

Witchell, and that is with regard to mimicry. Undoubtedly several birds are ready to mimic sounds which they hear about them, but it does not follow that every point of resemblance in the songs of two species is due to mimicry; it is quite as likely to be accidental. For instance, it seems to us fanciful to trace the origin of part of the song of a thrush in the following way:

"The 'kreeow' was given in the deliberate manner of the crow; the 'whillillill' was similar to the note of the wryneck; while the 'tewy' was clearly the call-note of the chiffchaff."

In another place we read:

"The nightingale is sometimes inclined to mimic, and one of its strains, a rapid 'slip slip slip' prolonged, is much like the sound made by the young perching nightingale when the parent is feeding it."

It seems curious that the nightingale should mimic the young birds when they are not yet hatched, for, in spite of the fact that nightingales are heard singing in mid-June, we do not believe that they generally sing after their young are hatched; and Mr. Witchell gives no evidence that the birds he heard were not delayed in their nesting owing to the destruction of their first nest.

Mr. Witchell is well known as a specialist in bird-song, and many of his observations could not be made without a carefully trained ear; so his book cannot fail to be of interest. We are doubtful as to the amount of help it would give to a novice wishing to become familiar with the various cries of birds; but it gives a fuller description of these cries than is generally to be found in ornithological works, and suggests many points which are worth further investigation.

H. C. P.

#### OUR BOOK SHELF.

*Psychologische Untersuchungen über das Lesen.* By Benno Erdmann and Raymond Dodge. Pp. viii + 360. (Halle, 1898.)

*The Story of the Mind.* By J. M. Baldwin. Pp. 263. (London: George Newnes, Ltd., 1899.)

PAINSTAKING records of psychological experiments are, as a rule, not the most entertaining form of literature. Yet an exception must certainly be allowed in the case of the work of Drs. Erdmann and Dodge, which is no less distinguished by literary charm than by the thoroughness and completeness of the investigations it records. The greater part of this admirable work is devoted to a careful and, in the judgment of the present reviewer, unanswerable refutation of the opinion which since Wernicke has been current among German pathologists, that in normal reading the letters are spelt out separately, one after another. By a series of elaborate experiments the authors seem to establish beyond a doubt that our apprehension of a written text takes place exclusively during the pauses between the movements of the eye along the lines, that six to seven letters can be clearly perceived during each such pause, and finally that a short word of not more than four letters can be read off in less time than a single letter. In the later chapters Cattell's well-known experiments on reaction-times for written symbols are submitted to a searching criticism; and it is shown from the absence, under normal conditions, of conflicting optical suggestions or of conscious sensory-motor "feelings of innervation" that no element of "discrimination" or "selection" enters into our ordinary apprehension of the meaning of the symbol. As this means that simple apprehension is *not*

"discrimination" of any kind, the result is an important one, and may be commended to the attention of those psychologists who still talk glibly of "discrimination" as the essential feature in perception. Altogether the book is a model of what a psychological monograph should be, clear, well-arranged, and most accurate.

Prof. Baldwin's little book is a valuable addition to the series in which it appears, and should awaken the interest of not a few intelligent general readers outside the little world of psychologists by profession. It is remarkable that he should have been able in so few pages to introduce his readers to almost every side of psychology. The most excellent feature of the book is probably the abundant illustration, from Prof. Baldwin's own researches, of the meaning and nature of psychological experiment. If one were in a fault-finding mood one might, perhaps, complain that the curious attack upon the teaching of language at p. 222 is both exaggerated and irrelevant, and that the concluding chapter on "The Genius and his Environment" is hardly definite enough in its results to justify its being reprinted from the popular magazine in which, no doubt, it has made a previous appearance.

A. E. TAYLOR.

*Sewer Analysis.* By J. Alfred Wanklyn and W. J. Cooper. Pp. xiv + 220. (London: Kegan Paul, Trench, Trübner, and Co., Ltd., 1899.)

*Sewer Design.* By H. N. Ogden, C.E. Pp. viii + 234. (New York: John Wiley and Sons. London: Chapman and Hall, Ltd., 1899.)

THE first of these two volumes is described as "a practical treatise of the examination of sewage and effluents from sewage." Many practical hints on the analysis and treatment of sewage are given; and the collection of original papers printed as an appendix contains useful notes and explanations on various analytical processes in chemistry. The object of the book is, however, stated to be to bring about a reformation in the analysis of sewage, and to point the way to its proper disposal. Apparently one of the chief reforms required, according to Mr. Wanklyn, is to induce chemists using the ammonia process of water analysis to express the readings of albuminoid ammonia in terms of parts per million, instead of parts per 100,000 and grains per gallon. But other reforms are urged; and as Mr. Wanklyn claims that "In some respects the opportunities enjoyed by my colleague and myself are absolutely unique," and remarks that "the severance of all relations with the London Chemical Society has operated to our advantage," the volume evidently contains criticisms and conclusions upon which a difference of opinion may be permitted.

Prof. Ogden's volume contains a course of lectures given in the College of Civil Engineering, Cornell University. It shows how the subject of sewer design may be dealt with scientifically, and therefore practically. Much scattered material upon points which have to be considered when preparing the design and making the plans for a system of sewers in a city, has been brought together by the author. Sanitary engineers will find the volume as serviceable for reference as students of sanitary engineering will find it helpful as a text-book.

*The Hygiene of the Mouth, a Guide to the Prevention and Control of Dental Diseases.* By R. Denison Pedley, F.R.C.S. Edin., L.D.S. Eng. Pp. 93. (London: J. P. Segg and Co.)

THE importance of taking care of the teeth of children cannot be too strongly emphasised or too widely understood. In this volume the author describes the measures to be adopted for the prevention of dental diseases in adult life, the progress and treatment of dental caries, and some of the consequences of neglect of the teeth. The facts contained in the book should be known to every parent.