

proof of it is given in the present number of the *Journal* by Mr. A. B. Kempe, well known for his investigations into linkage. The number also contains an explanation of the "curved ball" of the base-ball players, and a method for representing a space of four dimensions.

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**Studies in Deductive Logic.**

By W. Stanley Jevons, LL.D. (London and New York: Macmillan & Co. 1880.)

CSP, identification: Haskell, *Index to The Nation*. See also: Burks, *Bibliography: List of Articles*.

William Stanley Jevons (1835-1882) was a leading English economist and logician. He was professor of logic, political economy, and philosophy at Owens College from 1866 until 1879. Jevons was the author of several books on logic and economy, and was also interested in political and social reform.

—Some forty years ago the two mathematicians, De Morgan and Boole, commenced a reform of formal logic. Their researches were continued by a number of other excellent thinkers (Mr. Jevons among them) in different countries, and the work is now so far advanced that the new logic is beginning to take its place in the curriculum of the universities, while many persons have imagined that some almost magical power of drawing conclusions from premises was to be looked for, and that logic would prove as fertile in new discoveries as mathematics. Concerning such hopes Professor Sylvester says: "It seems to me absurd to suppose that there exists in the science of pure logic anything which bears a resemblance to the infinitely developable and interminable heuristic processes of mathematical science." "To such a remark," replies the author of the book under notice, in his preface, "this volume is perhaps the best possible answer." A more exaggerated pretension never was made. The book is a convenient manual of exercises in elementary logic, tinged with the author's peculiar views, of which there will be different opinions, but, at any rate, sufficiently sound to be useful in the class-room. But if Professor Jevons were to penetrate only a little ways into the heuristic world of the mathematicians—an excursion quite worth the while of a logician—were to learn what discoveries are there made every month, and what sort of a stamp a proposition must bear to be considered, in that field, as really new, it is to be hoped that he would feel something different from self-satisfaction at recollecting that he had set up anything in this little volume as worthy to be compared with the triumphs of a Sylvester. Logic, inductive and deductive, is an important discipline, probably more important than the higher mathematics, just as the multiplication-table is more important than the calculus; but very, very few are the new problems which have ever been solved by the regular application of any system of logic. That part of logic which can best compete with mathematics in the discovery of new truths is the complicated theory of relative terms. But even there the comparison would be very unequal between what is only a branch of mathematics and the whole body of mathematics together. The solution of problems used to be considered as the glory and touchstone of the mathematician; in our time, the aim is rather at the discovery of methods, and we might perhaps look to the logician to produce a *method* of discovering methods. But the main advantages which we have to expect from logical

64 studies are rather, first, clear disentanglements of reasoning which is felt to be cogent without our precisely knowing wherein the elenchus lies—such, for instance, as the reasoning of elementary geometry; and, second, broad and philosophical *aperçus* covering several sciences, by which we are made to see how the methods used in one science may be made to apply to another. Such are really the chief advantages of the new systems of formal logic, much more than any facilities they afford for drawing difficult conclusions; and it is evident that if logic is to make any useful progress in the future, we must set out with some more or less accurate notion of what sort of advantages we are to seek for.

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THE RECIPROCITY TREATY WITH SPAIN

TO THE EDITOR OF THE NATION:

SIR: The one-sided character of the proposed "reciprocity" treaty with Spain may be judged from the following estimate. I use round numbers:

Sugar consumed in the United States .....	1,000,000 tons
Sugar produced in Cuba and Porto Rico .....	700,000 "
The present duty on the latter amount .....	\$30,000,000
Value of total imports into Cuba .....	\$50,000,000

Since the products of the islands would not suffice for our consumption, the growers there could compel us to pay about the same as other markets offered us—that is, as much as we now pay to both the grower and the United States Custom-house; all the present duty—say, \$30,000,000—would be their additional profit, while even if we should sell to Cuba all that she now buys (a manifest impossibility), and make the extraordinary commercial profit of 10 per cent., we should receive but \$5,000,000. In other words, we are asked to pay the Cubans \$30,000,000 for the privilege of making not over \$5,000,000 out of them.

Really, Mr. Editor, is Mr. Foster a Yankee? Did he ever learn to *kalkerlate*?  
—Yours, etc., T. E. C.

BALTIMORE, December 11, 1884.

TO THE EDITOR OF THE NATION:

SIR: You seem to hold that the ratification of the Spanish treaty would not for a number of years affect the price of sugar "to the consumer," in this country; and that during the gradual decline of importations from non-Spanish ports, the price would be fully maintained. I find this position so difficult to understand, that I beg for some further elucidation of it.

1. Would not the Spanish ports immediately begin sending us more sugar, full 20 per cent. more the first year? Would they not import sugar to send us?

2. If the Spanish ports should send us more, would not one of two things necessarily happen, namely, either that the price would fall, or that the non-Spanish ports would send less?

3. But if the importation from non-Spanish ports were to be diminished by the effect of the treaty (as you seem to admit it would be), would not the sugar withdrawn be the product of those lands which among all those now raising sugar for this country are the worst fitted for this purpose? Would not the result be that the worst of the land then producing sugar for us would be better than the worst of the land now doing so? And would not this state of things, by the operation of competition, work a fall in the price?

C. S. PEIRCE.

WASHINGTON, December 15.