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THE
PSYCHOLOGICAL BULLETIN

THE CHICAGO SCHOOL.¹

BY PROFESSOR WILLIAM JAMES.

The rest of the world has made merry over the Chicago man's legendary saying that 'Chicago hasn't had time to get round to culture yet, but when she does strike her, she'll make her hum.' Already the prophecy is fulfilling itself in a dazzling manner. Chicago has a School of Thought!—a school of thought which, it is safe to predict, will figure in literature as the School of Chicago for twenty-five years to come. Some universities have plenty of thought to show, but no school; others plenty of school, but no thought. The University of Chicago, by its Decennial Publications, shows real thought and a real school. Professor John Dewey, and at least ten of his disciples, have collectively put into the world a statement, homogeneous in spite of so many coöperating minds, of a view of the world, both theoretical and practical, which is so simple, massive, and positive that, in spite of the fact that many parts of it yet need to be worked out, it deserves the title of a new system of philosophy. If it be as true as it is original, its publication must be reckoned an important event. The present reviewer, for one, strongly suspects it of being true.

¹1. *Studies in Logical Theory*, John Dewey, with the coöperation of members and fellows of the Department of Philosophy. The Decennial Publications, second series, Volume XI., Chicago. The University of Chicago Press, 1903. 2. *The Definition of the Psychical*, George H. Mead. 3. *Existence, Meaning and Reality*, A. W. Moore. 4. *Logical Conditions of a Scientific Treatment of Morality*, John Dewey. 5. *The Relations of Philosophy to Philosophy*, James Rowland Angell. Reprints from Volume III. of the first series of Decennial Publications, *ibid.*, 1903.

The briefest characterization is all that will be attempted here. Criticism from various quarters will doubtless follow, for about the new system as a bone of contention discussion is bound to rage.

Like Spencer's philosophy, Dewey's is an evolutionism; but unlike Spencer, Dewey and his disciples have so far (with the exception of Dewey's admirable writings on ethics) confined themselves to establishing certain general principles without applying them to details. Unlike Spencer, again, Dewey is a pure empiricist. There is nothing real, whether being or relation between beings, which is not direct matter of experience. There is no Unknowable or Absolute behind or around the finite world. No Absolute, either, in the sense of anything eternally constant; no term is static, but everything is process and change.

Like Spencer, again, Dewey makes biology and psychology continuous. 'Life,' or 'experience,' is the fundamental conception; and whether you take it physically or mentally, it involves an adjustment between terms. Dewey's favorite word is 'situation.' A situation implies at least two factors, each of which is both an independent variable and a function of the other variable. Call them *E* (environment) and *O* (organism) for simplicity's sake. They interact and develop each other without end; for each action of *E* upon *O* changes *O*, whose reaction in turn upon *E* changes *E*, so that *E*'s new action upon *O* gets different, eliciting a new reaction, and so on indefinitely. The situation gets perpetually 'reconstructed,' to use another of Professor Dewey's favorite words, and this reconstruction is the process of which all reality consists.

I am in some doubt as to whether, in the last resort, Dewey thinks monistically or pluralistically of this reality. He often talks of 'experience' in the singular as if it were one universal process and not a collective name for many particular processes. But all his special statements refer to particular processes only, so I will report him in pluralistic terms.

No biological processes are treated of in this literature, except as incidental to ethical discussion, and the ethical discussions would carry us too far afield. I will confine myself

therefore to the psychological or epistemological doctrines of the school.

Consciousness is functionally active in readjustment. In perfectly 'adapted' situations, where adjustments are fluent and stereotyped, it exists in minimal degree. Only where there is hesitation, only where past habit will not run, do we find that the situation awakens explicit thought. Thought is thus incidental to change in experience, to conflict between the old and new. The situation must be reconstructed if activity is to be resumed, and the rejudging of it mentally is the reconstruction's first stage. The nucleus of the *Studies in Logical Theory* becomes thus an account of the judging process.

