

CONTENTS

INTRODUCTION

								PAGE
§ ı.	Application of the term 'substantive'							хi
§ 2.	Application of the term 'adjective'.							xii
§ 3.	Terms 'substantive' and 'adjective' cont 'universal'		d witl	•	rticul	ar'	and .	xiii
§ 4.	Epistemic character of assertive tie .		•					xiv
§ 5.	'The given' presented under certain deter	mina	bles		•			xiv
§ 6.	The paradox of implication		•	•				xv
§ 7.	Defence of Mill's analysis of the syllogism							xvii

CHAPTER I

INFERENCE IN GENERAL

§ 1.	Implication defined as potential inference	I
§ 2.	Inferences involved in the processes of perception and association .	2
§ 3·	Constitutive and epistemic conditions for valid inference. Examination of the 'paradox of inference'	
٤.	·	7
8 4.	The Applicative and Implicative principles of inference	10
§ 5.	Joint employment of these principles in the syllogism	IJ
§ 6.	Distinction between applicational and implicational universals. The	
•	structural proposition redundant as minor premiss	I 2
§ 7·	Definition of a logical category in terms of adjectival determinables .	15
8.8	Analysis of the syllogism in terms of assigned determinables. Further	
3 0.	illustrations of applicational universals	17
§ 9.	How identity may be said to be involved in every proposition	20
	The formal principle of inference to be considered redundant as major premiss. Illustrations from syllogism, induction, and mathematical	
	equality	20
§ 11.	Criticism of the alleged subordination of induction under the syllogistic	
-	principle	34



vi

CONTENTS

CHAPTER II

THE RELATIONS OF SUB-ORDINATION AND CO-ORDINA-TION AMONGST PROPOSITIONS OF DIFFERENT TYPES

§ 1.	The Counter-applicative and Counter-implicative principles required for the establishment of the axioms of Logic and Mathematics	27
8 2.	Explanation of the Counter-applicative principle	28
-	Explanation of the Counter-implicative principle	29
-	Significance of the two inverse principles in the philosophy of thought	31
	Scheme of super-ordination, sub-ordination and co-ordination amongst propositions	32
§ 6.	Further elucidation of the scheme	38
	CHAPTER III	
	SYMBOLISM AND FUNCTIONS	
§ 1.	The value of symbolism. Illustrative and shorthand symbols. Classification of formal constants. Their distinction from material constants.	41
§ 2.	The nature of the intelligence required in the construction of a symbolic system	44
§ 3.	The range of variation of illustrative symbols restricted within some logical category. Combinations of such symbols further to be interpreted as belonging to an understood logical category. Illustrations of intelligence required in working a symbolic system	46
§ 4.	Explanation of the term 'function,' and of the 'variants' for a function	48
§ 5.	Distinction between functions for which all the material constituents are variable, and those for which only some are variable. Illustrations from logic and arithmetic	50
§ 6.	The various kinds of elements of form in a construct	53
	Conjunctional and predicational functions	55
	Connected and unconnected sub-constructs	57
-	The use of apparent variables in symbolism for the representation of the distributives <i>every</i> and <i>some</i> . Distinction between apparent variables and class-names	58
10.	Discussion of compound symbols which do and which do not represent	50
	genuine constructs	61

§ 11. Illustrations of genuine and fictitious constructs.

functions and the functions of mathematics

§ 15. Functions of two or more variants .

