ably with the way the subject is presented here in the University of California. Our first course is practically on the solar system, which is covered by the first volume, and our second course is on modern astronomy, which is undoubtedly covered by the second volume soon to be issued.

This first volume is extremely well done. The only adverse criticism I have to make is that it is not quite complete. Undoubtedly the second volume furnishes the material some of which I would like to see in the first volume. Even at the expense of a slight repetition of this material to be placed in the second volume, I would have had a chapter treating of the solar system in the sidereal universe. Such a subject, for instance, as "The Sun's Way" should not be omitted from a volume on the solar system. Space for such an additional chapter might well be gained by shortening the chapter on "Celestial Mechanics." Much of the subject-matter of this chapter is quite beyond the grasp of those for whom this work is intended and finds its more appropriate place in the "General Astronomy."

In connection with this chapter on "Celestial Mechanics" I can not refrain from mentioning the smile with which I read on page 275, "The calculation of an orbit from three observations takes a skilled computer two days or sometimes less. The novice may take as many weeks, most of his time being occupied in finding and correcting mistakes which are only too easy to make." With the last sentence I heartily agree, but would add that often these weeks of struggle are due to erroneous observations which, alas, are entirely too frequent. The first sentence of this quotation I would have written, "The calculation of an orbit from three good observations takes a skilled computer a few hours."

The book is well balanced and very up-to-date, as is evidenced by the introduction of such items as the pendulum observations in a submarine.

I am sure that the second volume, which will contain many subjects upon which Professor Russell is an eminent authority, will be of the same degree of excellence as this. The whole work will be not only a superb text-book, but also a regular authoritative handbook for the professional astronomer.

The authors have wisely followed Professor Young in giving numerous examples for the student to solve. A most welcome and valuable addition is the frequent lists of references.

I have noted a few very minor corrections which will be sent directly to the authors.

The book is well illustrated and beautifully printed.

R. T. CRAWFORD

STUDENTS' OBSERVATORY,
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History of the Origin and Establishment of the Inquisition in Portugal. By ALEXANDRE HERCULANO. Translated by JOHN CASPER BRANNER. Stanford University Press.

DR. JOHN CASPER BRANNER, professor of geology in Stanford University for thirty years, and for three years its president, was for nearly half a century in one way or another connected with the Geological Survey of Brazil. In this capacity he acquired a very thorough knowledge of the Portuguese language, in which he published several important works.

After retiring in 1916 from active work in the university, Dr. Branner devoted himself mainly to writing, and among other things he made a translation of one of the most important of Portuguese historical works, Herculano's "History of the Inquisition."

Dr. Herculano gives a just and sane account of the most hideous period in the history of his native country, supported throughout by documents, and forming as a whole the strongest possible arraignment of the form of intolerance called religious, and of the beastly efforts to destroy heresy, current in the sixteenth century. It is much to the credit of modern Portugal that its scholars are free to tell the truth, which "Absolution" and "Patriotism" would like to conceal.

DAVID STARR JORDAN

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A MICRO METHOD FOR ESTIMATING THE RELATIVE DISTRIBUTION OF GLUTATHIONE IN INSECTS

HOPKINS[1] in 1921 isolated a constituent of cell protoplasm responsible for the nitroprusside reaction in animal tissues; this nitroprusside test had been previously applied by Heffter[2] and Arnold[3] in proof of the presence of a sulphydryl group (SH) in the cell. According to Hopkins, the substance which he isolated and named "glutathione" is a dipeptide and contains glutamic acid and cystein. This dipeptide is autoxidisable; it acts readily under varying conditions either as a hydrogen or oxygen acceptor, promoting cell oxidation and reduction under factors present in the tissues, and presumably has actual functions in the chemical dynamics of the cell.

During the writer's studies with arsenicals, the effect of the latter upon respiratory metabolism of insects indicated that in general the oxygen consumption and carbon dioxide production were profoundly

[1] Hopkins, *Biochem. Jour.*, 15, 286, 1921.

[2] Heffter, Med. Naturwiss Arch. 1, 81, Maly's Jahresb. 1908.

[3] Arnold, *Zeitsch. Physiol. Chem.*, 70, 300 and 314, 1911.