"In psychological terms we may say, in explanation of the judging process, that some stimulus to action has failed to function properly as a stimulus, and that the activity which was going on has been interrupted. Response in the accustomed way has failed. In such a case there arises a division in experience into sensation content as subject and ideal content as predicate. In other words, * * * upon failure of the accustomed stimulus to be adequate * * * activity ceases, and is resumed in an integral form only when a new habit is set up to which the new or altered stimulus is adequate. It is in this process of reconstruction that subject and predicate appear." The old subject (the *that* of the situation) stands for the interrupted habit, the new subject (the *that* with the new *what* added) stands for the new habit begun. The predicate is thus essentially hypothetical—the situations to which the use of it leads may have quickly to be reconstructed in turn. In brief, *S* is a stimulus intellectually irritating; *P* is an hypothesis in response; *SP* is a mental action, which normally is destined to lead or pass into action in a wider sense. The sense of 'objectivity' in the *S* emerges emphatically only when the *P* is problematic and the action undefined. Then only does the *S* arrest attention, and its contrast with the self become acute. 'Knowing,' therefore, or the conscious relation of the object to the self, is thus only an incident in the wider process of 'adjustment,' which includes unconscious adjustments as well.

This leads Professor Dewey and his disciples to a peculiar view of 'fact.' What is a fact? A fact and a theory have not different natures, as is usually supposed, the one being objective, the other subjective. They are both made of the same material, experience-material namely, and their difference relates to their way of functioning solely. What is fact for one epoch, or for one inquirer, is theory for another epoch or another inquirer. It is 'fact' when it functions steadily; it is 'theory' when we hesitate. 'Truth' is thus in process of formation like all other things. It consists not in conformity or correspondence with an externally fixed archetype or model. Such a thing would be irrelevant even if we knew it to exist. Truth consists in a character inclosed within the 'situation.' Whenever a situation has the maximum of stability, and seems most satisfactory to its own subject-factor, it is true for him. If accused here of opening the door to systematic protagoreanism, Professor Dewey would reply that the concrete facts themselves are what keep his scepticism from being systematic in any practically objectionable sense. Experience is continually enlarging, and the object-factors of our situations are always getting problematic, making old truths unsatisfactory, and obliging new ones to be found. The object-factors moreover are common to ourselves and others; and our truths have to be mated with those of our fellow men. The real safeguard against caprice of statement and indetermination of belief is that there is a 'grain' in things against which we can't practically go. But as the grain creates itself from situation to situation, so the truth creates itself *pari passu*, and there is no eternally standing system of extra-subjective verity to which our judgments, ideally and in advance of the facts, are obliged to conform.

There are two great gaps in the system, which none of the Chicago writers have done anything to fill, and until they are filled, the system, as a system, will appear defective. There is no cosmology, no positive account of the order of physical fact, as contrasted with mental fact, and no account of the fact (which I assume the writers to believe in) that different subjects share a common object-world. These lacunæ can hardly be

inadvertent — we shall doubtless soon see them filled in some way by one or another member of the school.

I might go into much greater technical detail, and I might in particular make many a striking quotation. But I prefer to be exceedingly summary, and merely to call the reader's attention to the importance of this output of Chicago University. Taking it *en gros*, what strikes me most in it is the great sense of concrete reality with which it is filled. It seems a promising *via media* between the empiricist and transcendentalist tendencies of our time. Like empiricism, it is individualistic and phenomenistic; it places truth *in rebus*, and not *ante rem*. It resembles transcendentalism, on the other hand, in making value and fact inseparable, and in standing for continuities and purposes in things. It employs the genetic method to which both schools are now accustomed. It coincides remarkably with the simultaneous movement in favor of 'pragmatism' or 'humanism' set up quite independently at Oxford by Messrs. Schiller and Sturt. It probably has a great future, and is certainly something of which Americans may be proud. Professor Dewey ought to gather into another volume his scattered essays and addresses on psychological and ethical topics, for now that his philosophy is systematically formulated, these throw a needed light.

PSYCHOLOGICAL LITERATURE.

Les Obsessions et la Psychasthénie. T. I. PIERRE JANET. Pp. xii + 764. T. II. F. RAYMOND et PIERRE JANET. Pp. xxiv + 543. Paris, Félix Alcan. 1903.

