(1) *The Purpose of Laboratory Work.* The most important factor contributing to good laboratory instruction was felt to be a clear understanding of the objectives and purposes of the laboratory in general and the laboratory course in particular. (2) *Motivation.* A number of suggestions were made for the motivation of the teaching assistants. (3) *Pre-Term Indoctrination.* It was recommended that the week prior to the opening of classes be used for the indoctrination of the teaching assistants. (4) *Staff Meetings.* A number of suggestions were made for the conduct of the weekly staff meetings. (5) *Evaluation.* Two methods for evaluating the performance of teaching assistants were recommended. (6) *Methodology and Administration.* Various techniques of teaching and the preparation for teaching on the part of the teaching assistants were discussed.

A careful reading of the whole report is recommended to all teachers of college physics.

Physical Measurements in Gas Dynamics and Combustion. Edited by R. W. Ladenburg, B. Lewis, R. N. Pease, and H. S. Taylor. 578 pp. Princeton University Press, Princeton, N. J., 1954. $12.50. *Reviewed by Abraham S. Friedman, National Bureau of Standards.*

Increased interest and activity in the fields of aerodynamics and gas dynamics have produced a correspondingly rapid development of experimental techniques for physical measurements in gas dynamics. Volume IX of the *High Speed Aerodynamics* and *Jet Propulsion series* is concerned with physical measurements in gas dynamics and combustion.

The first part of the book, edited by the late Professor Ladenburg, presents an excellent survey by various authors of the applicable experimental methods. In addition to clear expositions of the classical optical methods of measuring densities—shadow, schlieren, and interferometric—several newer procedures are discussed. These include electrical discharge and after-glow methods; oxygen, ozone, and mercury vapor spectral absorptino methods; and techniques involving the absorption of soft x-rays, α particles, protons, and electrons. The pressure measuring techniques reviewed are, in the main, conventional. There is a short discussion of the Pitot tube and a survey of manometers, vacuum gages, diaphragm gages, piezoelectric gages, etc. Several interesting methods of measuring air speeds are described. The ionization anemometer is based on timing the flow of a small quantity of ionized gas from the point of ionization to a detector downstream. Velocities are also measured by timing the flow of illuminated particles. The determination of local and instantaneous velocities can be accomplished by use of various types of discharge anemometers which are described. For wind tunnel use, the acoustic Mach meter is applicable. The measurement of the velocity of shock waves by the light screen technique is the subject of a short chapter. Other shock front measurements by light reflectivity are reviewed. Modifications of the classical methods of temperature measurement, applicable to shock tube and wind tunnel studies, are described. These include resistance thermometry, thermoelectric couples, radiant energy emission, and acoustic thermometry. An interesting section is devoted to procedures for studying turbulence. Analogue methods using the water table and the hodographic tank are described.

Part 2 of this book is concerned with physical measurements in combustion. This part, edited by H. S. Taylor, B. Lewis, and R. N. Pease, reviews the latest methods of measuring flame temperatures, pressures, and velocities. There are also review chapters on flame photography and mass and optical spectroscopy. Part 2 is of particular value to those chemists, physicists, nad thermodynamicists interested in the extremely important and rapidly expanding fields of research related to high-temperature phenomena.

Many of the techniques described in this volume are applicable to the study of a wide variety of other phenomena and hence the book is properly addressed to a reading audience not restricted to aerodynamicists and combustion chemists.

Théories Relativistes de la Gravitation et de l'Électromagnétisme. By A. Lichnerowicz. 298 pp. Masson et C^ie^, Paris, France, 1955. 2800 francs. *Reviewed by T. Teichmann, Missile Systems Division, Lockheed Aircraft Corporation.*

In this book Lichnerowicz has given an extremely elegant and clear account of the mathematical structure of the theory of general relativity, together with a discussion of some essays at unified field theories. In accord with the modern mathematical spirit which underlies the work, the basic geometrical ideas of the theory are brought to the fore, and the results are derived with great clarity, and without overwhelming formal tensorial techniques.

The first part of the book treats general relativity proper. After describing the underlying geometry, the Einstein equations are written down, and the energy-momentum tensors for pure matter, perfect fluids, and electromagnetic fields introduced, and several of their basic properties derived. A discussion is then given of the Cauchy problem and the consistency conditions for electromagnetic and gravitational fields. The next main section then gives a comprehensive discussion of relativistic hydrodynamics, including perfect charged and uncharged fluids, and viscous fluids. This section is extremely well done, but regrettably contains no reference to the work of Taub and McVittie on similar topics. The last section of the first part contains a global study of stationary space-time, and is basically a generalization of ordinary potential theory. Throughout this first part, as indeed throughout the entire book, the really important results are stated as theorems and printed in heavy type, which makes them extremely easy to refer to.

In the second part of the book, the author has chosen