efficient have proposed a relative measure of intelligence.

The present volume embodies the results of long and patient labor in overcoming and correcting the imperfections in the original Binet-Simon scale. Standardized tests are provided through average adult and superior adult levels, making the scale valid for the detection of "borderline cases." Standardized directions (admirably simple and natural) are given for every test. The method of scoring has been refined, so that the individual's mental status is determined by months, and the Intelligence Quotient becomes the measure of ability. This is obtained by dividing the "mental age" by the actual age. One would predict that this Intelligence Quotient (I. Q.) will be made the subject of much discussion and investigation during the next few years.

Six tests are provided for each year up through ten years, instead of four or five, as in the Goddard Revision, which has been most widely used in this country. The Stanford Revision, as the author modestly chooses to designate his work, is by no means a mere rearrangement of the old, familiar tests. The new scale is rich in original contributions, such as the vocabulary test, and the ball-in-the-field test. For these many cleverly conceived tests Terman gives much credit to his collaborators.

The time devoted to an examination according to the Stanford Revision is considerably greater than in the case of the former revisions. This will be a good thing from the point of view of everybody except administrative officers. The number of psychological examinations now expected daily of psychologists working in various public capacities, is little short of a scientific scandal.

The wide usefulness into which this volume has already come testifies to its timeliness as a treatise on the subject. The book is so written and so organized that it serves almost equally well as a text, as a manual, or as a reference. The first half is taken up with a discussion of the technique and method of measuring intelligence, and with the history of graded tests. The subject is clearly and simply presented in non-technical terms. The second half is given over to a presentation of the revised tests themselves, with the directions for giving and the method of scoring each. The necessary test material may be purchased from the publishers of the book.

It would seem inevitable that the Stanford Scale will, in general, replace all revisions of the Binet-Simon Measuring Scale for Intelligence hitherto in use in clinics and in institutions, because it is more scientific and more complete than any other which has been made available. The method of scoring by years and months of "mental age," however, may and probably will prevent its adoption by those psychologists who believe that the method of scoring by "points" is preferable.

LETA S. HOLLINGWORTH
TEACHERS COLLEGE,
COLUMBIA UNIVERSITY

Telegraphy. By T. E. HERBERT. London and New York, Whittaker and Co. Third Edition. 985 pages, 630 illustrations. Cloth, nine shillings net.

This is the third and a thoroughly revised edition of an excellent handbook on British telegraphy, designed to meet the needs of the technical student and the requirements of departmental technical examinations of the staff.

The mathematics employed are quite elementary, so that no difficulties need be apprehended by the technical student in this direction. The telegraphic apparatus and plant of the British post-office system are well described and explained. A strong feature of recommendation for the book is that it enters at some length into the technique of the apparatus described, and gives practical directions as to best adjustments.

The text is divided into twenty-three chapters, respectively dealing with the following topics: Introduction, Primary Cells, Circuit Calculations, Current Measurements, Battery Testing, Resistance Measurements, Single-current Systems, Condensers, Differential Duplex, Quadruplex, Wheatstone Automatic, Bridge Duplex, A B C and Recording Instruments, The Hughes, The Bandot, The Murray,

Central-Battery Systems, Secondary Cells, Secondary-Cell Working, Repeaters, Test Boxes, Telegraph Testing, Aerial Lines, Underground Lines.

As will be seen from the above list, the plan of development opens with the elementary theory of the subject, and then proceeds with detailed descriptions of the various types of apparatus in most general use. Finally, the circuits and lines are dealt with.

A number of useful appendices on special topics are inserted near the end of the book. The index of subject-matter has been prepared with great care.

As a practical telegraphist's guide, and as an elementary text-book of the principles of wire telegraphy in Great Britain, the volume deserves high praise. A. E. Kennelly

PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

The first number of Volume 3 of the *Proceedings of the National Academy of Sciences* contains the following articles:

Inferences concerning Auroras: Elihu Thomson, General Electric Company, West Lynn, Massachusetts. Auroras consist of vertical streamers which, seen from different points of perspective, give the various optical effects observed.

Application of the Laws of Action, Reaction and Interaction in Life Evolution: Henry Fairfield Osborn, American Museum of Natural History, New York City. In each organism the phenomena of life represent the action, reaction and interaction of four complexes of physico-chemical energy.

The Resistance of Metals under Pressure: P. W. Bridgman, Jefferson Physical Laboratory, Harvard University. Twenty-two metals are examined up to 12,000 kg.

The Rate of Discharge of Central Neurones: Alexander Forbes and W. C. Rappleye, laboratory of physiology, Harvard Medical School. The normal frequency of nerve impulses discharged from the ganglion cells in voluntary contraction must lie between 300 and 5,000 per second.

A Physiological Study of Noctiluca, with Special Reference to Light Production, Anesthesia and Specific Gravity: Ethel Browne Harvey, Cornell University Medical School, New York City, and department of marine biology, Carnegie Institution of Washington. These animals are able to regulate their specific gravity. Anesthetics seem to attack the mechanism of the utilization of oxygen in the absence of which light is not produced.

Physiographic Subdivision of the United States: Nevin M. Fenneman, department of geology, University of Cincinnati. The basis of division shown on the map is physiographic or morphologic. There are twenty-four major divisions, some with six to ten subdivisions.

On the Composition of the Medusa, Cassiopea Xamachana and the Changes in it after Starvation: S. Hatai, Tortugas Laboratory, Carnegie Institution of Washington.

Studies of the Magnitudes in Star Clusters, IV. On the Color of Stars in the Galactic Clouds surrounding Messier 11: Harlow Shapley, Mount Wilson Solar Observatory, Carnegie Institution of Washington. The frequency curve for colors shows great diversity of color index and general resemblance to the curve for the brighter stars in the neighborhood of the sun. A striking progression of color with decreasing brightness is shown.

The Color of the Standard Polar Stars Determined by the Method of Exposure-Ratios: Frederick H. Seares, Mount Wilson Solar Observatory, Carnegie Institution of Washington. The colors of the Polar Standards, brighter than the 13th magnitude, have been determined to about the same precision as was reached in the investigation of the magnitude scale, with an expenditure of time and labor perhaps a tenth of that in an earlier investigation.

Terracing of Bajada Belts: Charles Keyes. The feature of desert bajada-terracing, when explained upon a strictly aqueous basis, can not but lead to complete misinterpretation. It is far more largely the result of wind-action.

Relation of the Apex of Solar Motion to proper Motion and on the Cause of the Differences of its Position from Radial Velocities