In this work, which by virtue of its mere bulk as well as by reason of its scientific and literary qualities may truly be called monumental, M. Janet continues the already extended and remarkably brilliant series of studies in mental pathology which have established for him a reputation second to none among the investigators in this field in our generation. As in the case of the *Névroses et Idées fixes*, the second volume is written in collaboration with Professor Raymond and contains the clinical material on which the views set forth in the first volume are principally based — a record, in all, of two hundred and thirty-six observations. The subject of the study is a variety of phenomena — obsessions, phobias, morbid impulses, morbid states of excitement and distress, mental manias, tics, neurasthenias, queer feelings of strangeness, of loss of personality, etc.—in all of which the author finds a common character, a fundamental defect which they all express and by which they are all to be explained. Hence their union in one group. This common character is a certain enfeeblement of psychological function defined as a lowering or relaxing of the psychological tension. What this more precisely means, we shall see presently. Here at the outset we note only the central idea and primary aim of the treatise as a whole: it is that these diverse diseases constitute a single great psycho-neurosis, namely, psychasthenia, distinct from and yet related to the already recognized great psycho-neuroses of epilepsy and hysteria. This classification and the development of the principle on which it is grounded is the special contribution which the treatise claims to make to science.

The method of approach to the establishment of this principle and the wide range of the topics discussed in the treatise may best be indicated by an outline of its contents. The book—the reference is to the first volume—falls into two parts. The first part consists of an analysis of the symptoms. It treats in successive chapters of the obsessive ideas, their content and their form; of the agitating mental, motor and emotional disturbances (*agitations forcées*); and of the

psychasthenic 'stigmata.' These last are defined as "modifications in the functioning of the psychological processes which are independent of the obsessions and of the 'forced' operations" (p. 268); they include the feelings of incompleteness, inadequacy or defect (*senti-ments d'incomplétude*) on the part of the subjects themselves, together with those psychological deficiencies, such as indolence, timidity, revery, the need of guidance, of loving and of being loved, etc., which are manifest to the observer. Under this head the author also treats of the physiological defects, but attributes to our knowledge of them an altogether subordinate importance for our understanding of the disease. The second part is entitled "General studies on the lowering of the psychological tension." The first chapter treats of the pathogenic theories, advancing in a first section, by way of exposition and criticism of the intellectual and emotional theories, to the theory of psychasthenia, the principle of which is explained at length in the section following, while a third section applies the theory to the interpretation of the symptoms. The second chapter deals, under the general title of evolution, with the etiological conditions and with the development of the disease; the third, with its diagnosis and treatment. Finally, there is a general conclusion, discussing the place of psychasthenia among the psycho-neuroses.

The central conception of the work, then, is the unification and interpretation of a multitude of diverse symptoms under the one principle of psychasthenia. The time is not so very distant when every mania, every phobia, every form of obsession, was regarded as a curious and independent disease. That time is now past, but the various unifications proposed all seem at some point open to criticism. In uniting the diverse symptoms under the principle of psychasthenia, Janet claims to have introduced greater precision into the classification than his predecessors and certainly has gone farther. Thus he includes under the principle not only obsessions, phobias and mental manias, but, *e. g.*, tics. His treatment of tics affords a very good illustration of the way in which he connects phenomena that at first sight seem to be unlike. The tic used to be regarded as any minute and evanescent movement, spasmodic, automatic or reflex. Since Charcot, however, called the tic a caricature of acts, its systematic character has been more generally recognized along with its rapidity and minuteness. Janet defines the tic as 'an act reproduced regularly and frequently, but in a manner altogether inopportune, useless and incomplete because the will feels forced to perform it' (p. 164). The so-called *tic douloureux* is, accordingly, no tic at all, but a simple

spasm; an example of a true tic would be the movement, reducing itself eventually to a simple contraction of the fore-finger, of constantly touching the ear to verify the presence of the ear-ring (p. 161). Now the interesting thing about this conception is that it enables the author to treat these, and similar movements, from the psychological point of view. They are psychological in their origin. This is the first point. The next thing is to connect them with the patients' mental manias by showing that the latter possess altogether similar characters. But it had already been shown, in the section dealing with the subject, that there is a class of patients in whom the various manias of interrogation, hesitation, precision, repetition, perfection, expiation, conjuration, etc., appear as 'forced agitations' repeatedly occurring, not wholly independently of the will, but in a manner inopportune, useless and incomplete. Similar characters also appear in the obsessions of these patients. In the section dealing with this subject Janet has sought to show that, along with the characters which pertain to the content of the obsessive ideas, which always relate to acts of the subject and never, as in the case of hysterical subjects, to mere objects, and are of a sort to suggest a profound disturbance of cerebral functions and are never, as again in the case of the hysterical, merely imposed from without, they have everywhere the form of incompleteness, that the fixed ideas and associations are only in a certain limited degree independent of volition, that the tendency to action is never so necessary and constrained as to lead to execution, that the hallucinations are only symbolic, pseudo-hallucinations, never complete, that the patients never altogether believe in their obsessions, that the obsessive idea is imperfectly developed, that, in brief, the obsession is more or less voluntarily entertained and criticised, never effectively developed or disposed of.