§ 13. Explanation of the notion of a descriptive function

§ 12. Criticism of Mr Russell's view of the relation between propositional

§ 14. Further criticism of Mr Russell's account of propositional functions

64

66

69

71

73

PAGE



	CONTENTS	vii
	CHAPTER IV	
	THE CATEGORICAL SYLLOGISM	
	1	PAGE
§ 1.	Technical terminology of syllogism	76
§ 2.	Dubious propositions to illustrate syllogism	77
	Relation of syllogism to antilogism	78
§ 4·	Dicta for the first three figures derived from a single antilogistic dictum, showing the normal functioning of each figure	79
§ 5.	Illustration of philosophical arguments expressed in syllogistic form .	81
	Re-formulation of the dicta for syllogisms in which all the propositions are general	83
§ 7.	The propositions of restricted and unrestricted form in each figure .	84
§ 8.	Special rules and valid moods for the first three figures	85
8 o.	Special rules and valid moods for the fourth figure	87
	Justification for the inclusion of the fourth figure in logical doctrine .	88
8 rr.	Proof of the rules necessary for rejecting invalid syllogisms	89
§ 12.	Summary of above rules; and table of moods unrejected by the rules	-
3	of quality	92
§ 13.	Rules and tables of unrejected moods for each figure	93
§ 14.	Combination of the direct and indirect methods of establishing the valid	
	moods of syllogism	96
	Diagram representing the valid moods of syllogism	97
	The Sorites	97
	Reduction of irregularly formulated arguments to syllogistic form .	98
	Enthymemes	100
§ 19.	Importance of syllogism	102
	CHAPTER V	
	CIIMITER V	
	FUNCTIONAL EXTENSION OF THE SYLLOGISM	
	Deduction goes beyond mere subsumptive inference, when the major premiss assumes the form of a functional equation. Examples	103
-	A functional equation is a universal proposition of the second order, the functional formula constituting a Law of Co-variation.	105
	The solutions of mathematical equations which yield single-valued functions correspond to the <i>reversibility</i> of cause and effect	106
§ 4.	Significance of the <i>number</i> of variables entering into a functional formula	108
§ 5.	Example of a body falling in vacuo	110
§ 6.	The logical characteristics of connectional equations illustrated by thermal and economic equilibria	111
	The method of Residues is based on reversibility and is purely deductive	116
§ 8.	Reasons why the above method has been falsely termed inductive .	119
§ 9.	Separation of the subsumptive from the functional elements in these extensions of syllogism	I 20



viii

CONTENTS

CHAPTER VI

FUNCTIONAL DEDUCTION

		PAGE
§ 1.	In the deduction of mathematical and logical formulae, new theorems are established for the different species of a genus, which do not hold	
	for the genus	123
	Explanation of the Aristotelean tδιον	I 25
§ 3.	In functional deduction, the equational formulae are non-limiting. Elementary examples	126
§ 4·	The range of universality of a functional formula varies with the number of independent variables involved. Employment of brackets. Importance of distinguishing between connected and disconnected compounds	128
§ 5·	The functional nature of the formulae of algebra accounts for the possibility of deducing new and even wider formulae from previously established and narrower formulae, the Applicative Principle alone being employed	120
e 6	• •	130
•	Mathematical Induction	133
	The logic of mathematics and the mathematics of logic	135
-	Distinction between premathematical and mathematical logic	138
§ 9.	Formal operators and formal relations represented by shorthand and not variable symbols. Classification of the main formal relations ac-	
	cording to their properties	141
§ 10.	The material variables of mathematical and logical symbolisation receive specific values only in concrete science	144
§ 11.	Discussion of the Principle of Abstraction	145
	The specific kinds of magnitude are not determinates of the single de-	
	terminable Magnitude, but are incomparable	150
§ 13.	The logical symbolic calculus establishes formulae of implication which	
	are to be contrasted with the <i>principles of inference</i> employed in the procedure of building up the calculus .	151
	CHAPTER VII	
	THE DIFFERENT KINDS OF MAGNITUDE	
§ 1.	The terms 'greater' and 'less' predicated of magnitude, 'larger' and 'smaller' of that which has magnitude	153
§ 2.	Integral number as predicable of classes or enumerations	154
§ 3·	Psychological exposition of counting	155
§ 4.	Logical principles underlying counting	158
	One-one correlations for finite integers	160
	Definition of extensive magnitude	161
	Adjectival stretches compared with substantival	163
	Comparison between extensive and extensional wholes	166
	Discussion of distensive magnitudes	168
	Intensive magnitude	172
•	Fundamental distinction between distensive and intensive magnitudes.	173



