then since ACD are par^{l}., it will be as $BD(a) : AC(b) :: DS(a - x) : \frac{ab - bx}{a}$ = the line ac. And the area of the rectangle

or $ac \times BS = \frac{abx - bx^2}{a}$; the fluxion of wh. is $\frac{ab\dot{x} - 2bx\dot{x}}{a}$, & being put $= 0$, we have $a = 2x$, or $x = \frac{1}{2}a$, or $x = \frac{a}{2}$. Hence the gr^{t} ht. of, or side of, the sq. $\frac{1}{2}$ that of the Δ.

(4.) Of all the rt. $\angle^{d}$ plane Δs, containing the same given area, to find that the sum of the legs is the least poss^{e}. Let one leg $(AB) = x$, & the area by a then the other leg will be $\frac{2a}{x}$, the fluxion of wh. is $\dot{x} - \frac{2a\dot{x}}{x^2} (= 0)$, or $x^2 = 2a$, or $x = \sqrt{2a}$. Where the other leg $(BC) = \left(\frac{2a}{x}\right) = \frac{2a}{\sqrt{2a}} = \sqrt{2a}$, $\therefore$ the Δ is isosceles.

xt

Gunpowder.

76 pts. nitre
15 - - - charcoal
9 - - - sulphur.

100

Fulminating Powder.

3 pts. nitre, 2 pts. W. Hs. potass, & 1 pt. of sulphur, well dried & mixed togeth.

Mr. Albert G. Wedderburn
Preceptor of Gilford Academy
of Meredith Bridge.

Explosion

is a sud.n & violent burst of expanded air or other fluid, & caused by gradual expansion, or else by ignition.

o.
a c.

Exmouth, N.H. Jan'y 9th 1847

Dear sir – I take the present opportunity to express my thanks to you for the kindness exhibited in your Almanack, and which I thought, refered to me. I would say that I desire that your years may be "many and abundantly useful and happy."
I have found the answer to the other Enigma to be
Morse's Electric Telegraph.
The state in the south of Europe, is Greece.
That which we cannot live without, is Air.
The philosopher who flourished B. C. 400 was Plato
The Indian chief is Metea.
The river in France is the Loire.
The river in Great Britain is the Tees.
The heathen philosopher, statesman, and orator is Cicero.
The heathen poet is Horace.
The mountain in Africa is the Atlas.
The town in Egypt is Cairo.
The imposter who lived A. D. 600 is Mahomet
The Old Testament prophet is Hosea.
The celebrated island in the Mediterranean sea is Malta.
The Narraganset Indian is Totatomet.
The insect is the Ephemera.
The amphibious animal is the Otter.

Dear sir – please not insert my name in your next

Almanack, although you may, if you please, say what shall have reference to me, as in your last. Please excuse all errors, in whatever particular they may be. That the wish expressed at the beginning of this letter may be fully experienced is the earnest desire of your sincere servant,

William W. Dow.

Portsmouth, N.H.

Artificial Earthquake

Mix 25 lb. iron filings & 25 lb. sulphur. Moisten with water & bury in the G. In 8 or 9 hours the G will swell, crack, &c., & a blue flame sometimes appear.

Liberty.

Of Conscience. Freedom in matters of religion, as to our judgment or choice.

Christian or Spiritual. — Freedom from the yoke of the ceremonial law.

Luke 4:18.
Rom. 8:21.
2 Cor. 3:17.
Gal. 5:1.
Jam. 1:25. & 2:12.

Gilpa Academy
Meredith Bridge
January 16 1846

My dear Sir

A gentleman has just called upon me, wishing me to request of you a solution of the annexed problem, found on the last page of Burn's Arithmetic.

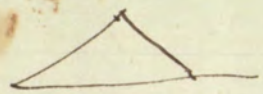
If you will furnish a solution that will reach me by mail Wednesday morning you will much oblige one who remembers you with great respect as his former teacher

Very respectfully
Your obt
Servt
Albert G. Weeks

A square stick of timber has three sides of the larger base 9 inches and one side of the smaller six inches.—What must be ~~taken~~ cut from the small end to make a solid foot.

Ans 3. 339 Inch

This is the answer I think as stated tho' me though one of the decimals may be wrong



Triangles.