We are thus led to the consideration of the principle which serves to unite these very various symptoms in one group. In the chapter on the stigmata of psychasthenia, Janet presents an imposing catalogue of psychical, and also of physical, deficiencies in the subjects of whom he treats. As already indicated, these deficiencies are partly appreciated by the subjects themselves (*sentiments d'incomplétude*), partly revealed to observation. The former, *e. g.*, include feelings of difficulty and inability in action, indecision, automatism, discontent, revolt; feelings of difficulty in thinking, dulness of comprehension, imperfect perception, loss of the sense of time, doubt; feelings of indifference, restlessness, need of excitement; feelings, finally, in regard to the self — feelings of strangeness, of a divided self, of loss of per-

sonality. To the latter belong in only a subordinate degree, if at all, the symptoms characteristic of hysteria — anæsthesias, subconscious movements, the hypnotic sleep, suggestion — but, on the other hand, a multitude of disorders of will, intelligence and emotion which confirm the view taken by the subjects themselves of their lack of ability to meet, in certain respects, at least, the normal demands of physical and social life. On the basis of this broad survey of the facts, Janet criticises both the intellectual and the emotional theory of obsessions. He regards the latter, which considers the emotional distress, or phobia, the primary phenomenon, as a decided advance over the former, which made the fixed idea the essential character; it is an advance because it points to a profounder source of the disease. But it is unsatisfactory; in particular, it is too vague and at once too general and too narrow. It is too vague, because the conception of emotion is still vague in psychology. It can be used, and frequently is used, in a sense so broad as to preclude discussion. Pitres and Régis in their Moscow report endeavor to make it more precise by reference to the James-Lange hypothesis,¹ but fail to show how the crises of obsession are to be distinguished from other pathological states also accompanied by marked visceral changes. This theory, again, can only rest in generalities, it cannot explain the differences in the cases in detail, the difference, *e. g.*, between the phenomena consequent on emotional shock in a hysterical subject and those which follow in a crisis of scruple. And it is too narrow because it leaves many essential phenomena entirely out of account. Thus the metaphysical obsessions relating to the dualism of God and the devil result, Janet tells us, in one of his patients, not from visceral, but from previous mental disturbance. This criticism (pp. 461 ff.) shows at least the need of more, and more careful, investigation into the place of emotion in pathological conditions, and for the benefit of those who are disposed to see in all pathological states a fundamental visceral disturbance the opinion of Janet, based as it is on an experience so wide and carefully considered as his is, is worth quoting, namely, “that a great number of these troubles, of these cases of psychological insufficiency, cannot be regarded as secondary to visceral modifications, but result primarily from a cerebral trouble, constitutional or accidental, in which the emotional element plays but a very small part” (p. 469). But besides the intellectual and the emotional theory, there is a volitional theory of these phenomena, the theory that the fundamental defect is a de-

¹ In their recent work *Obsessions et Impulsions*, Paris, 1902, p. 194, these authors deny having formally adopted this hypothesis.

fect of will. Janet himself lays great stress on defects of the volitional order. But he believes it necessary to get back of these distinctions of intellect, feeling and will and all these interminable discussions as to which is primary and primarily affected and to look for the more general disturbance whence all the special disorders of intellect, emotion and volition arise. An examination of a very large number of cases has shown a general or special mental insufficiency in all their varied phenomena which has been designated as psychasthenia. What, now, more precisely, is the nature of this defect?

As psychological deficiency means inability, or at least difficulty, in the performance of psychological functions, the first thing which Janet proposes is to determine what functions are relatively more and less difficult. He accordingly seeks to establish first a hierarchy of psychological phenomena, to arrange them, that is, in classes, designated as 'higher' and 'lower,' with reference to degrees of difficulty and facility in their performance, and that, not on any *a priori* grounds, but as indicated by the pathological facts themselves. From this point of view, the first place is given to 'the function of the real,' that is, the apprehension of reality in any form. The highest degree of this function relates to prompt and effective action; next comes attention in the perception of reality, with belief. A position of special importance in this class is assigned to the formation of the consciousness of present time, the nature and significance of which psychologists have hitherto but imperfectly understood. In the next class is placed 'disinterested' activity, including habitual action, action without the feeling of the present, of unity or of freedom, and perception without the sense of certainty and with the sense of the present vague. In a third, still lower class, are reckoned the functions of images — purely representative memory, imagination, abstract reasoning and revery; in a fourth, visceral emotional reactions; and in a fifth, the lowest, useless muscular movements, such as tics. This classification is admittedly schematic and provisional; it claims, however, to be in general agreement with the facts. In the psychasthenic psychological functions "disappear the more quickly the higher, and persist the longer the lower their coefficient of reality"; from which it is concluded that "these operations form a series of decreasing difficulty and complexity according as their . . . correspondence with reality diminishes" (p. 487).

