

Answer to Questions in the April No.

1st. From each end of the given line, and on the same side of it, draw lines making with it angles $22\frac{1}{2}^{\circ}$, being half the equal angles of the required triangle; bisect each of these lines and let the bisecting lines cut the given line; it will then be divided into three parts, the middle part of which will be the base of the required triangle, and the two outer segments the two equal sides.

2nd. By an algebraical solution we find that the base of an isoscele right angled triangle, is equal the square root of twice the square of the perimeter, minus the perimeter, therefore if the perimeter be 12 the base will be the square root of 288, minus 12, equal 4 97056, and the two sides 3-51472 respectively.

Long Crack, April.

P. S—w.

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To M. N. W.

SIR,—When you say that you are not aware of having used “false reasoning” and “erroneous principles,” as you misquote the latter passage, you say in effect, that my statements are ungrounded, and consequently, unmanly and unjust. To a person who, rather than yield to truth, strains every nerve to make truth yield to him—who shuts every passport to his intellect against reason, or who wilfully brings false charges against another, silence, when its hushed eloquence cannot be attributed to a wrong cause, is decidedly the most noble reply. As your statements, however, from your age and inexperience in scientific inquiries, may probably be sincere though inaccurate, I shall now refer you to some of your own contradictions, which may suffice to convince you that your arguments are illogical and your opinions unphilosophical. In the first piece which bears your signature in the Amaranth you say, “the effects of heat are reciprocally proportional to the square of its distance from the centre whence it is propagated.” In the next you say, “my solution was founded on the simple notion that heat emanates from the surface of the sun. Your correspondent supposes heat to proceed only from the sun’s centre: this, I think, will account for the difference of the results.” And in the last you say, “I had no idea that I was guilty of using ‘erroneous principles’ and ‘false reasoning,’ by giving a simple arithmetical solution. I am not aware that I employed any principle but that used by yourself, nor any reasoning at all. If I had squared the number of semi-diameters instead of the number of diameters, as given in the question,

I should have found the same answer as you.” Now you surely cannot avoid seeing the wonderful harmonization that pervades this chaos of confusions. At one time the heat emanates from the centre, at another from the surface; at one time the principles or notions are the same, at another they are different; at one time you have two distances, at another only one; at one time you think, at another you do not think at all; at one time you are a rational agent, at another a mere arithmetical machine.* These are your own assertions without any exaggeration: your language cannot be misconstrued. To suppose a centre in the surface of a sphere; the surface at a distance from itself; a ratio without two homogeneous terms; a proportion without equal ratios; or a person thinking without reasoning at all, is manifestly absurd. No wonder you had no idea when you did not reason at all: no wonder you should have found the same answer as I, had you performed the same operation. In Simple Proportion, when one term is in half yards, and another in whole yards, whether do you reduce them to the same denomination or use them as given in the question? The latter, it would appear, as it is not unlike the doctrine which you so strenuously advocate. The truth is, to be plain with you, that in evading my objections to your theories, you have involved yourself into a labyrinth of inconsistencies, from which you cannot possibly extricate yourself. That others obtained the same result as you, is no argument in its favour, if it can be demonstrated to be wrong; and, I challenge any mathematician to confute the demonstration I have already given. Some who stand pre-eminent in the literary world have committed remarkable mistakes. Ferguson, in calculating the common centre of gravity of the earth and moon, neglects the quantity of matter in the latter altogether; Hutton confounds the elastic curve with the catenary; and Bonycastle classes an axiom with the postulates. Joyce says that a horse drawing a load is as much drawn back by the load as he draws it forward! Young that a vessel sailing at any

* Pascal appears to have been the first who brought a machine of this kind to any perfection. Napier’s rods are ingenious but very limited in their application. Babbage’s engine is wonderful; it involves and evolves numbers; resolves algebraic equations; integrates equations of finite differences; and computes astronomical and other tables with unerring accuracy, and at the rate of 44 figures per minute. A person who can perform calculations without reasoning may be justly compared to this curious automaton.