

Perhaps the most striking of the advances in immunology which have occurred in the last ten years are those, so much dependent on the development and use of electrophoretic technique, which have been made in the study of antibodies. It is interesting to compare the lack of definite knowledge and the contradictory evidence put forward at the time of the last edition with the accumulation of definite knowledge and the promise of continued advance which are so ably recorded in the corresponding chapter of the 1944 edition. In other parts of the subject no new technique of comparable importance to that of electrophoresis has been developed recently, and although numerous and important advances have been made there are not such great changes in outlook and prospects.

The objects of the book are in no way changed. A clear, concise, connected and authoritative account of this expanding subject has been given in a readable form. The bibliography is extensive; more than 2,000 references are given, and the author is more than justified in saying that he has attempted to offer a bibliography comprehensive enough for the use of workers in the field.

Unfortunately, in this edition, possibly to save paper, a system of abbreviations for journals and text-books is used in which, except in one case, a maximum of three letters is allowed. The reviewer has great difficulty in remembering even those initials which occur most often, especially when they bear so little relation to the full title, as 'Pr' for *Proceedings of the Society for Experimental Biology and Medicine*. This type of abbreviation is coming into wider use; but is certainly difficult for the reader and can only be justified as an emergency measure for saving paper.

Dr. Landsteiner and his colleagues have done a very large amount of very important serological work, much of it on antigens and serological reactions using simple compounds. It is fitting that a new edition of "The Specificity of Serological Reactions", prepared shortly before his death and printed posthumously, should be his last published work.

J. A. R. MILES.

MEASURING THE INFANT'S MIND

Intelligence Tests for Young Children

By Prof. C. W. Valentine. Pp. xii+68. (London: Methuen and Co., Ltd., 1945.) 4s. net.

IN this little book, Prof. C. W. Valentine has arranged a series of tests into a scale for assessing the 'intelligence' of children between eighteen months and eight years of age. For backward children the scale is recommended as suitable up to the age of eleven years. Tests are provided at half-yearly intervals up to the age of four, that is, during the period when mental growth is apparently more rapid, and thereafter at yearly intervals. Although the scale is intended chiefly for teachers, it is also meant for the use of that *rara avis*, an 'intelligent parent', eager to weigh the native talent of his offspring.

Apart from four new tests, all the material is borrowed, often with slight modifications, from Burt, Gesell, Stutsman and from the Merrill-Palmer and Terman-Merrill scales. In many cases new age assignments have been given. As in the Binet scale, the tests are scored on a pass-fail principle, and all test

items are given equal weight, though no evidence is offered that they deserve it. A practical advantage is the simplicity of the apparatus required.

The reader may be surprised not to find in a book of this kind, where the emphasis is upon intellectual ability, any reference to the work of Dr. Charlotte Bühler, for Dr. Bühler's aim is to judge the degree of maturity attained by the child's personality as a whole, including its cognitive aspects.

A few of the 'tests', for example, bowel and bladder control, are scarcely tests at all in the sense of sampling responses in a standardized situation, for success in them depends on habits acquired under varied conditions of training. Without further evidence, one cannot therefore regard them as indexes of basic ability. The validity of the 'sentence completion' test at age six is also questionable, since it requires the highly specific ability to use two prepositions. One intriguing point is the author's statement (p. 10) that he found a "very close correspondence between very early tests (at only 12 or even 6 months) with tests of intelligence at 10 years and later". One would like to know precisely which tests were given at the age of six months to obtain such good predictions of later ability.

Intelligence testing originated in the practical aim of detecting inferior and superior educable capacity. During the school years the tests can be validated, because an independent criterion of what is measured by the test can be obtained—the teacher's estimates or school marks. In testing pre-school children, however, especially those less than two years of age, no such criteria are available and the question arises: What in fact do the tests measure? Almost certainly it is not just intellectual capacity, as might be the case in later years, but something affected by the child's whole make-up, including sociability, shyness, timidity and the affective dispositions generally. Prof. Valentine is well aware of this. The predictive value of intelligence tests at the early years is low, if only because of the low test reliability at these years; testing young infants is a painstaking task which makes it difficult to obtain consistent results. Although the test stimulus is designed to evoke a cognitive response alone, in reality, the child's entire personality reacts, and this influences the specific response to the test adversely or favourably. It would seem that Prof. Burt's observation made twenty-five years ago is unfortunately still to some extent true: "With infants, indeed, all tests and all estimates are bound to be more or less unsatisfactory" ("Mental and Scholastic Tests", p. 200).

Prof. Valentine admits that the age assignments are not altogether satisfactory, especially in the very early years. Thus the 'action agent' test at age three requires the infant to know the meaning of such words as 'gallops', 'aches', 'explodes', 'roars', etc. This surely deserves a higher age assignment than the Binet test in which the child is required to point to its nose, eyes, mouth, hair and knee, or the one in which the child has to put on his shoes. Some brief experiments by the reviewer confirm this view. Nevertheless, the scale may be warmly recommended for further experimentation and clinical use. It may be justified as a device for roughly gauging the general ability of young children, the estimates improving in accuracy as the child grows older. Much careful work is, however, needed, as the author would doubtless agree, before all the tests could claim a sound theoretical foundation.

JOHN COHEN.