The cardinal defect in psychasthenia thus appears as a defect relative to the function of apprehending and acting towards the real. The question then is, what makes this function difficult? For answer

we must analyze the function. Some have supposed the deficiency due to a lack of vividness in the presentation, others to the absence of intervening movement; Janet's previous writings might lead one to think that he would regard it as due to a lack of mental synthesis. None of these explanations, however, touches, in his opinion, the essence of the matter, important as they all are, or may be, as factors. The function of the real is essentially characterized, he holds, in its highest degrees by two phenomena; these are (1) unification, concentration, a phenomenon specially important when novel and constituting the mental synthesis, and (2) the number, or mass, of the psychological phenomena which enter into this synthesis. A certain relative complexity of elements, then, and a certain relative completeness of their synthesis constitute the function. And as Janet in his former writings had emphasized the importance for normal mental life of the function of synthesis, so here, as a sort of new discovery, he emphasizes the coördinate importance of the complexity of the elements that enter into it. We are now prepared for the formula which, as already indicated, characterizes for Janet the essential defect in psychasthenia. The presence of the two phenomena mentioned, complexity and synthesis, in the function of the real form together what may conventionally be termed the 'psychological tension.' The function of the real with action, perception of reality, certainty, are phenomena of high tension, on a higher mental level; revery, motor agitation, emotion are phenomena of low tension, on a lower mental level. We thus get a unification of the phenomena of psychasthenia parallel to that which Janet had previously made of the phenomena of hysteria. He had characterized the fundamental defect of hysteria as 'a narrowing of the field of consciousness'; he now characterizes the fundamental defect in psychasthenia as 'a lowering of the psychological tension.' He does not doubt that the psychological tension corresponds to a physiological tension in the central nervous system. Psychasthenia is, at the same time, neurasthenia. But in our ignorance of the conditions on which cerebral tension depends, it is better, he thinks, to follow at present the indications of the clinical material on the psychological side and not waste our efforts in the construction of hypothetical physiology.

The theory thus generally stated gets a further and more precise construction as it comes to be applied to the interpretation of the symptoms. First, we have the feeling of insufficiency on the part of the patients themselves. This is easily interpreted as the obvious subjective transcription of the fact of the diminution of the psychological

tension. It is not necessary to suppose that the subject has a direct consciousness of the emission of the nervous force; it is enough that he should be aware of its result. Assuming this, the feeling of deficiency is accounted for by three coöperating factors, defect of mental synthesis, reduction of the mental complexity and memory of the contrasted earlier state in which the psychical functions and contents were at once more unified and more complex. This retrospection is important, because the psychasthenic is, as a rule, very intelligent; and for the same reason it is important to consider the mental richness regarded as inherent in the function of the real as wholly relative; an imbecile probably never needs anything but a simple thought, but a mind accustomed to a certain maximum of consciousness calls that maximum real and no longer recognizes the real and the present when this maximum is lost (p. 548).

So much for the subjective sense of incompleteness — the interpretation here follows the hypothesis with relative directness and immediacy. When, however, we come to the '*agitations forcées*,' this is no longer the case. For while we find diminution of the psychological tension in that a lower form of activity has been substituted for a higher, this lower form takes on so extraordinary a development that it is no longer enough to point to the mere fact of the decline. To account for this novel feature in the symptoms, Janet supplements his hypothesis by the idea of 'derivation.' The principle is stated as follows: 'When a force primarily destined to be expended in the production of a certain phenomenon remains unutilized because this phenomenon has become impossible, it produces derivations, that is to say, it produces other phenomena unforeseen and useless' (p. 555). This principle has long been recognized in certain of its forms; Janet would extend it to a wide range of pathological phenomena, to cerebral phenomena such as automatically associated images, abstract ideas and reasonings, as well as to muscular and visceral disturbances. It is in favor of this principle that he rejects the theory of the exclusively genital origin of these agitations; they can be produced, he holds, whenever a phenomenon of higher tension has begun, but is arrested in its development by a lowering of the psychological tension which makes its execution impossible. And so the characteristic crises of emotional distress and mental rumination are regarded, not as a sort of subjective reaction against the painful sense of insufficiency, but as secondary phenomena derived from the initial forces of will, attention and emotion which sought expression in phenomena of high tension but failed by reason of mental incapacity. Now this principle ex-