If a line is drawn bissecting any ∠, to the op. side, then the segs. of that side are :: to the sides adjacent to them.

And the □ of the bisect. line is = the diff. between the rect ∠ of the sides, & the rect ∠ of the segts. of the bissected side.

3 perpendrs. bisecting the 3 sides of a △, all intersect in 1 point, & that is the centre of the circumscrib. ○.

3 lines bis. the 3 ∠s of a △, all intersect in 1 pt. viz. the centre of the inscrib. ○.

3 perpendrs. fr. the 3 ∠s of a △ upon the op. sides, all intersect in 1 pt.

Any △ may have a circumscrib. ○ & an inscribed ○ touching all 3 sides.

The □ of the side of an equilat. △ is = to 3 times the □ of the rad. of the circumscrib. ○.

△s of = altitudes are : one another as their bases, & vice versa.

Weare, Jan. 30th. 1830.

Dear Sir—

It is with regret, yet with confidence that I am compeled to address you on a subject of this nature—however if you could give me a little insight into the following Question, without being too much trouble to yourself it would be gratefully received &c

Yours Respectfully

Daniel B. Eastman

If the linear expansion of Iron Wire is to that of Brass as ,000006813 is to ,000010400; what is the length of that wire, of which so much of it is brass, as to have the iron part of it always just 15 inches longer than the brass part?

If the solick contents of a tetraedron be 13.8562 inchs — would not the cube root of it be a proper rule to obtain the largest cube that could cut from it?

Please direct to South-Weare, N.H. if you think it would not be too much trouble &c &—

Yours & &

D. B. Eastman

Dudley Leavitt Esqr

Mexican Words.

La Resaca d' la Palma — Lah Ray sah-kah day la Palmah.
Palo Alto — Pa-lo A hl-to.
Santiago — San-te ah-go.
Rio del Norte — Ree-o-del-Nor-tay.
Pelon — Pay-lone.
Monterey — Mon-tar-ray.
Plaza — Plah-sah.
Los Muertos — Lohs-Mwer-tohs.
Saltillo — Sawl-te-yo.
Beuna Vista — Bwey-nah-Vees-tah.
China — Chee-nah.
Agua Nueva — Ag-wah New-ay-vah.
San Luis Potosi — San Lew-is-Po-to-see.
Sierra — See-er-rah.
San Juan de Ulua — San Whahn-da Ooloo-ah.
Vera Cruz — Vay-rah-Crooz.
Alvarado — Al-vah-rah dho.
Jalapa — Hah-lah-pah.
Mexico — May-hee-co.
Sacrificios — Sac-ree-fe esee-ohs.
Bonita — Bo-nee-tah.
La Vega — Lay Vay gah.
Ampudia — Am-poo-dhe-ah.

Aug. 1847.

D.	Temp.	Wind.	Remarks, &c.
1	77	E.	Morn. cloudy & foggy; then mostly cloudy. P.M. Thun. & (raind in nt.) raind a little.
2	73	W.	Fair & windy, & but few clouds.
3	71	N.W.	Fair, but few clouds. Fine brisk wind.
4	77	W.	Morn. very clear & calm. Then some clouds & wind (but in W. most of nt.) very
5	77	E.	Fair, but appearances of showers, — rain (nt.) & wind in (nt.)
6	69½	N.E.	Stormy morn. very heavy wind. Cleared off P.M. Wind shifts N.W.
7	67	N.E.	Forenoon cloudy, P.M. rainy. — Stormy nt.
8	69	N.E.	Cloudy, hills capped, heavy air. Rainy night.
9	67	Vari.	Sprinkled rain A.M. & P.M. 11h. Misty towards nt.
10	74	Vari.	A.M. cloudy. cleared off about noon.
11	81	S.W.	Fair A.M. P.M. strong wind. Thunder shower in the even.
12	77	W.	Fair and windy. Smoky air.
13	77	N.W.	Brisk wind, smoky air, but very few clouds.
14	76	N.E.	Cloudy. Sprinkled rain P.M.
15	74½	Vari.	Morn. cloudy. Hills capped. Hazy sky. Brisk wind.
16	73½	E.	Mostly clear. Hollow wind.
17	76	Do.	Do. Do. Some shower clouds.
18	76	E. & W.	Morn. A.M. cloudy, rainy morn. Clear'd off bef. noon.
19	68	N.W.	Fair & windy. — some clouds.
20	65	S.	Clear & quiet. — aft 1h morn. N.L. same time, faint glean.
21	70	S.W.	Fair & windy. N. Lts. late at nt.
22	76	Vari.	Mostly clear, and a brisk whistling air.
23	67	N.W.	Fair & windy. But few cloudy.
24	69	Vari.	Cool morn, fair day, & few clouds.
25	71	S.E.	Fair, calm, & smoky.
26	69	S.	More clouds than sky, but fair weather
27	71	Vari.	A.M. clear. P.M. cloudy — fine shower just to the S. & a light shower here, when needed.
28	68	E.	Cloudy, with fine moderate showers. rain, just
29	71	S.E. W. P.M.	Morn. showery; then fair & fine.
30	74	S.	Fair & mostly clear. Very fine weather.
31	74	Vari.	Morn. cloudy. P.M. clear, & very smoky.

