

done—much more important than the actual metaproof. (The weak completeness of sentence logic is briefly proved by normal forms in an easily omitted optional section.)

The rules of deduction are a felicitously chosen list, neither discouragingly short nor tiresomely long. Roles of connectives are not sharply segregated, but the conditional and biconditional with their special problems are initially kept apart from conjunction, disjunction, and negation. Conditional and indirect proof are not introduced until later. The quantifier rules involve the usual number of special restrictions. The rules are conveniently listed on the endpapers.

The book is written in good grown-up English—an essential medium to which to expose our students, who may not have picked it up from high-school, television, or “real” life. This is no monosyllabic pabulum for seventh-grade reading-level freshmen.

The one possible drawback of the book is its sparseness. The teacher can, of course, easily supplement text material by classroom presentation, as most but not all like to do. The only concession to grab-bag fans is four appendices on special topics: axiomatization, proof trees, mathematical induction, and switching circuits. Also, it seems to me that the chapter “Quantificational logic: symbolism and semantics” throws perhaps too much at the student at once: monadic predicates, relational predicates, descriptions, interpretations.

The formal development is rigorous without being pedantic or opaquely technical. Footnotes give a useful selection of further possible readings on theoretical and philosophical topics.

(The word “stratagem” is misspelled throughout, unless the authors would re-hellenize our Romance orthography.)

— John Bacon

ROBERT BAUM. *Logic*. New York: Holt, Rinehart, and Winston, 1975, Pp. 511, index. \$9.95, hardbound.

Baum's text has both good and bad features when viewed from a pedagogical standpoint, but on the whole compares favorably with other popular texts. Its greatest virtue is its clarity and readability: if I had to recommend a book to a student who wanted to learn logic on his own, this one would be among those which I would most seriously have to consider. Many distinctive features contribute to making this book a valuable teaching instrument: key terms are set in bold-face type and defined clearly and precisely, important concepts and principles are introduced through concrete illustrations from which abstractions are then inductively drawn, and many of the examples used, both in the text and exercises, are contemporary and topical. Pitfalls and misinterpretations to which a student may fall victim are anticipated and guarded against: a clear distinction is made, for example, between a conditional statement and an argument (13), so that a reader of this text is unlikely to mistake one for the other. The presentation is rigorous and precise, but without being at all formalistic, as is, for example, that of Michalos in his *Principles of Logic*. Summaries at the end of each chapter provide a concise means of review and reinforcement of the material covered therein. About half of the numerous exercises are answered at the back of the book, a feature which makes the text useful for independent study and frees for other things some of the class time which would normally be devoted to drill. The book is quite ordinary in scope, covering, in order, classical syllogistic logic, symbolic logic (both propositional and quantificational), induction, scientific method, Mill's methods, probability, ordinary

language, definitions, and informal fallacies.

Besides these general features, there are a number of more specific items in the book which may be classed as innovations, or at least which may serve to distinguish it from some other texts. One of these is the author's rather explicit admission that "in point of fact, the truth-functional operator symbolized by the horseshoe has no real counterpart in ordinary English" (162). It is unusual, and a refreshing change, to see this fact stated so baldly in an introductory text. (It might be added, however, that Baum's explanation of why, in light of this circumstance, the word "implication" is used to translate the horseshoe is as unsuccessful as those found in other books.) For another, in his discussion of enthymemes Baum points out that inasmuch as two different premises may both formally serve to complete a given argument, a principle of decision is needed in order to know which of the two to choose. He advances, therefore, a "**principle of charity**," which stipulates that one should supply statements that make the argument as good as possible" (135). This rule, which is only vaguely hinted at in other texts, is here made explicit. Again, Baum emphasizes, as I have not found done elsewhere, that the same argument can be stated either inductively or deductively, and he exploits this principle in several contexts. Finally, the author reintroduces, to good advantage, the four Aristotelian causes in his treatment of causation, and proceeds to incorporate these into his discussion of necessary and sufficient conditions.

On the other hand, however, the book is marred by certain shortcomings which, in my judgement, lessen its value as a classroom text. One is its occasional lapse into gratuitous and lengthy technicality. Whereas, for example, other authors are content

merely to mention the issue of existential import, the Boolean interpretation, and its results for the square of opposition, Baum, in addition to this, launches into an explanation of obversion, conversion and contraposition, first on the Boolean interpretation, complete with Venn diagrams to show logical equivalences, and then repeats the whole procedure as it would work on the Aristotelian interpretation, Venn diagrams and all, in great and dull complexity. (71-94). An instructor who does not want to go into such detail will be somewhat hampered by the text in attempting to present a simpler version of these immediate inferences.

A further deficiency is that some of Baum's examples do not illustrate what they are supposed to. At the conclusion of what promised to be an example of a crucial experiment, the reader is told that "logically as well as historically . . . [the] experiment was probably not 'crucial'" (343), and no example of such an experiment is subsequently offered. In the chapter on informal fallacies an instance of *petitio principii* is promised, but after presenting the example the author (quite justly!) confesses that it was "not really an argument" (465), much less one which commits that particular fallacy. Other examples illustrate only poorly their intended object. The first example given of formal proof construction in propositional logic is an argument having nine conditional premises, to prove the conclusion of which it is solely necessary to apply the rule of hypothetical syllogism eight (!) times. The reason for this example is not one which I can readily discern. Finally, while Baum is usually at pains to construct varied and interesting illustrations, in one case essentially the same example (*anent* "Professor Wilson's metaphysics course") is beaten to death, appearing ten or eleven times

in the same chapter.