plains, in Janet's view, the extraordinarily rich development of these phenomena. For just as a physical force when duly applied produces phenomena that do not appear to us excessive, but when otherwise applied produces effects of alarming proportions, so, he argues (p. 559), when a psychological phenomenon is very superior to another in the hierarchy of functions, the tension required for its production, if otherwise employed, could produce an inferior phenomenon a hundred times as great.

Another feature of the phenomena which requires explanation is their systematic specialization. They are not all vague and diffuse, nor is the patient an imbecile. His incapacity extends not to the whole of the mental life; it is specifically related to certain acts, operations and objects. How now shall we account for this specialization? The problem has two parts; the first relates to the specialization of the psychological deficiencies, the second to the systematization of the derivations. The specialization of the psychological deficiencies is accounted for by the special difficulty afforded by certain acts and operations. Such difficulty is partly natural, partly artificial. Among acts naturally difficult, naturally demanding high tension, Janet reckons as in the first rank social acts, involving consideration of others and their consideration of us. Here belong, *e. g.*, the acts connected with marriage and the sexual relation; also acts connected with one's trade or profession. A very large number of the cases are included within these groups. An act becomes artificially difficult when, from being performed in a simple manner, there is an effort made to perform it in a manner adequate and complete. Example: a prayer made with full realization of its theological and philosophical implications as compared with the same prayer repeated in the simple faith and with the simple intelligence of childhood. There is a great variety of operations of this sort to which, for one reason and another, the attention of the patient becomes drawn and which he seeks to perform with a perfection for which his fundamentally diseased condition, his inability to sustain a function of high tension, renders him incompetent. Thus his psychological insufficiencies become specialized. The systematization of the derivations is accounted for by three principles—individual predisposition, habit and the best adaptation possible. The first determines the general categories of the reaction, the second leads to its repetition, the third gives to the derived phenomena a certain relation to the primary, which failed of being accomplished. The mental manias of the patients are referred to this third principle and, indirectly, the systematic character of the tics, which are regarded as their consequence.

A similar explanation, finally, is given of the obsessive ideas: they are the symptoms and consequences of the more radical defect, the lowering of the psychological tension. Their most fruitful source is internal, the patient's sense of lack and his actual psychological deficiencies. Even when occasioned by some external circumstance, there are always present, in Janet's opinion, these other conditions, by which the subject is prepared. As illustrating the interpretation of the facts from this point of view, we may take the case of the patient obsessed by the hallucinatory idea of the *membrum virile* desecrating the host. The explanation Janet gives of this idea is as follows: The patient is, before all else, a psychasthenic, possessing the sense of lack. Hence results, first, a crisis of efforts in the form of convulsive movements. Such movements are largely determined by a 'derivation' from the higher phenomena that have become impossible. These movements lead to genital excitements, these to masturbations. This vice becomes for the subject the symbol of her fall. Other manias, of generalization, of the infinite, etc., drive her to the extremity; she associates religious crimes with genital faults and so symbolizes her opinion of herself by the hallucination of the *membrum virile* and the host (p. 585). In other cases the connection of the obsession with the sense of deficiency is much more direct than this, as, *e. g.*, in that of John Bunyan obsessed by the idea of falling deeper and deeper with every step into a slough, and that of the man with an abnormal dread of social intercourse, obsessed by the idea of becoming a priest (p. 586). But the principle is the same throughout. And the formal features of the obsessions, such as their persistence, the part played in them by the association of ideas and their impulsive character, are also interpreted (pp. 596 ff.) as pointing to the same fundamental defect.

