

**SCEPTICISM - CREDULITY
= 0. THE RELIGION OF
ALGEBRAIC CURVES**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649225422

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Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

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JAMES BROWNE

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THE RELIGION OF ALGEBRAIC
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MODERN scientific sceptics urge fairly enough from their special point of view, that religion should be examined by the cold light of science, and that all that cannot stand the hard test of reasoning and of evidence, should be consigned to the limbo of superstition. They rightly deny any scientific weight to mere sensational emotions, which unfortunately constitute so large a share of modern religion, and which are often as dependent on the state of a man's health, as on the state of his soul. The champions of orthodoxy, on the other hand, frequently fall into the error of defending their opinions, on the very ground most unfavourable to themselves. They often appeal by preference to personal experiences and feelings, and sternly repudiate any mathematical reasoning, from not appreciating the fact, that it is precisely the most unfavourable battle-ground for scepticism. Viewed mathematically, scepticism appears in its true light as the very highest

development of credulity. Sceptics consequently encourage the idea, that religion is *ipso facto* beyond the sphere of mathematics; whilst marvelling at the blindness which, in military parlance, induces the troops of orthodoxy to stand on the defensive, in comparatively indefensible positions, instead of assuming the offensive against that weak flank of scepticism—the purely mathematical view of religion, summed up in the equation

$$\text{Scepticism} - \text{Credulity} = 0.$$

To define scepticism as the very highest development of credulity sounds paradoxical, but it is not more so than the proper definition of a scientific expert—he who best knows his scientific ignorance. Take a hoop, and saw it across at one point. Call the narrow space between the saw-cut, truth; its edges, knowledge and ignorance.

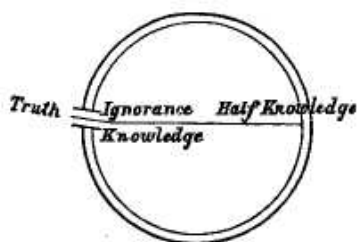


Fig. 1.

It is a long continuous path along the hoop, from edge to edge of the cut; and the point in the path farthest from

the truth, is also that which is the farthest from ignorance as from knowledge, that half-knowledge which the intellectual progress of the nineteenth century may perhaps be approaching, that scepticism which, being the farthest from the truth, is therefore the highest development of credulity.

Profiting by any admission made by believers, that a personal God, being the originator of all law, must be above the law, and that in the relations between the moral and physical world, mathematical reasoning is inadmissible, as necessarily limiting the power of the Deity, sceptics push their advantage by asking, "All the physical universe is governed by scientific, *i.e.* mathematical, laws. How, then, can these laws be altered for your special benefit?" They appeal to Cæsar's laws against Cæsar, to the universal lawgiver against the cry of the mother over her dying babe; and as nature's laws follow their relentless course, they conclude that the mathematically-governed physical universe, cannot, in the remotest degree be altered or affected, by prayer to a personal God. Which of us has not felt the force of this argument? Which of us, as generation after generation is crushed out, has not asked with the Persian poet, "Who can resist the grinding of the two millstones—the sky above, and the earth beneath?"

But strong as this argument may seem, it is, to the mathematician, a hopelessly weak one; for it is founded on an entire misconception of the nature of a mathematical law. In popular belief, a mathematical law must

be indicated by a regular, inelastic, unaltering, continuous series of effects due to certain causes. In real fact, a mathematical law may, and often does, represent in a certain sense the most irregular, elastic, variable, and discontinuous series of effects. The very fact, indeed, of the universe being directed by mathematical laws, is the only conceivable method, whereby even an infinite intelligence could have left itself an infinite latitude for deducing the most absolutely varying, contradictory, and incongruous effects, from invariable and constant causes, such as seem to be the moving agents in the system of the universe. In view of the objections to a personal God carrying out constant changes and contradictions in the mathematical laws of nature, in compliance with the prayers of individuals or nations, the mathematical line of argument would briefly be as follows: "Admitting the government of the universe by mathematical laws, and knowing that such laws may represent the most contradictory and incongruous series of effects, the *onus probandi* lies with the sceptic to show, that apparent changes and contradictions in answer to prayer would be mere acts of omnipotent will, in other words, violations of law, and would not be due to mathematical laws, involving such irregularities in obedience to law." As a matter of feeling, the believer in God's all-pervading Spirit may shrink from the thought of such a Spirit being bound by mathematical laws; but he may in argument fairly say to the sceptic, "Thou hast

appealed unto science, and unto science shalt thou go;" and find, that even when tried by such a cold, unimpassioned abstraction of science as an algebraical equation, the theory of a personal, or, to speak in all reverence, an interfering God, is not only possible, but in the highest degree probable and scientific.

But before going further, it may be well to define a mathematical law as being merely a statement of equality—an equation. Every equation can be graphically represented, and brought before the eye in a diagram. To explain the relation between an algebraic equation, and its graphic representation, an algebraic curve, we must go back to very simple considerations. A detective searching a room for a stolen paper, finds a remark in the thief's notebook, "Four from corner in length, two across;" and counting from the corner of the room four squares in the carpet one way, and two in the other, there finds the paper under the carpet. The point had been defined, with reference to the corner and to the two side walls, in terms of the carpet squares. Similarly, if we draw two indefinite straight lines or axes intersecting at right angles on a sheet of paper, we may define the exact position of any point by such a statement as "four inches in length, two inches across," with reference to the intersection of the axes, which is called the origin, by measuring four inches from it one way and two inches the other. Calling all measurements along one axis x ,

and all measurements along the other y , the point is defined by the two equations

$$x=4,$$

$$y=2,$$

x and y being called the co-ordinates of the point as measured from the origin.

Going a step further, if from the origin we draw a

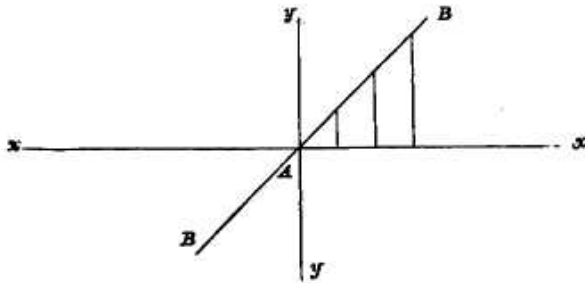


Fig. 2.

line AB bisecting the right angle between the axes, it is self-evident that for every possible point in that line, the co-ordinates are always equal, and fulfil the condition

$$x=y,$$

which therefore is the equation to a straight line, bisecting the angle between the rectangular axes, and passing through the origin, the said straight line being the graphic representation of the equation

$$x=y,$$

which embodies the mathematical law binding upon