Further problems attend some of the author's theoretical positions. Strongly in favor of the view that deductive inference is ultimately circular, Baum finds himself unable to distinguish, on formal grounds, between sound deductive argument and the fallacy of begging the question (28, 464). Conversely, the general criterion which Baum advances for evaluating inductive arguments is both circular and such that *no* inductive argument could in principle *ever* be known to be strong, since, in order to say this, we would have to know that "of all possible arguments that could be given in support of the conclusion, this particular argument is stronger than most" (29, 39). (How one is to ensure that "all possible" arguments have in fact been considered, and in terms of what criterion, is not explained.) Jointly, these considerations entail the result that good arguments are either circular or weak, an unfortunate lesson to convey to beginning students, however much it reflects Baum's own philosophy of logic.¹ It would have been more appropriate had the author at least mentioned alternative conceptions of deduction and induction, ones which do not entail this result. (Joseph G. Brennan, for example, in his *A Handbook of Logic*, argues that the syllogism is not circular, and gives a less one-sided picture of induction than that found in Baum.)

Other questionable notions include the concept of "logical effort" as the effort expended in attempting to falsify an observation statement in science. The effort is said to be both non-psychological and non-physical (333-4), but we are not then told what kind of effort remains. Again, in a departure from the definition and general usage of "validity" to pertain to arguments only and not to propositions, it is said in chapter five (written by David T. Wieck) that "a given statement is either

valid or invalid" (260).

Turning now to larger issues, it is evident that although Baum may strive for balance he is more interested, along with the authors of most other texts, in teaching logic as a formal discipline than in teaching and demonstrating its practical utility and applications. The chapter on quantification, naturally the most complex in the book, is singularly lacking in the type of ordinary language exercises which one finds in Copi, for example, and which would, in some measure at least, serve to legitimize study of quantification in the minds of introductory students. But the best evidence of this imbalance is the very poor treatment of informal fallacies, consigned to the back of the book. The discussion of argument from ignorance is a case in point. This is defined as reasoning that since "there is no evidence (or proof) that it is the case that X, therefore it is not the case that X" (466, 489). This is only half the usual definition of the fallacy, and the worst half at that, since in some cases it is not at all fallacious to argue in this manner. To the claim that invisible elves keep my watch running it would be quite reasonable to answer that this is false on the ground that "there is no evidence (or proof) that it is the case." Contrary to Baum, the "basic" form of the fallacy is the argument that a proposition is true on the ground that it has not been proven false. Baum's definition throws the burden of proof on the party denying the existence of some alleged entity, whereas it is properly the burden of the party making the positive claim of existence. Baum, and here he has much company, is completely at sea when he tries to dispose of the common suggestion that the legal principle which holds that a man is properly assumed innocent until proven guilty is an instance of this fallacy. His reply is that this "is not a fallacious argument, because 'due process of law'

proceeds specifically from the premise. The law expressly stipulates this assumption as the basis for argumentation by the defense and the prosecution and for the jury's interpretation of the arguments" (467). But if an argument is fallacious, it is so whether it is advanced "specifically" and "expressly" or covertly and through inattention. The correct explanation is provided by Manicas and Kruger in *Essentials of Logic*: "this presumption of innocence is not without some foundation, since experience has shown that most people are innocent of any serious wrongdoing when there is no evidence to the contrary" (329).

Elsewhere in the same chapter Baum advances a conception of the *argumentum ad populum* which amounts to appealing to a large audience for a purpose of which one disapproves. Thus, as an illustration of this "fallacy" Baum quotes a passage from *The Blue Book* of the John Birch Society and comments that it "is a rather stunning little paradigm of illogic which was conceived as a vehicle for discrediting the late John F. Kennedy," which "utilizes malicious terms without demonstrating their suitability invokes the loyalties and incites the fears of its audience," and which in general appeals to emotion rather than to reason (471). But if this is what is wrong with the passage, then it is not properly characterized as an appeal to the people unless every highly emotional address to a large group is to be so classed. Surely this is not the traditional fallacy of *argumentum ad populum*. It is not necessary to press the point further; suffice it to say that there is little originality, while there are several errors, in the treatment of fallacies.

One area in which this text is outclassed by another, that of Copi, is in the provision of exercises. Here Copi's text, which has the considerable advantage of now being in its fourth edition,

stands out in the sheer numbers of exercises, their quality, and arrangement from simple to more complex. In a workbook which accompanies Baum's primary text, additional exercises, plus all their solutions, are provided, but at a price which, on top of an already expensive book, makes the Copi a better buy.

In summary, while this new book is unquestionably competent, in spite of the difficulties which I have pointed out, and has great strengths, these being its clarity, rigor, and inductive method of presentation, it is not an unqualified success. Considering its strengths and weaknesses together, my judgement is that while it is the equal of its competitors, it is not clearly superior to them.

1. To be fair, I must add that this conclusion is not one which the author draws himself. In fact in chapter six, on enumerative induction, Baum lists some specific criteria for the evaluation of particular inductive arguments. However, the difficulty logically entailed by the author's avowed general conceptions of deduction and induction nevertheless remains.

— Edward Regis Jr.

Correspondence

—from John Wilson, Oxford University Department of Educational Studies.

First Steps in Teaching Philosophy. I aim here only to make a number of points which might form a basis for serious research in this area.

1. The first point is itself philosophical or at any rate "methodological." Research on methods of teaching a subject S must be conducted by a researcher who is reasonably expert in S. This is obvious enough: the question of what other qualifications needed is harder,