There is no space here, nor is this perhaps the place, to treat of the more medical aspects of the discussion. The interested reader will find these fully dealt with, and in masterly fashion, with a wealth of sane suggestion, in the chapters on the etiology and progress of the disease and on its diagnosis and treatment. Reference, however, must be made to the author's final disposition of the disease as a special psycho-neurosis. It was his aim, we remember, to establish psychasthenia as such a special psycho-neurosis alongside of the already recognized psycho-neuroses of epilepsy and hysteria. How, then, are these three great pathological conditions related and distinguished? As regards the relation of psychasthenia to epilepsy, the two have many features in common, the principal one being decline or fall of mental or nervous tension. In the epileptic attack this is sudden and often

results in a complete loss of self-consciousness, in psychasthenia it is continued and less complete. The convulsions of the epileptic are phenomena of derivation, like the mental ruminations of the subjects of psychasthenia, but of a more elementary order. On the other hand, with the partial recovery of the mental tension, phenomena characteristic of psychasthenia, such as the feeling of insufficiency, doubts of the reality of self and of the world, etc., are also met with in the epileptic. The conclusion is that 'the psychasthenic state is an attenuated and chronic epilepsy' (p. 734). As regards the relation of psychasthenia to hysteria, here too we meet certain common features, such as defects of will and attention and diminution of mental and nervous activity, and there are cases of transition between these states. But, in general, the relation here is one of contrast, hysteria being characterized by a narrowing of the field of consciousness with full, even excessive, development of the phenomena within that field, psychasthenia by a general lowering of the mental tension, a general enfeeblement of the higher functions. Psychasthenia, in brief, occupies a position between epilepsy and hysteria. It is closely related to neurasthenia and possibly to certain forms of paranoia. It is a disturbance primarily of those functions which put the mind into relation with reality. Other functions remain apparently intact, and thereby show their inferiority. The relaxation of the psychological tension brings about a mental unrest, feelings of incompleteness, etc. Under its influence and by virtue of the suppression of the higher phenomena, the lower phenomena become greatly exaggerated; hence motor agitations, distressing emotions, mental ruminations. Finally, ideas are formed which resume, as it were, and interpret these phenomena and present the same general characters as the states from whence they arise; they are permanent and obsessive because they resume and express a permanent condition, they do not give rise to really insane convictions, but preserve the form of distressful emotions and ruminations, because they share in the incompleteness of function as regards reality and conviction which characterizes the disease (pp. 735 ff.).

Such is the new theory of obsessions and allied phenomena which M. Janet develops in the present work with characteristic acuteness and suppleness of thought on the basis of an extraordinarily wide experience of the facts. Final judgment on the theory must be left with the experts who possess something like the same intimate acquaintance with the facts. In particular, attention should be directed to the question whether, in all cases of obsession and impulsive ideas, there is what Janet calls a general lowering of the mental tension, or whether

there are some in which the decline is altogether of a special type. That is, are the 'specializations of the psychological insufficiencies' and 'systematizations of the derivations' themselves symptoms of a more general state, or is the psychasthenia in such cases special and limited and without general significance? Janet seems not to have made this point very clear. Then, there is the further question as to whether, granting that the defect mentioned is primary and fundamental, the other phenomena can all be explained as derivations, specializations, systematizations and self-invented explanations of it. Janet's argument on this head is exceedingly plausible, but are not his facts colored by his theory? Only the expert can decide. One, however, who can claim no such title may still be permitted to question the meaning and scope of the conceptions employed. The central conception is that of 'psychological tension.' Now tension is a term of well-defined meaning in physics, but not in psychology. Janet himself admits that he uses the term only in a conventional sense. What, then, does the term thus used stand for? It stands with him for a certain constitution of the 'function of the real' which makes that function difficult as compared with other functions; it stands for relative complexity of content with concentration or synthesis. Here, then, we get another term, 'function of the real,' and this term is by no means clear. Since, however, it is here evidently of psychological, and not of epistemological or metaphysical import, we may assume that it refers to the apprehension of and reaction towards that which is subjectively taken for real.

The analysis of this function will, therefore, include, as one of its essential parts, the analysis of belief. Does Janet's analysis satisfy the conditions? No doubt it is true, as he claims, that a certain relative richness belongs to the content of that which is taken as real, when compared with a similar content; this relative complexity of content is one of the features, as Stout has observed, which distinguishes an actual sensation from the corresponding image. And Janet has done well to call attention to the importance of this factor in the sensible awareness of present time. But is it, in certain cases, *e. g.*, in the case of dreams, a more important factor than that of vividness or, again, than that of the absence of felt contradiction in the content? And is it, in general, a more essential factor than the motor elements which presumably enter into the consciousness of the attitude, the readiness to act, which seems to characterize all states of belief? It may well be doubted. Janet discredits the alleged motor factor in the consciousness of reality because he finds subjects

