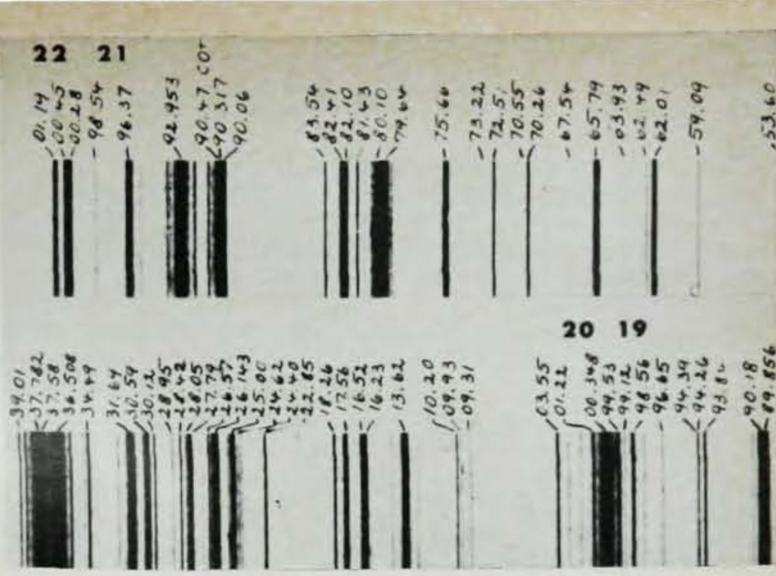

A portion of the Specola Vaticana spectogram of copper, same size as original. Full chart is 10½ x 14 in.

calculation of the forces on two-dimensional airfoils or the Helmholtz-Kirchhoff theory of free streamlines. But in each case the classical work is only the first step in the development of a more powerful theory. Thus the airfoil analysis is extended to deal with time-dependent flows, and leads up to an entire chapter devoted to effective and constructive approximate methods for dealing with thin airfoils.

The analysis of cascade theory leads to some very beautiful problems of function theory which are elegantly solved, and there is also an interesting chapter on the related question of planing motion.

The last part of the book deals with problems of gas dynamics, potential gas flow, and gas jets. Here too the semiclassical methods are presented (e.g., Pandth-Meyer expansions), but always as the starting point for further developments.

Each chapter begins with a "problem formulation" explaining the physical background of the problem to be discussed. On the other hand very little space is given to the actual derivation of the equations, which are more or less taken for granted.

The English translation is good. The reviewer knows of no similar book in English and strongly recommends it to anyone who wants to become acquainted with the techniques created by the Moscow school for solving problems in the mechanics of nonviscous fluids.

Atomic Spectra in the Vacuum Ultraviolet from 2250 to 1100 Å. Part One: Al, C, Cu, Fe, Ge, Hg, Si, (H_2). By J. Junkes, E. W. Salpeter, and G. Milazzo. 124 pp. plus 9 charts. Specola Vaticana, Vatican City, 1965. Paper, $10.00.
Reviewed by C. C. Kiess, Georgetown College Observatory.

The spectroscopists of the Specola Vaticana have set for themselves the problem of mapping ultraviolet atomic spectra in the region where vacuum techniques are required down to 1100 Å. The work was undertaken, and is being continued, to satisfy the growing needs not only of physicists and spectrochemists but also of astronomers and space scientists, for spectral data in the region to which our atmosphere is opaque.

Part One, which is the subject of this review, is primarily a set of maps of the short-wave spectra emitted in hollow-cathode discharges of the elements aluminum, carbon, copper, iron, germanium, mercury, and silicon. Other parts of the completed *Atlas of Atomic Spectra in the Vacuum Ultraviolet* will appear in due course. The elements treated in the first installment were chosen because many of their spectral lines have been measured accurately and are suitable standards of comparison for wavelength measurements. An additional map in the present lot portrays the spectra of the Lyman and Werner bands of molecular hydrogen (H_2), of which some lines persistently appear in spectra excited in hollow cathodes.

The maps are eighteen-fold enlargements of original spectrograms that were obtained with a concave grating of 1200 grooves/mm set up in an Eagle mounting. Each map consists of seven strips covering a range of 160 or 170 Å, with sufficient overlap at the ends to join with the preceding and following strips. The wavelengths of all lines, including those of impurities, are marked in the margin above each strip. Most of them are wavelengths taken from the literature, but if these are lacking, wavelengths derived from the new spectrograms are given. In format the maps are nearly twice the size of those previously published by the Specola Vaticana for iron and thorium, and in quality they conform to the high standards adopted for the earlier work.

Accompanying the charts is a paperbound text with a foreword stating the purpose of the work and an introduction describing various details of the experimental procedures. The remainder of the textual matter presents individually for each element and for H_2 an account of and references to previous work; and a list of known lines, including those newly measured, with their wavelengths, estimated intensities, excitation state, and source. These parts of the text are independently numbered so that "after the whole work is completed, the charts can be arranged alphabetically, according to elements, and all sheets of text and wavelengths can be taken apart and rebound together as one desires." These maps and texts greatly supplement existing descriptive material, and supply valuable tools for the practical spectroscopist.

Mathematical Theory of Optics. By R. K. Luneburg. 448 pp. University of California Press, Berkeley, 1965.
Reviewed by Harold Mendlowitz, National Bureau of Standards.

Optics can be considered a very broad field in which many somewhat related disciplines are studied, often quite independently. One might be