Dudley Leavitt Esq

Meredith

N.H.

Slavery

The slaveholders don't kill their slaves
& sell their skins, as hunters do wild beasts, or
as farmers do their cattle, & as the Indians us'd
to their captives, whn. they killed 'em & sold
their scalps, or else sold them as slaves to the
Fr., who sold 'em fr. one Master to another
as the Southerners do their negroes.

The most mild form of servitude authorized
by law, is apprenticeship, & in this the appr.^e
freqy. brks. his indent.^res, & absconds fr. his Master.

Bondage is a term often us'd to signify
slavery, tho' bondmen, strictly speaking, are
such as bind themselves to serve some
ld. or Mr.

A servant is one who, voluntarily, serves, ~~or~~
waits, or attends upon another, generally without
any other compens.^n, required or expected ~~given~~, thn. ~~an~~
~~easy~~ & comfortable ~~living, as he goes along~~ &
liberal supply of food & raiment during
the term of service. Not so with the
slave.

Some ~~pro slavery men assert~~ who advocate slavery argue in extermination ~~[illegible]~~, that the Bible
countenances the practice ~~slavery~~. Be it so if they can make
it appear. I am prepared to ~~prove~~ show fr. the
Bib.^e tht. slavery is wicked ~~it is wrong & wicked & tht. it is wrong~~ for M.B.'s to enslave ~~our~~ their
fellow beings, whatever may be their complexion
or the order of their intellect; ~~& to do this I will [illegible]~~

tht. the institution of slavery as it exists in Ama. is totally opposed to the prin.s of Just. & humanity, fr. the cr. of its hd. to the sole of its foot.

Even D. Web., ~~tht.~~ the pride & boast of N. Eng. as an or. & statesm. has not been lavish of his remks. on slavery. If tht. crafty fox could spring the trap without getting caught, he would prob'y. do it but you wont catch him to step his foot on the trembler.

PAID

Paid

Dudley Leavitt Esq

Meredith

Care P.M. please forward immediately

GILFORD N.H.

Slavery.

The slavery or bondage of the Chil.n of Isr.l in Egypt, was rather accidental than systematic. The Egyptians had no inst.n of slavery, but seem'd to claim the Israel.s as bondmen, by pt. of a quiet poss.n, as some do real estate after they have poss.d it quietly a certain No. of yrs. This the law allows, in some states, but we know not that there was any such law in Egypt. And it is very certain that Joseph's Br.n, when they sold him to the Ishmael.s, little dream't that by so doing they were indirectly preparing a rod for their own backs, for if Jos. had not been sold into Eg.t, it is not prob.e that the Hebrews would have ever been in bondage there.

[It is wrong to take slaves fr. their Masters without an equivalent, except in war. The Algerines would not give up theirs, unless they were redeemed, &c.]

It is true that in the case of Esau & Jacob their father I. told Esau that he had made his br. Jac. his Ld., & it was said the elder should serve the younger, but it was not said how he should serve him. If he had serv'd him as he deserved to be, he would have chastised him for his perfidy, instead of serving him as a slave.

Mr Dudley Leavitt

Meredith Village

N. H.

Meredith, Feb. 10, 1847.