	CONTENTS					ix
						AGE
8 12.	The problem of equality of extensive wholes .					174
	Conterminus spatial and temporal wholes to be considered	lered	eoua	l. aua	li-	-,+
5 - J.	tative stretches only comparable by causes or effects	•		•		175
§ 14.	Complex magnitudes derived by combination of simp	olex				180
§ 15.	The theory of algebraical dimensions					185
	The special case in which dividend and divisor are	quan	tities	of t	he	
	same kind	•	•	•	•	186
§ 17.	Summary of the above treatment of magnitude .	•	•	٠	•	187
	CHAPTER VIII					
	INTUITIVE INDUCTION					
§ι.	The general antithesis between induction and deducti	ion		•		189
§ 2.	The problem of abstraction	•	•			190
	The principle of abstractive or intuitive induction				•	191
	Experiential and formal types of intuitive induction	•	•	•	•	192
	Intuitive induction involved in introspective and ethic		_		•	193
§ 6.	Intuitive inductions upon sense-data and elementar	y alg	ebrai	cal a	nd	
٥.	logical relations	•	•	•	•	194
8 7.	Educational importance of intuitive induction .	•	•	•	•	196
	CHAPTER IX					
5	SUMMARY INCLUDING GEOMETRICAL	. IN	DU	CTIC	NC	
8 1.	Summary induction reduced to first figure syllogism					197
	Summary induction as establishing the premiss for	· induc	· tion	orone	er.	-91
0	Criticism of Mill's and Whewell's views		•			198
§ 3·	Summary induction involved in geometrical proofs					200
§ 4.	Explanation of the above process					201
	Function of the figure in geometrical proofs .					203
§ 6.	Abuse of the figure in geometrical proofs					205
§ 7·	Criticism of Mill's 'parity of reasoning'	•	•	•	•	208
	CHAPTER X					
	DEMONSTRATIVE INDUCTION	ON				
§ 1.	Demonstrative induction uses a composite along w	vith a	n in	stanti	al	
§ 2.	premiss	to de	mon	strati	• ve	210
•	induction	•				210
§ 3.	Conclusions reached by the conjunction of an altern	ative	with	a di	is-	
	junctive premiss	•	•	•	•	214
				(2 5	



> CONTENTS X PAGE § 4. The formula of direct universalisation 215 § 5. Scientific illustration of the above 216 § 6. Proposed modification of Mill's exposition of the methods of induction § 7. The major premiss for demonstrative induction as an expression of the dependence in the variations of one phenomenal character upon those of others 218 § 8. The four figures of demonstrative induction 22I § 9. Figure of Difference. 222 § 10. Figure of Agreement. 223 § 11. Figure of Composition § 12. Figure of Resolution. 226 § 13. The Antilogism of Demonstrative Induction 226 § 14. Illustration of the Figure of Difference 228 § 15. Illustration of the Figure of Agreement 231 § 16. Principle for dealing with cases in which a number both of cause-factors and effect-factors are considered, with a symbolic example . . . § 17. Modification of symbolic notation in the figures where different causefactors represent determinates under the same determinable 234 § 18. The striking distinction between the two last and the two first figures. § 19. Explanation of the distinction between composition and combination of cause-factors. 235 § 20. Illustrations of the figures of Composition and Resolution . 237 CHAPTER XI THE FUNCTIONAL EXTENSION OF DEMONSTRATIVE INDUCTION § 1. The major premiss for Demonstrative Induction must have been established by Problematic Induction 240 § 2. Contrast between my exposition and Mill's 24 I § 3. The different uses of the term 'hypothesis' in logic . 242 244 § 5. The establishment of a functional formula for the figures of Difference and of Composition . 246 § 6. The criteria of simplicity and analogy for selection of the functional formula 249 § 7. A companison.
> Whewell and Mill comparison of these criteria with similar criteria proposed by 251 § 8. Technical mathematical methods for determining the most probable 252 INDEX . 254