am prepared to admit that in many issues the administrative and the academic decisions will agree. In those cases I shall still regret that the right decision is reached for the wrong reasons, or that an unwise precedent is enforced by giving decisive weight to minor considerations. Everything that makes for the importance of the administrative function in the higher education is, to my thinking, bad, especially when it gains its prestige at the sacrifice of the professors' interests.

I go back but a few issues in SCIENCE to find another illustration. Vigorous protests appeared in SCIENCE and elsewhere against the summary action of the Carnegie Foundation in cutting off the privilege of retirement after twenty-five years of service, which had been definitely agreed upon as one of the two main purposes of the foundation. That this action was unwise and unethical has been made clear; and it is certainly most important that the foundation modify it at its next meeting. For the moment that is not the issue. The pertinent matter is again that in reaching this decision the academic interests were insufficiently considered. It is inconceivable that if the board of the foundation were composed, as it should be, of professors (with one or two presidents to represent the necessary administrative side of things) such an action should have been taken. It is another case of the conflict of the two interests and the unwise and unjust arrangement whereby the administrative side prevails and the professorial side is not officially represented.

I agree lastly with Mr. Chapman's contention, that as things are, the most hopeful procedure is for the professors to appeal directly to the boards of laymen who control affairs. I have every faith in the fairness of the lay boards. I believe that they have been largely misled by the over emphasis by the president of the administrative side of affairs, by the natural assumption that he was really representing faculty sentiment when he could not vitally do so. This will not be a radical measure, only a temporizing one, it is true; but it is practical. The only radical measure will be one that rearranges the authority of professor and president and minimizes in every respect the administrative function, making the administrative officers, what they should be and be satisfied to be, the convenient mode of expressing the will of the faculty and of preserving the energies of the faculty in behalf of academic purposes. I am aware that the suggestion has a danger of its own; that of inducing the board to take a hand in educational matters. In principle that is unwise, and is most subject to abuse. But the good to be gained is well worth that risk. Moreover, I believe that the good sense of lay boards will be and in the end must be the only safeguard against their unwise interference with the prerogatives of the faculty. Furthermore, the division between educational and financial questions is quite artificial and has as a fact been used to throw the authority where it is desired. Just as soon as professorial opinion makes itself felt, it will be respected. It is certainly regrettable that the situation demands this form of solution; but practically I see no other as promising. A far better solution would be the natural decline of the administrative temper in the higher education, by a refusal on the part of men elected to such positions to exercise it.

Be the solution what it may, and the temporary steps such as in each situation the best wisdom and the kindest consideration of all interests may suggest, this remains certain: that no one will respect those who do not respect themselves and stand boldly and proudly for their rights. The timidity and the unwise reserve of the professor stand as the most serious obstacle in the way of the removal of the evils in the professorial situation.

JOSEPH JASTROW

CHESTER, NOVA SCOTIA,
July 9, 1910

## SCIENTIFIC BOOKS

*Rara Arithmetica.* A catalogue of the arithmetics written before the year MDCI. with a description of those in the library of George Arthur Plimpton, of New York. By DAVID EUGENE SMITH, of Teachers College, Columbia University. Boston and London, Ginn and Co. 1908.

As a rule, bibliographical works, though valuable, are uninteresting. The publication which we are reviewing is an exception to the general rule; it is interesting as well as valuable. Every college and school library ought to possess a copy of it. The author aims not only to catalogue the arithmetics in Mr. Plimpton's library that were published before 1601 and give a brief statement of their contents, but to supplement this by the titles of other arithmetics known to have been printed during that period. Altogether not less than 500 publications are given, a number which swells to 1,200, if the various editions of each publication are counted. In addition to this a large number of manuscripts, some belonging to the thirteenth century, are catalogued and described. Perhaps no period in the history of arithmetic is more important than the fifteenth and sixteenth centuries, when printed works came to be widely used and when different methods of reckoning were struggling for supremacy.

What makes this book specially interesting are the numerous protographs of the title-pages, and of other pages exhibiting the notation and methods of computation in arithmetic, in vogue four or five centuries ago. The reader has before him in photographic reproduction the old scratch methods of multiplication and division, the beginnings of decimal fractions, documents showing the probable origin of the + and — signs, drawings explaining various kinds of finger symbolism and many other points of interest to teachers and students of arithmetic.

In America few researches have been carried on in the history of mathematics. One needs only examine the volumes of the *Bibliotheca Mathematica,* a journal devoted to the history of mathematics, to realize the dearth of American productive scholarship in this field. With this fact in view it is a pleasure to note that the above publication is one of value and importance, when measured by European standards. Sixty years ago De Morgan's "Arithmetical Books" was the best authority on arithmetical bibliography. Later much work in this line was done on the European continent. Now Professor Smith's "Rara Arithmetica" takes first rank. Professor Smith has enjoyed unusual facilities for the preparation of this work. The Plimpton collection of fifteenth and sixteenth century arithmetics, in New York City, the largest collection of this kind that has ever been made, lay at his disposal. He has labored assiduously and with care. Here and there we might have wished to have seen a still wider range of topics selected for photographic exhibition; in one or two instances a greater watchfulness for the historically vital points in books might have been desired. But these are minor blemishes. The work as a whole takes first place as a bibliography of early printed arithmetics.

FLORIAN CAJORI

*Thought and Things or Genetic Logic.*[1] Vol. II., *Experimental Logic.* JAMES MARK BALDWIN. London, Swan Sonnenschien & Co.; New York, The Macmillan Company. 1908. Pp. xv + 436.

This is the second of three volumes on a subject never before so comprehensively treated by an American author. The title of the present volume has been in use for some time, but the treatment is peculiar. The genetic method of tracing out the various steps and stages in the embodiment of belief is more consistently followed here than, I think, in any well-known treatise on logic. Great praise is due the work for this and for many interesting and illuminating points in the discussion. The general problem of the work is logic from the knower's point of view, not logic from the point of view of the outside psychologist or logician who looks on and analyzes. The theme itself as conceived by Baldwin presupposes a difference between these two types of logic: it presupposes that knowledge and the knowing process have for the knower characters which they do not have for the "outsider." Knowing, for the knower, involves continual reference, according to Baldwin, to similar knowing processes dealing with the same material and going on actually or possibly in other minds; it involves, in

[1] The entire work is appearing simultaneously in French, German and English. It includes a fair index to volumes one and two, and three appendices.