Mr. Weeks, Sir,—

Your letter of Jan. 16, 1846, which year I conclude was written in haste for 1847, I did not receive until this morning. The question proposed is fastened at each end, but left loose in the middle.—A curious Lusus Naturæ with a proper head and tail, but no body! I have Burnham's Arithmetic printed in 1837, though I don't make use of it except to look it over; but I do not find any such question in it as the "Gentleman" wishes to have solved. The length of the stick of timber, as well as the bigness of each end ought likewise to be given; otherwise, if I understand the question, and I think I do, it will admit of more answers (correct ones too) than any question I ever met with in Alligation Alternate, as the length of the frustum of the pyramid may be assumed any number of feet, &c., whatever. I hope you have a pleasant and profitable School.—Please to give my respects and best wishes to your Father and his family, when you see them.

Respectfully your friend,

Dudley Leavitt

Political Arithmetic

calcns respecting the, or relating to, the wealth of Nations. It does not determine in wh. the wealth of a N. truly consists, but estimates the valc of whatever passes under this name; & is an interesting subj. to every one who wishes to acquire a just idea of the strength & resources of his own country or others. The exact amt. of wealth in any country cannot be known without an exact inventory of all the particulars wh. compose it: a thing utterly impos. in large & commercial states, in wh. contin. changes are going on.

In all inquiries of this kind, the state of the population is of primary importance. This is 1. into? Those who do not labor at all, as the gentry children under 10 yrs. (about 1/4) or more): infirm persons, &c. — 2. Unproductive laborers, as officers & govt, servants, &c. whose labor contributes no wealth to the country. — 3. Productive laborers, as farmers, merchants, mechanics, &c., who contribute the real wealth.

The Wealth of a Nation consists in the value of the land, stock of all kinds, houses, shipping, money, &c. — Agricultural produce, merchandize, &c.

Slavery

At the sess. of the N.H. Legislature in 1847, Mr. Fowler of Conc. offered an amend moved a resolut. that the toleration of slavery is a disgrace to our country & that means should be taken to abolish it. The vote by yeas & nays was ayeas 118, nays 141

July. 1847.

State of the Weather

Day.	Tem.	Wind	
1.	74.	E'ly	Fair, broken clouds, brisk air. — Dark clouds in N.W. at eve.
2.	75.	N.E.	Do. & windy. Foggy morning. — Heavy wind,
3.	75.	S.W.	storming. rips the leaves of the trees. Mostly clear and calm.
4.	78.	N.W.	Fair, rather windy, with very few Clouds, A.M. — P.M. wind vari. Heavy shows in N.E. & came over. Hot
5.	72.	Vari.	Cloudy, windy, sprinkle of rain & shine alternately.
6.	81.	Vari.	A. sing. look brassy smoky day. Thick hazy air, very smoky
7.	83.	N.E.	Do. Do. Do.
8.	83.	S.W.	Clear & smoky. Brisk air. — One small cloud in N.E. P.M.
9.	85.	S.E.	Do. " " as Sept. occasional light breezes.
10.	85.	Do.	Do. Do.
11.	82.	Vari.	Morn. cloudy & foggy. P.M. Dashes of rain. Thund. once.
12.	82.	S.E.	Do. Do. Do. ⊙ set in a cloud & wind
13.	76.	Vari.	Showery, with much light & heavy thunder, A.M. — P.M. cloudy, with mod. rain.
14.	72.	N.	Mostly clear, windy.
15.	72.	N.W.	Fair, clear & windy. smoky.
16.	74.	S.	Clear, brisk air & very smoky. Hottest nt.
17.	79.	S.	Thick hazy air, fresh wind, smoky, Thunder heard A.M.
18.	71.	E.	A.M. a fine rain, P.M. cloudy.
19.	79.	S.E.	A.M. cloudy. P.M. clear. light[t] in the N. even rains in ni
20.	86.	S.W.	Morn. pt'ly. cloudy, sprinkled rain. — P.M. brisk wind.
21.	82.	Do.	Do. Do. Do. Thunder shower A.M. Rain'd in nt.
22.	80.	Do.	Do. Do. Do. Sprinkled rain A.M. Do. P.M. & thund. Rainy P.M.
23.	74.	N.W.	Do. Do. Rainbow in S.E. nr. ⊙ set Do. cleared off bright. Show[rs] clds. P.M.
24.	77.	Vari.	A.M. clear & calm. P.M. scat[d] clouds & lit breezes.
25.	75.	S'ly	Mostly cloudy. Sprinkled rain A.M. Thun[r] show[rs] P.M.
26.	73	S.W.	Light showers in morn. very strong wind & P.M. hi. wind & rain.
27.	66.	Vari.	Morn. pt'ly. cl[y]. then clear. P.M. ⊙ gen[y]. obsc. by clouds, showers passed N. & S. Sprinkled rain here.
28.	72.	Vari.	Light show[rs] A.M. P.M. fair & clear.
29.	74.	Vari.	Clear air, & very free fr. smoke. Wind mostly S'y.
30.	69.	E.	Scuds across the W. morn. A.M. fair. P.M. very rainy. Rainy nt.
31.	69.	E'y	A.M. rainy. ⊙ app[d] about 11h. P.M. cloudy, but ⊙ shin'd by fits. clears off towards nt.

