

easily understandable manner. There are some very few points in the author's explanations of phenomena as regards which we cannot quite agree with him. For instance, when he is considering the action of light on silver chloride he states that an oxychloride is formed (on the authority of Dr. Hodgkinson). That this is not always the case is shown by the fact that silver chloride is darkened when exposed in the presence of bodies which contain no oxygen, as, for instance, when the exposure is given in benzene. The author has adopted the plan of calling his chapters lectures, and in this instance we shall find no fault with what often is an artifice to cover slipshod writing, since the subject-matter is good, the language clear, and descriptive experiments are appended after each note in the narrative. We feel assured that if a student be fairly grounded in elementary chemistry and carries out these experiments, he will have a far better knowledge of the theory of photography than nine out of ten students possessed before this work was written. The author rightly points out that much in the theory of photography still requires elucidation, and with this we quite agree; but by putting into a connected shape those portions of the theory which may not require reconsideration, he has done much towards facilitating the solution of the remaining problems which are still *sub judice*.

The Popular Works of Johann Gottlieb Fichte. Translated from the German by William Smith, LL.D. With a Memoir of the Author. Fourth Edition. In Two Vols. (London: Trübner and Co., 1889.)

THESE volumes form part of the well-known "English and Foreign Philosophical Library." The translations included in them were first published in 1845-49, when German philosophy had only begun to attract attention in England. Fichte holds so clearly marked a place in the development of modern thought that it is still worth the while of students to make themselves familiar with his governing ideas; and there can be no disadvantage in their beginning with his popular rather than with his more systematic works. So far as the form of Fichte's teaching is concerned, it cannot of course be said to meet the needs of the present day. To many minds there is something even irritating in his use of large, abstract expressions, which are incapable of precise definition, and in the dogmatic tone in which he proclaims his convictions, as if he had somehow had special access to the sources of absolute truth. But his effort to solve the questions which lie behind the problems of physical science has at least the interest that belongs to perfect sincerity; and his methods and conclusions, whether they commend themselves to our judgment or not, are often in a high degree suggestive. He was personally of so manly and noble a character that his popular writings, in which he expressed his sympathies and tendencies freely, are perhaps more valuable from the ethical than from the strictly intellectual point of view. Dr. Smith's work as a translator is, we need scarcely say, excellent; and the like may be said of his work as a biographer. His memoir of the philosopher is written in a thoroughly appreciative spirit, and with adequate knowledge.

Travels in France. By Arthur Young. With an Introduction, Biographical Sketch, and Notes, by M. Betham-Edwards. (London: George Bell and Sons, 1889.)

EVERYONE who has given even slight attention to the pre-revolutionary period of French history knows, at least by hearsay, something about Arthur Young's "Travels in France." No other work of that time throws so clear and steady a light on the social and economic conditions which prevailed among the mass of the French people immediately before their great national convulsion. This is well understood by French historical students, who have found in the record of Young's ob-

servations a mine of information on the very subjects about which they are most anxious to obtain trustworthy contemporary statements. The present reprint deserves, therefore, to be cordially welcomed. It has been carefully edited by Miss Betham-Edwards, who, in an interesting introduction, prepares the way for the study of the book by presenting "a contrasted picture of France under the *ancien régime* and under the third Republic." She also gives a valuable biographical sketch of Arthur Young, the materials having been supplied by his grandson.

LETTERS TO THE EDITOR.

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Acquired Characters and Congenital Variation.

MR. DYER accuses me of invading the pages of NATURE by methods of discussion characteristic of the political debater. Those methods, however, may be good as well as bad. In addition to direct affirmative arguments in support of a particular conclusion, they may trace the working and the power of preconceptions which in science, as well as in other things, are an abounding source of error. On the other hand, methods of debate may be confused and declamatory, dealing in vague phrases, and delighting in clap-trap illustrations. If I could not handle a scientific question by some method less adapted to the "shilling gallery" than the method of my censor in this case, I should wish to be silent for evermore. In his letter I see "Teleology" compared to "a wise damsel" who is "temporarily ruffled," but who nevertheless "gathers up her skirts with dignity." I see Addison brought in, head and shoulders, with "the vision of Mirza." I see Fortuity described as "inseparable from life," with the somewhat obscure oratorical addition that "it is at the bottom one of the most pathetic things about it." I see mixed metaphors of all sorts and kinds, "the church," and "orthodoxy," and "automatically self-regulating machines," and "tenacity about outworks"—and many other such words and phrases—all handled according to methods which do not strike me as at all perfect examples of true scientific reasoning.

Nor am I able to follow Mr. Dyer's logic better than I can admire his declamation. The object of my last letter, which he attacks, was to lay down and defend the proposition that "there is no necessary antagonism between congenital variation and the transmission of acquired characters." Mr. Dyer admits this proposition to be "perfectly reasonable," adding, in respect to this supposed antagonism, "theoretically there is none." But then he proceeds to say, "this does not make the transmission of acquired characters less doubtful." In other words, the complete and effectual removal of an adverse presumption is of no value in an argument which rests altogether on difficulties and doubts. This would be unreasonable enough considered merely in the abstract. But it becomes still more unreasonable when we recollect that the whole doctrine of evolution implies, of necessity, the continual rise of new characters and the transmission of them. These new characters are "acquired" in one sense, and they may be congenital in another. They not only may be, but probably they must be, acquired from latent congenital tendencies, and they may be fixed and transmitted only by those tendencies ceasing to be latent. On this view of the matter, the present controversy between the two conceptions becomes a mere logomachy. The different breeds of dog do undoubtedly transmit characters which have been "acquired." But it is always possible to assert, and always impossible to deny, that these characters arose out of congenital tendencies latent in the species. Mr. Dyer's assertion that this method of reconciling the two ideas "does not make the transmission of acquired characters less doubtful," is an assertion, therefore, which is obviously wrong. The reconciliation attacks the difficulty about the "inheritance of acquired characters" at its very heart and centre. It shows it to lie—as a thousand other difficulties have lain before—in an ambiguous word. "Acquired"? Yes; but from what? From "use"? Yes, but whence came the possibility