and having resources put at 10,000,000 Mexican dollars.

Of what might be called precious-stone material there is very little signalized; some opal is found at Tecali and Tlatlauqui, and azurite occurs in Acatlan. The so-called "Mexican Onyx" (an aragonite) of the district of Tecali in the state of Puebla is well known, and was already used by the Aztecs for ornamental purposes.

In the State College in Puebla, where courses of law, medicine and engineering are given, besides the customary preparatory studies, there are excellent collections illustrating physics, chemistry, bacteriology and histology, and also radiographic and radioscopic installations, as well as apparatus for wireless telegraphy. There is also a well-furnished natural history collection and an important museum.

The few items presented here may give a little idea of the quality of this monograph, though insufficient to indicate the wide field it so ably covers. It certainly merits to be consulted by all who are seeking information regarding one of the principal states of the Mexican Federation.

GEORGE F. KUNZ
NEW YORK CITY

THE TALKING MACHINE AND THE PHONOGRAPH

TO THE EDITOR OF SCIENCE: Professor Peckham's interesting account of the talking machine, as distinguished from the phonograph, in SCIENCE of November 9, closes with this statement:

> It is not probable that any one had thought of a phonograph in the sense in which we use the term as early as 1772. Knowledge of electricity was not sufficiently advanced at that time.

This, I presume, is a mere slip of the pen, the writer thinking perhaps of the telephone while writing of the talking machine and the phonograph. Otherwise some of us who are engaged in other fields of science, and hence can lay claim to no special knowledge of physics, would like to have pointed out to us the connection between electricity and the ubiquitous phonograph.

J. VOLNEY LEWIS

SCIENTIFIC BOOKS

Mental Adjustments. By FREDERICK LYMAN WELLS, Ph.D. New York & London: D. Appleton & Co., 1917.

F. L. Wells wrote his book with a rather unusual background. Trained in the experimental school of Cattell and Woodworth, Wells took up his work at the McLean Hospital in 1907, where he returned after one year's work with Dr. August Hoch on Ward's Island and with considerable contact with Dr. Charles Macfie Campbell, to whom the book is dedicated. Coming from a school which might be frankly dynamic and objective, if it had the necessary philosophical courage combined with a desire for consistency, Wells found most valuable opportunities at the McLean Hospital owing to the excellent tradition established there by Dr. Hoch in the study of an uncommonly interesting type of patients; and even before he went to Ward's Island he had been concerned with association experiments and with problems which were bound to bring him into touch with the sphere of ideas of Freud and Jung. His studies of the last few years have shown a growing mastery of the psychopathological problems and the present book gives ample evidence of earnest and able collaboration along lines very characteristic of modern American psychopathology.

Eight chapters constitute this book of 331 pages. In "Mental Adaptation" he gives illustrations of types and problems of adaptation and in a way a forecast of the book. The discussion of "Use and waste in thought and conduct" leads the reader, in one of the best organized chapters of the book, to a very direct understanding of fundamental adaptive trends and their adjustments and supplements, many times crossing the boundary between the "motor" and "mental" varieties of behavior, "granting, indeed, that such a boundary exists." He gives a very good picture of the rôle of fancy and autistic thinking (*i. e.*, primitive fancy unconcerned about reality) and especially of the rôle of word-plays and of rationalization. He sums up the discussion by saying that "realistic thinking contributes mainly to making it possible to exist, and

autistic thinking to making it worth while to live."

Pages 71 to 113 are devoted to Symbolic Association, in a chapter showing a remarkably wide range of resources of reading, and leading from the symbolisms of language and of normal waking life to those of dreams.

The discussion of emotion is given the title "The continuity of emotion," and deals with "affective displacement" (a somewhat questionable term for affective diffusion and disproportions) and affective compensation. The more specific types of "affective displacement" are exemplified by a number of "unaccountable" dislikes and in the use of contrast and exaggeration in humor. "Loaded" experiences and transference are reduced to the principle that emotions are to be viewed as reactions, which are switched in and out according to the principle of associated reflex and conditioned and associated responses. The switching off of the affect is spoken of as a de-emotionalizing and siphoning process. The rôle of various complexes and affective symbolism is illustrated by many examples. The phrase "Objekt vergeht, Affect besteht" expresses the meaning of the title of the chapter.

The discussion of "Types of Dissociation" is more clearly systematic than most of the rest of the book and is a valuable survey for the student, although perhaps somewhat heavily loaded with varieties and subvarieties for those readers who have but little concrete experience, and who might have a desire for principles rather than for details. Chapter VI. (pp. 204–226) takes up the dynamic importance of factors which determine repressions and its various degrees. Chapter VII. takes us into the field of available experimental approaches, with a discussion of various types of intelligence tests, the association method, and those involving what is called measurements by relative position (the "better or worse"), free association, the schedule of personality study; and a final chapter dealing with "Balancing Factors" gives a valuation of various trends for life and the quest of happiness and application to education.

It is, I suppose, both a merit and a drawback of the book that it resists a brief summarizing survey. Clearness of principles and the ease of reading might readily gain by moderation in the amount of illustration and in the use of metaphors, or, since most of these are really well chosen, by paragraphs of orientation. The few paragraphs of this character certainly do much to make one more receptive.

Wells puts forth as his aim not to tell us things, but to enable us to see for ourselves what we would otherwise miss. He does, in fact, tell us so many things that one feels very much the importance of what he himself calls "strategic regrouping," of the author's treasure of reading and of observation. Every reader of the replete volume must be willing to do his share; those who do so will certainly find a rich material and ample work. How readily the book would lead one not already experienced in the field will have to be tried out. The reviewer can not help feeling that medical responsibilities with the cases and the material might have added a kind of practical simplicity and directness where the reader might be apt to lose himself in the detail. Wells does, however, make it clear that the normal and the abnormal are made of much the same material, and his book, with its softened rendering of Freudian conceptions, will be a stimulus and a help along sane and useful lines.

Adolf Meyer

The Combination of Observations. By David Brunt, M.A. (Cantab.), B.Sc. (Wales), Lecturer in Mathematics at the Monmouthshire Training College, Cærleon, Mon. Cambridge University Press. 1917. Pp. x + 219.

This book gives an elementary treatment of the methods of adjusting observations. The normal or Gaussian law of error is derived from Hagan's hypotheses regarding the nature of errors, and the presentation in this connection is very attractive. The book gives a brief and simple treatment of certain important parts of the theory of statistics. This includes Pearson's generalized frequency curves first published in the *Philosophical Transactions* of