

**THE SUBSTITUTION OF SIMILARS,
THE TRUE PRINCIPLE OF
REASONING, DERIVED FROM A
MODIFICATION OF ARISTOTLE'S
DICTUM, PP. 4-86**

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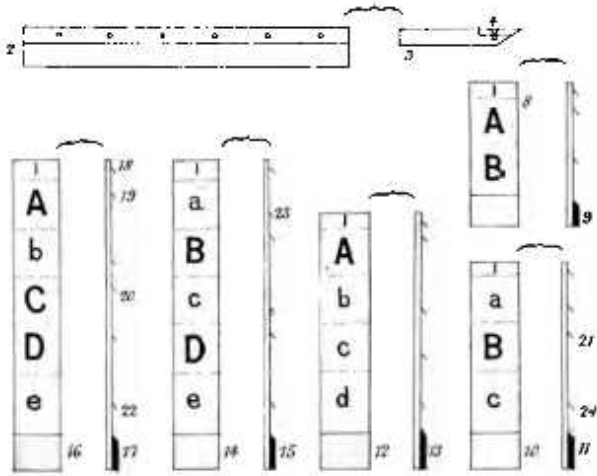
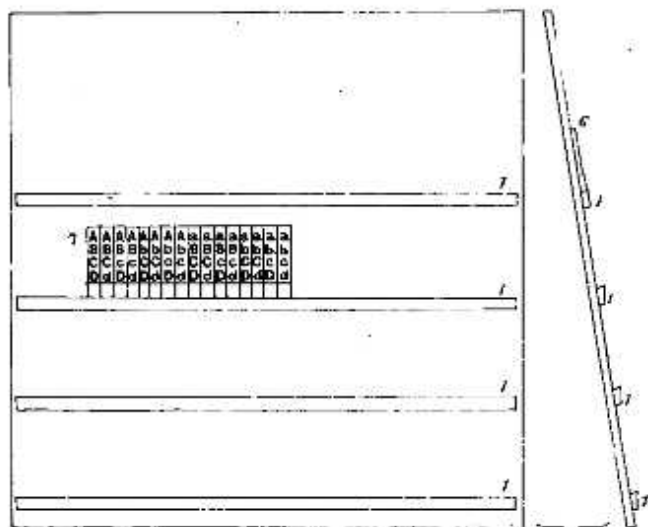
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THE LOGICAL ABACUS.



SEE DESCRIPTION, P 85, AND APPENDIX.

THE
SUBSTITUTION OF SIMILARS,

The True Principle of Reasoning,

*DERIVED FROM A MODIFICATION OF ARISTOTLE'S
DICTUM.*

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PREFACE.

IN this small treatise I wish to submit to the judgment of those interested in the progress of logical science a notion which has often forced itself upon my mind during the last few years. All acts of reasoning seem to me to be different cases of one uniform process, which may perhaps be best described as the *substitution of similars*. This phrase clearly expresses that familiar mode in which we continually argue by analogy *from like to like*, and take one thing as a representative of another. The chief difficulty consists in showing that all the forms of the old logic, as well as the fundamental rules of mathematical reasoning, may be explained upon the same principle; and it is to this difficult task I have devoted the most attention. The new and wonderful results of the late Dr.

Boole's mathematical system of Logic appear to develop themselves as most plain and evident consequences of the self-same process of substitution, when applied to the Primary Laws of Thought. Should my notion be true, a vast mass of technicalities may be swept from our logical text-books, and yet the small remaining part of logical doctrine will prove far more useful than all the learning of the Schoolmen.

that Aristotle, however great, should at a single bound have reached the highest generalizations of a closely kindred science of human thought?

4. Kant indeed was no intellectual slave, and it might well seem discouraging to logical speculators that he considered logic unimproved in his day since the time of Aristotle, and indeed declared that it could not be improved except in perspicuity. But his opinions have not prevented the improvement of logical doctrine, and are now effectually disproved. A succession of eminent men,—Jeremy Bentham, George Bentham, Sir William Hamilton, Professor De Morgan, Archbishop Thomson, and the late Dr. Boole,—have shown that in the operations and the laws of thought there is a wide and fertile area of investigation. Bentham did more than assert our freedom of inquiry; in his uncouth logical writings are to be found most original hints, and in editing his papers his nephew George Bentham pointed out the all-important key to a thorough logical reform, the *quantification of the predicate*.¹ Sir William Hamilton, Archbishop Thomson, and Professor De Morgan rediscovered and developed the same new idea. Dr. Boole, lastly, employing this fundamental idea as his starting

¹ See "Outline of a New System of Logic," by George Bentham, *Esq.*, London, 1827, p. 133 *et seq.*

point, worked out a mathematical system of logical inference of extraordinary originality.

5. Of the logical system of Mr. Boole Professor De Morgan has said in his "Budget of Paradoxes:"¹ "I might legitimately have entered it among my *paradoxes*, or things counter to general opinion; but it is a paradox which, like that of Copernicus, excited admiration from its first appearance. That the symbolic processes of algebra, invented as tools of numerical calculation, should be competent to express every act of thought, and to furnish the grammar and dictionary of an all-containing system of logic, would not have been believed until it was proved. When Hobbes, in the time of the Commonwealth, published his 'Computation or Logique,' he had a remote glimpse of some of the points which are placed in the light of day by Mr. Boole. The unity of the forms of thought in all the applications of reason, however remotely separated, will one day be matter of notoriety and common wonder; and Boole's name will be remembered in connexion with one of the most important steps towards the attainment of this knowledge."

6. I need hardly name Mr. Mill, because he has expressly disputed the utility and even the truthfulness of the reforms which I am considering, and

¹ No. xxiii. *Athenæum*.