

## MISCELLANEOUS.

### THE PSYCHOLOGY OF REASONING.

Of modern experimental psychologists there are few who write more pleasantly or better understand the art of lucidly presenting the results of the research of their domain than Dr. Alfred Binet, Director of the Laboratory of Physiological Psychology in the Sorbonne, Paris. The present work by M. Binet, *The Psychology of Reasoning*,<sup>1</sup> which has just appeared, is a translation, from the recent second French edition, of a book, which on its original appearance some years ago attracted wide-spread attention in the thinking world, and was quoted in the controversy on Language and Thought between Max Müller, the Duke of Argyll, Francis Galton, Professor Romanes, and others.

This interesting little book is a development of the thesis that "reasoning is an organisation of images, determined by the properties of the images themselves and that the images have merely to be brought together for them to become organised, and that reasoning follows with the inevitable necessity of a reflex."

Perception is the topic first considered, and is defined as "the process by which the mind completes, with the accompaniment of images, an impression of the senses." Perception is itself unconscious reasoning; it involves the addition of something new to the simple sense-impression, it involves a species of judgment; and Dr. Binet contends that in studying the nature of this addition he is also studying the mechanism of reasoning in general. This is done largely by an investigation of the illusions and hallucinations of the senses, which furnish the very interesting chapter on images, where all the various types of representation, visual, motor, auditory, etc., are studied. The third chapter treats of reasoning in perception, and shows that the mechanism of reasoning in general is that of a natural fusion of images, comparable to that of the cinematograph and of the old scientific toy called the zoötrope, and that the formation of concepts has its physical counterpart in the production of composite photographs. Just as perceptive reasoning, or the recognising of exterior objects as the things which they really are, is a perfectly natural and mechanical process, so also logical reasoning is a natural process. "The organisation of our intelligence," he says, "is so arranged that when the premises of a reasoning are stated, the conclusion results from them with the ne-

<sup>1</sup>*The Psychology of Reasoning*, Based on Experimental Researches in Hypnotism. By Alfred Binet, Doctor of Science, Laureate of the Institute, Director of the Laboratory of Physiological Psychology in the Sorbonne. Translated from the Second French Edition, by Adam Gowans Whyte, B. Sc. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1899. Pages, 191. Price, 75 cents (3s. 6d.).

cessity of a reflex action. In other words, we reason because we have in our brain a machine for reasoning."

To enforce his doctrine, Dr. Binet makes use of the following pretty comparison; "If it were necessary to make use of a comparison in order to describe the mechanism of reasoning, we would mention those flowers which are formed during frost on the window panes of rooms. Let us thaw them with our breath and then observe the regelation of the liquid layer. While crystallization is taking place round a first crystal, 'you notice one feature which is perfectly unalterable and that is, angular magnitude. The spiculae branch from the trunk, and from these branches others shoot; but the angles enclosed by the spiculae are unalterable.'<sup>1</sup> Just as these crystallisations are produced by the forces inherent in each of the molecules, so reasoning is produced by the properties inherent in each of the images; just as crystallisation, in its oddest eccentricities, always observes a certain angular value, so reasoning, true, false, or insane, always obeys the laws of resemblance and of contiguity."

In conclusion he remarks: "Images are not by any means dead and inert things; they have active properties; they attract each other, become connected and fused together. It is wrong to make the image into a photographic stereo-type, fixed and immutable. It is a living element, something which is born, something which transforms itself, and which grows like one of our nails or our hairs. Mental activity results from the activity of images as the life of the hive results from the life of the bees, or, rather, as the life of an organism results from the life of its cells."

The book cannot, on the score of its suggestiveness, be too cordially recommended. The work of the translator has been very well done.

### DE MORGAN'S ELEMENTARY ILLUSTRATIONS OF THE CALCULUS.

The publication of this new reprint of De Morgan's *Elementary Illustrations of the Differential and Integral Calculus*<sup>2</sup> forms, quite independently of its interest to professional students of mathematics, an integral portion of the general educational plan which the Open Court Publishing Company has been systematically pursuing since its inception,—which is the dissemination among the public at large of sound views of science and of an adequate and correct appreciation of the methods by which truth generally is reached. Of these methods, mathematics by its simplicity, has always formed the type and ideal, and it is nothing less than imperative that its ways of procedure, both in the discovery of new truth and in the demonstration of the necessity and universality of old truth, should be laid at the foundation of every philosophical education. The greatest achievements in the history of thought—Plato, Descartes, Kant—are associated with the recognition of this principle.