Newbury N.H. Paid 5
Jy 12

Mr Dudley Leavitt
Meredith Village
N H

London Ridge N.H.
Dec 5

Paid 5

Dudley Leavitt M.M.
Meredith Bill
N. H.

June. 1847.

D.	Therm.	Wind	Weather, &c.
1	58°	Ey. light	Forenoon rainy. Aftn. cloudy. Thunder shower in the nt.
2	64	N.W.y brisk	Fair, ptly. cloudy, and the swallows in playful gambols skim along the surface of the grass in the fields, as much as to say more rain soon.
3	68	Ely.	Fair. Forenoon hazy. P.M. Showr. clouds. Tree toads sing. Rain'd in nt.
4	63	Varia.	Morn very rainy. Wind N.E. P.M. fair & cloudy. Wind S.W.
5	63	~~N.W.~~ly	Fair & windy, with scattering clouds.
6	64	N.W.	Fair & windy, with a few flying clouds.
7	70	Vari.	Fair. hazy, smoky air. Alternate calms and light breezes.
8	71	S.ly	Fair. Smoky & ptly. cloudy. Damp air.
9	65	E.ly	A.M. cloudy. P.M. rainy. Thunder.
10	78	S.ly	Fair. Some clouds. Windy.
11	76	S.ly	A.M. mostly cloudy, windy, now & then ~~sprinkd~~ dashes of rain. ~~Thunder.~~ ~~P.M. Do.~~ P.M. Rainy.
12	64	S.W.ly & Var.	Fair & windy, with many clouds.
13	3 P.M. 71	S.ly	Fair. A.M. Clear. P.M. some clouds. Rain in nt.
14	70	E.ly	A.M. Cloudy, & misty. P.M. Showery. Lightg. once, ev.
15	53	N.W.	Squally, very windy, & cold enough in the morn. to wear gr. coat & mittens.
16	69 nearly	W.ly	Fair. Light wind, A.M. Calm P.M. showr. clouds.
17	69	Varia.	Windy. Scatterg. clouds. Sprinkled rain A.M.
18	70.	Varia.	Fair. very few clouds. A few lity. breezes perceptible, but the air genery. calm, A.M. But P.M. more air stirring.
19	69	S.ly	Fair. Brisk hollow wind. Mostly cloudy. Damp air. Rainy nt. ~~rainy~~
~~20~~	~~69~~		
20	60	N.E.	This day, & the preced. nt. we had a real, old fash'd, ~~fine~~, soaking rain.
21	56	N.E.	A.M. very rainy. P.M. fair. ptly. cloudy.
22	64	Ey.	A.M. Cloudy & mostly foggy; ☉ appeard bef. noon. P.M. Cloudy, foggy, & some rain. Rainy nt.
23	70	Wy.	Fair A.M. Cloudy & fogy. morn. P.M. fair & calm.
24	74	Wy.	Fair, ~~brisk breeze of wind~~ brisk drying wind
25	78	Do.	Do. Hazy sky, & appearc. of smoke. do. do. do.
26	76	Varia.	Fair. Brisk wind. Showers went round to the S.
27	79	Wy.	Fair, windy, thundr., showers went to the N.
28	81	S.W.	Fair, many shower clouds. Thun. P.M. Showrs. N. & S. Rain'd few drops about ☉ set.
29	70	Vari.	Cloudy, with some rain.
30	71	Do.	Fair. Alternate clouds & ☉ shine

It has been aptly said by a fig. in rhet.c (Metonomy) tht. rain is cash to the farmer, and if so then the farmers have had in the late rain, a copious ~~rich~~ emis.n of ~~tht. notes, &c.~~ the ready rhino, fr. the bank of Heaven & ~~who~~ where is the ht. so unthankful as not to beat with grat.de for a rich supply gratis, fr. such a bank as tht. of wh. the "Gr. 1st Cause" is the pres.t, & the cashier, & the O, D, & *s, the directors?

