dike's notion of "ten thousand" possible directions of activity is pure illusion.

The relations of pure and applied science—not that I like those terms—are extraordinarily complex. No one, so far as I know, has ever worked them out with the fulness the subject deserves. It lies on the surface, however, that applied science furnishes its counterpart with a vast number of appliances and procedures which represent standardizations and short-cuts of method, and that pure science on its side furnishes applied science with ideas. If anyone doubts the latter part of this statement, I refer him to the address by my colleague, Professor Nichols, printed in Science of January 1, 1909. There are, in point of fact, all manner of mutual dependences and mutual relations, and there is no clean-cut antithesis of conscience and employer.

I believe very strenuously in pure science. But I think I see that there is no end of work to be done on both sides of the line that Professor Thorndike draws. I wish him more power to his elbow; and I wish him graduate students as talented, ingenious, adaptable and persistent as our colleges can provide. Only I think it foolish to tell these students how superior they are to their fellow-students in the other field: because—apart from the question of fact—they will do better work in a spirit of humility. Surely there is enough downright, sweating labor for all of us, and surely it is waste of time to argue about priority of talent.

E. B. Titchener

## THE PUBLICATION OF ISIS

To the Editor of Science: The publication of *Isis*, an international quarterly devoted to the history and philosophy of science, was brutally interrupted in 1914 by the German invasion of Belgium. As I have no direct way of reaching all those who at that time had subscribed to Volumes II. and III., I would be grateful to you if you would kindly insert this account of the future projects of the journal.

The sixth part of *Isis* was in the press in Brussels when war broke out. It will appear as soon as circumstances permit, but I fear this will not be until next autumn. The publication of Volume III., however, will take place soon after, perhaps in 1919, but at the latest in the early part of 1920. The undertaking in its original form met with encouraging support from many quarters; I may be permitted to mention for example that it is for my work in connection with it that the Prix Binoux was awarded to me by the Académie des Sciences of Paris in December, 1915. Yet after four years of work and thought the weaknesses of *Isis* are very obvious to me and I shall endeavor to correct them. Of course, the latter part of Volume II., as well as Volume III., which had already been prepared for publication in 1914, will not greatly differ from Volume I. But from Volume IV. onward considerable changes will be made. It is my ambition to make *Isis* the main center of information in all matters pertaining to the history and philosophy of science and the international organ of New Humanism.[1]

Some of the features which I propose to introduce are as follows:

Instead of publishing in four languages an effort will be made to use only French and English—chiefly, and perhaps exclusively, the latter. Articles written in other languages will be translated into English. More illustrations will be added and will consist mainly of portraits, facsimiles of manuscripts and of rare books. The bibliographical section will contain a larger number of short critical notes. Moreover, from Volume III. or IV. onward I hope to share the editorial responsibilities with other scientists, chiefly with Dr. Charles Singer, of Exeter College, Oxford, who is known as a historian of medicine and a medieval scholar.

The new *Isis* will only publish shorter articles. The longer and more monographic ones would be included in Singer's *Studies in the*

[1] Those who are not already acquainted with this movement to humanize science and to show its relationship to all other aspects of human life and thought, will find an explanation of it in *Scientia*, Bologna, March, 1918, or in the *Scientific Monthly*, New York, September, 1918.

*History and Method of Science.* The first volume of this work was issued by the Oxford University Press in 1917. I understand that the second volume is now ready for the press and Dr. Singer tells me that he hopes to share with me the editorial responsibilities of the third and succeeding volumes. Thus, *Isis* and the *Studies* would be supplementary one to the other, and between them would provide suitable outlet for new work on the history and philosophy of science.

GEORGE SARTON
CARNEGIE INSTITUTION OF WASHINGTON

### A STEADY CALENDAR

TO THE EDITOR OF SCIENCE: The interruption of our recent scientific meetings by the coming of Sunday in the middle of the (Christmas) week—a reputed impossibility that happens every five or six years—is one of the many inconveniences that we half-consciously endure as the result of inheriting a varying calendar from the unscientific past. If in adopting any one of the many improved calendars that have been proposed, we should annually sacrifice upon the altar of reason a single day in ordinary years and two days in leap years, as extra days without week-day names, then Christmas and New Years would always fall on the same day of the week; and by waiting to begin the sacrifice until those holidays come on a Saturday or a Monday, the scientific meetings of the last five days of the year, which have become so well established among us, would never thereafter be broken in half by an interrupting Sunday. Home celebrations and scientific meetings would both profit by the change. How can we best bring it about?

W. M. DAVIS
CAMBRIDGE, MASS.,
January 4, 1919

## SCIENTIFIC BOOKS

*Forced Movements, Tropisms and Animal Conduct.* By J. LOEB. Philadelphia. 1918. Pp. 209, 42 figs.

The scope and character of this volume are in large part explained by the fact that it is offered as one of a series of monographs in which it is proposed to cover the field of recent developments in biology. The announced titles of the volumes scheduled to follow this first number deal, not so much with rational divisions of the science, as with those particular phases of physiology that have been the subjects of investigation at the hands of the respective writers. This general plan, already justified by its success in the treatment of modern advances in physical and biological chemistry, and in human physiology, necessarily results in a less closely coordinated system of monographs when applied to physiology proper—the latest of the sciences to acquire a realization of the analytical significance of quantitative methods of thought.

The first volume of the proposed series, then, endeavors to present within the space of some 170 pages a concise statement of the theory of tropisms, their origin in forced movements under various forms of activation, and their importance for the analysis of animal conduct, including that of *Homo*. Much of the matter discussed is, of course, no longer new; about half the content of the book is already familiar from the author's similar article in Winterstein's "Handbuch," and other publications; but as a compact, clear, and characteristically vigorous statement of the essential quantitative data upon which the tropism doctrine now rests, the book is welcome and in the main satisfying. In the introductory section it is pointed out that tropistic phenomena, depending upon the orientations of the animal as a whole, rather than the segmental reflexes, must be made the starting point for the analysis of conduct; that these tropistic orientations must first be studied in the behavior of bilateral animals; and that the key to the understanding of tropisms lies in forced movements initiated through differential tensions in symmetrical contractile elements of the body, not in the distinction of "pleasure" from "pain." It is only on such a basis, so far as we know, that quantitative laws may be deduced adequate for the description of behavior. This procedure is illustrated partic-