But it is precisely mathematics, and the pure sciences generally, from which the general educated public and independent students have been debarred, and into which they have only rarely attained more than a very meagre insight. The reason of this is twofold. In the first place, the ascendant and consecutive character of mathematical knowledge renders its results absolutely unsusceptible of presen-

<sup>1</sup> Tyndall, *Light*, p. 101; American ed., p. 104.

<sup>2</sup> Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co. Ltd. Cloth, \$1.00 (5s.). Pp. 144.

tation to persons who are unacquainted with what has gone before, and so necessitates on the part of its devotees a thorough and patient exploration of the field from the very beginning, as distinguished from those sciences which may, so to speak be begun at the end, and which are consequently cultivated with the greatest zeal. The second reason is that, partly through the exigencies of academic instruction but mainly through the martinet traditions of antiquity and the influence of mediæval logic-mongers, the great bulk of the elementary text-books of mathematics have unconsciously assumed a very repellent form,—something similar to what is termed in the theory of protective mimicry in biology “the terrifying form.” And it is mainly to this formidableness and touch-me-not character of exterior, concealing within a harmless body, that the undue neglect of typical mathematical studies is to be attributed.

To this class of books the present work forms a notable exception. It was originally issued as numbers 135 and 140 of the Library of Useful Knowledge (1832), and is usually bound up with De Morgan's large *Treatise on the Differential and Integral Calculus* (1842). Its style is fluent and familiar; the treatment continuous and undogmatic. The main difficulties which encompass the early study of the Calculus are analysed and discussed in connexion with practical and historical illustrations which in point of simplicity and clearness leave little to be desired. No one who will read the book through, pencil in hand, will rise from its perusal without a clear perception of the aim and the simpler fundamental principles of the Calculus, or without finding that the profounder study of the science in the more advanced and more methodical treatises has been greatly facilitated.

The book has been reprinted substantially as it stood in its original form; but the typography has been greatly improved, and in order to render the subject-matter more synoptic in form and more capable of survey, the text has been reparagraphed and a great number of descriptive sub-headings have been introduced. An index also has been added, and a Bibliography of English, German, and French works on the Calculus.—From the Editor's Preface.

#### THE PRINCIPLES OF BACTERIOLOGY.

Dr. Hüppe's book on Bacteriology<sup>1</sup> is universally recognised as one of the broadest treatments of the subject that have yet appeared. It is not a book on the technique of bacteriology, but a summary of the important discoveries of the science, which, as treating of knowledge which should be universally disseminated, will be of the greatest value not only to the physician, the scientist, and the student of hygiene, but to practical people in all walks of life. The structure of bacteria is thoroughly investigated, as are also the conditions of their life. The most important of the disease-producing bacteria are described, the causes of infectious disease, immunity, inoculation, and the history of bacteriology, all are duly considered. The diagrams are numerous, and not the least noteworthy exterior feature is the colored plates. While thoroughly rigorous in its treatment, there are chapters of the book, especially that on the “Prevention of Infectious Disease” by hygienic measures, which are within the reach of every reader, and which are of the highest importance.

<sup>1</sup>*The Principles of Bacteriology.* By Dr. Ferdinand Hüppe, Professor of Hygiene in the University of Prague. Authorised translation from the German, by Dr. E. O. Jordan, Assistant Professor of Bacteriology in the University of Chicago. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co., Limited. 1899. Pages, viii, 467. Price, \$1.75 198.