Mr Dudley Leavitt
Meredith N.H.

Meredith Oct 21 1846

Mr Leavitt's Dear Sir

That boy which formerly lived with you Richard C ~~Leavitt~~ is Dead he died yesterday about 11 o'clock and will be buried Tomorrow at 2 o'clock P M. And if you can make it Convenient I should like to have you attend the funeral

Your Most Kind
Friend [illegible]

$$\frac{24a^2}{2a} =$$

Algebra applied to Geometry.

As no gen.l rule can be given for drawing lines, and electing the most quan.ts to substitute, &c., so as to bring out the most simple conclusions, the best way to gain experience is to attempt the solution several ways, and apply that wh. succeeds best.

The follow.g directions may be useful.

1. In preparing the fig. by drawing lines, let them be either par. or perpendicular so as to form simil.r △s; if if an ∠ be given, let the perpendic.r be opposite to that ∠, & also fall for. the end of a line, if poss.le

2. In electing proper quant.s to substitute for, let those be chosen (whether requir.d or not) wh. lie nearest to the known or given pts. of the fig., & by help where of the next adjacent pts. may be expressed without the intervention of 3rds, by $+^n$ or $-^n$ only. Thus, if it were requir.d to find the perpendic.r of a plane △, for. the 3 sides given, it would be much better to substitute for one of the segments of the base then. for the perpendic.r, tho' the quant.y required; because the whole base being given, or expres.d, by $-^n$ only, & so the final equat.n comes out a single one; for. whence the segm.ts being known, the perpendic.r is easily found by corr.n with ∠. Whereas if the perpend.r be 1st sought, both the segm.ts would be unknown quantities, & the final equat.n an unsightly quadratic one.

Mr Leavitt Sir

Differing in opinion from some of the School teachers of our town respecting the correctness of a Table which we find in Pikes Arithmetick as abridged by yourself, page 57. particularly that part of it which asserts that "40 feet of Round timber or 50 feet of hewn timber make one Ton or Load" I have thought it not improper to ask your opinion upon this subject. Although an entire Stranger to you any farther than your talents and abilities have obtained you celebrity in the literary world yet from regard to truth I trust you will condescend to examine that Table of Solid measure and address me a line upon its correctness as your opinion will settle all our doubts. With respect

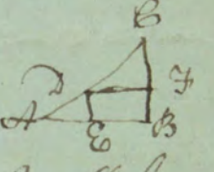
London Ridge Dec 2. 1845 A. M. Caverly

3. When in any prob. there are two lines or quantities alike related to other pts. of the fig. or prob. the best way is to make use of neither of them, but to substitute for their sum their prod., or the sum of their alternate pts., or for some line or lines in the fig. to wh. they have both the same relation.

4. If the area of the perimeter of a fig. be given, or such pts. thereof as have but a remote relation to the pts. required, it will sometimes be of use to assume another fig. similar to the proposed one, whereof one side may be unity, or some other known quantity; fr. whence the other pts. of this fig., may be known proportions of the homologous sides, or pts., may be found, and an equation obtained.

Geometrical Problems.

The area of a rt. $\angle^{d}$ Δ, & the sides of a ~~square~~ rectangle, &c., to find the sides.



Put $DF = a$, $DE = b$, & $BC = x$, & the area $= d$. Then by simil.^{r} Δs, we shall have $x - b\,(CF) : a\,(DF) :: x\,(BC) : AB = \frac{ax}{x-b}$. Therefore $\frac{ax}{x-b} \times \frac{x}{2} = d$, & cons.^{y} $ax^2 = 2dx - 2bd$, or $x^2 - \frac{2dx}{a} = -\frac{2bd}{a}$; or $x = \frac{d}{a} \pm \sqrt{\frac{dd}{aa} - \frac{2bd}{a}}$; fr. wh. AB & AC will be known.