## PSYCHOLOGY FOR BEGINNERS.

Mr. Hiram M. Stanley, of Lake Forest University, has attempted no easy task in writing *An Outline Sketch of Psychology for Beginners*:<sup>1</sup> but for the purpose for which he has designed the book—that of furnishing for high schools, summer schools, academies, and secondary schools, and also for independent students of any age, a practical *résumé* of the most important points of view of psychological thought—he has been quite successful. His book is clear and quite untechnical; the author has restricted himself to the indication of the simplest methods of individual introspection and individual experimenting. It has been his main object to have the beginner acquire “psychic insight and familiarity with method.” The student is told a little as possible, and is always allowed to learn and conclude for himself from his own psychological experience. The book is a small one, containing only forty-four pages. The main titles are: Sensation and Perception, Memory, Ideation and Introspection, Feeling and Will, and finally Special Psychology in which brief reference is made to the various forms which psychologic research has recently taken. After each paragraph of the text original exercises are given and blank pages are provided at the end of the book for recording these exercises.

It is hoped that the little volume will place within the means of every reader however limited his scientific knowledge may be, a means of becoming acquainted with the general scope and character of psychological science.

## THE MIXE IDOL.

*To the Editor of the Open Court :*

An error occurs in the statement under the picture of a Mixe idol in *The Open Court* for July. Had I seen proof of this I should have struck out the words—“for nearly four hundred years, as the image of a saint.” The idol represents no saint but a pagan deity. It had *not* been in the church “for nearly four hundred years.” It must have been placed there between two visits of the priest. At many small Indian churches in Mexico the priest is seen but once or twice a year. The idol could not have been on the altar one year. No Christian priest would tolerate such a thing knowingly.

FREDERICK STARR.

CHICAGO, August 8, 1899.

## BOOK NOTICES.

Despite his seventy-six years, Prof. F. Max Müller, the great philologist and philosopher of Oxford, is still untiring in his research. The latest volume which has come from his pen is *The Six Systems of Indian Philosophy*, published by Longmans, Green & Co., New York and London. (Pages, xxxi, 618. Price, \$5 00.) Every volume which bears Professor Müller's name is bound to be charmingly written, and his work will undoubtedly find a large circle of readers outside of the purely scientific ranks. His enthusiasm for Indian philosophy knows no bounds. To him it seems that human speculation “has reached its very acme” in the Vedānta philosophy. With the present facilities which we have for becoming ac-

<sup>1</sup> *Psychology for Beginners*. By Hiram M. Stanley, Member of the American Psychological Association, etc. Chicago: The Open Court Publishing Co. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1899. Pages, 44. Boards, 40 cents (2s.).

quainted with Hindu thought, he would allow to no one the unqualified title of "philosopher" who was unacquainted with at least the two prominent systems of ancient Indian philosophy,—the Vedânta and the Sâmkhya. One of the signa merits of the Hindu systems of thought in Prof. Max Müller's eyes is that they never leave us in doubt as to their exact meaning. Enormous labor is being spent in order to ascertain the exact views of Plato, Aristotle, and even of Kant and Hegel, on some of the most important questions of their systems of philosophy; but the Hindu systems "never equivocate or try to hide their opinions, even where they may be unpopular." If they are atheistic, they are outspokenly so; if they are dualistic, materialistic, or monistic, they are outspokenly so. For him there was no country so pre-eminently adapted as India for the development of philosophical thought, and no races of mankind more highly gifted than the Indian, or better qualified to solve "the eternal riddles of the world." To those who are familiar with Prof. Max Müller's own philosophical views, his unbounded admiration for the Vedânta system will be readily intelligible; but none can withhold their admiration for the facility and clearness with which he has expounded his matured reflexions upon the Indian philosophy, which at intervals have occupied his mind for more than forty years.

Starting from the approved thesis that the dogmas of the most ancient religions and systems of ethics disappeared merely to assume vitality under new forms, Dr. Félix Thomas, in his little book *Morale et Éducation*, has examined the chief modern systems of ethics and religion, with a view to indicating the transmutations from which these creations in their turn may have sprung. These systems have all grown up about the old religions as species of concretions; they all bear the varied impress of the reigning views of philosophy, science, and art; they are partly new, they are partly mere rejuvenations of old and forgotten doctrines. What is new and durable in them it is M. Thomas's purpose to discern, and he has also specially endeavored to point out what influence they may be made to exercise upon the education of children. (Paris: Félix Alcan. 1899. 12mo. Pages, 171. Price, 2 fr. 50.)

#### NOTES.

Prof. Karl Budde, who (as our readers may remember) was invited by the American Lecture Bureau to lecture on the Old Testament at the various universities of the United States, publishes in the *Allgemeine Zeitung* (Nos. 144 and 145, June 28th and 29th respectively) an account of his trip to America. His account is interesting, and upon the whole quite fair; but it is amusing to witness his astonishment at what he defines to be "American Individualism," viz., the principle that every one claims the privilege of asserting himself and allowing others to do the same. "Every openly claimed power over the wills of others," he says, "as well as every confessed dependence, is an abomination to Americans." He regards it as very strange that in America events of primary importance that happen in Germany are overlooked, while much importance is attributed to the convictions of the German Courts for *lèse majesté*, which after all are, in the opinion of Continental Europeans, only matters of secondary importance, nay, even, as Professor Budde says, "events of the third and fourth degree." The importance which is attributed to personal rights in the United States is to him a matter of American naiveté.

American individualism asserts itself in the church and in politics. As a rem-

edy for the many contradictions which originate by local legislation, such as prohibition, etc., Professor Budde would recommend as the sole effective means "a vigorous, inexorable and exacting central power; but," he adds, "the American shuns that most of all, and prefers to suffer a number of palpable inconveniences."

Professor Budde claims that the rule of the majority is quietly submitted to in the United States, but here he is mistaken, for the majority decides the *personnel* of the executive as well as of the legislative branches of the government. The last instance is not majority rule, but the rule of the law; for even a law may be invalidated by the decision of the Supreme Court, if it be unconstitutional. It is true, even in the United States the idea prevails that the nature of republicanism consists in replacing monarchs by a rule of the majority; but the idea is nevertheless as wrong as it is to consider the old monarchies as tyrannies pure and simple. While legally a monarch stands above the law, we are perfectly justified in stating that practically the law is, after all, recognised as the ultimate principle of monarchical governments.

As to England, he is astonished to find the sympathy between the two English-speaking nations very deep-seated. But he confesses that the Americans are much closer to the Germans than the English, because, as he says, they do not possess the insular and isolating character of the latter.

"While staying in England, Professor Budde had passed into another country and yet felt as if living on another continent; but in the New World, he simply felt that he had travelled into another country. He recommends Germans to cultivate friendly relations with the United States, and deems frequent visits as an indispensable means of becoming familiar with our characteristic nationality. "The new Germanic nation beyond the ocean," he says, is to me exceedingly charming and attractive."

As to the prospects of theology in the United States, Professor Budde takes a very optimistic view. The apparently chaotic conditions which allow liberty to every church and permit an easy formation of new sects, he finds, after all, and judging from his own experiences, a guarantee of a deepening of the religious conception, and of a sound development of theological science.

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Mr. Moncure D. Conway's article on "The Christ of St. Paul" is of deep interest because it treats of the main problem of the history of Christianity, and the topic is one concerning which there has been much discussion and a great difference of opinion. Mr. Conway takes a view which is perhaps too severe on Paul and credits the convert of Tarsus with the invention of all that may give offence in the Gospels. He believes that Jesus was free from the narrowness of the Pharisee convert. We believe that much can be said in favor of Paul which Mr. Conway omits to mention and yet all the points made are worthy of consideration. There is a harshness in the character of Paul which is not always commendable and it is a habit of his to give currency to his pet theories (for instance his doctrine of the second advent of Christ) by calling them a "word" of the Lord. But, after all, he was a powerful personality who succeeded in impressing his view of Christ upon Christianity, and there is no one who doubts that he is the creator of the Gentile church,—the only form of Christianity that survived after the disappearance of the Judaistic congregations, the so-called Ebionites, or Nazarees. A few hints as to the importance of Paul are contained in the editorial on "Paul's Conception of the Cross," page 476 of *The Open Court* for August, 1899.

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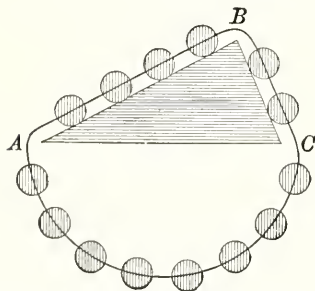
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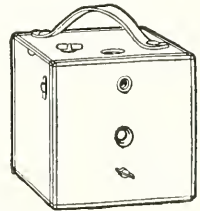
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