afflicted with all manner of scruples who appear to be entirely without any muscular defect. But need this prove more than that certain motor reactions may be absent without impairment of the muscular system in general? Finally, there is the conception of difficulty. The function of the real is difficult, it is a phenomenon of 'high tension,' involving concentration and a certain complexity of content. With this as a criterion, it ought to have been shown that the subordinate classes in the hierarchy of functions form a graduated series of decreasing complexity of content and diminishing concentration. Janet makes no pretence of showing this. But waiving this, we may raise the question of fact. Is it, in fact, always more difficult to perform the mental acts here classed as higher than it is to perform those which are ranked lower in the scale? Is it always harder to take something for real, *e. g.*, to perceive with conviction a present fact, than disinterestedly to entertain ideas?

One cannot but be struck by the low place assigned to abstract reasoning; it is placed in the third class, along with reverie, not only below the apprehension of reality that leads to prompt and effective action, but below perception without conviction and with the sense of present time vague. There may be some reason for this in the case of subjects mentally unbalanced, whose endless ruminations are only too facile, though even in their case it does not certainly appear that these ruminations are more facile than the habits of their ordinary life. But it seems hardly applicable to the average run of men. The truth is that difficulty is a term entirely relative in its application; some functions are difficult to some which are easy to others. Plato's philosopher finds it difficult to adjust his actions to the conditions of an ill-adapted state, while the behavior of the shrewd and unscrupulous politician is prompt and effective. There is one thing, and perhaps one thing only, which is difficult, in different degrees, to all alike, and that is the prompt and effective manipulation of new contents of consciousness. But by the 'function of the real' Janet understands both more and less than this.

Attention has been called above to only the principal theses in this important work. There are besides a multitude of fine observations which will interest the general psychologist as well as the special student, the alienist and the practitioner. The usefulness of the book in this regard is greatly enhanced by an analytical index.

H. N. GARDINER.

SMITH COLLEGE.

Philosophy of Conduct. GEORGE TRUMBULL LADD. New York, Charles Scribner's Sons. Pp. xxii + 663. \$3.50, *net*.

With regard to a work by a writer so well known as Professor Ladd many things will be taken for granted by readers of the *PSYCHOLOGICAL REVIEW*. They need not be told that his scholarship in his particular topic and in pertinent and allied branches of science is accurate and broad; that his treatment is detailed and exhaustive, as is witnessed, moreover, by nearly seven hundred closely-printed pages — an extent unapproached, I think, by any other single work on ethics in English; that in method his book is analytic of experience rather than purely *a priori*; that in outcome it is theistic; that in style it is clear and well illustrated by a scholarly array of facts. More briefly, readers will know that the work is weighty, judicious, one of the noteworthy discussions of morality, indispensable to students of the subject, and at the same time helpful to the plain man interested in such questions.

The task of the reviewer accordingly reduces itself to presenting an outline of the author's main scheme of treatment and of his more important discussions; and to indicating some of the views of the text that seem less complete, conclusive or clear, capable, it may be, of improvement in a second edition.

After four introductory chapters Professor Ladd's text falls into three main parts, dealing respectively with the agent of morality, the laws of morality and the ultimate worth of morality. The first consists of a discussion, chiefly psychological, but partly anthropological also, of the equipment of the human self, *quod* moral — no animal has the moral equipment, according to the author. The second discusses the virtuous life, giving an account of the cardinal virtues, of duty, of moral law, of moral principles, and of the distinctions and interrelations of these modes of moral behavior among themselves. The third discusses the cosmic nature of morality, its source, sanctions and ultimate significance; considering especially whether its essential worth consists in its happiness value, its social value, or its sanction by the rational will and judgment of the Absolute.

The account, in Part I., of the moral self is one of the best in ethical literature. Admitting that the intimate and important interrelations, genetic and static, of the moral and the social selves receive a scantier consideration than many investigators would think their due, it remains true that there are few accounts in English of the moral self psychologically as accurate and as exhaustive as Professor Ladd here offers. The equipment of the moral self is discussed, for convenience,

under the headings of feeling, judgment and will. The chief moral feelings are obligation — which is fundamental, — approbation and merit, felicitously defined, after Professor Bowne, as ‘the desert of moral approval and the right to be rewarded accordingly.’ Ethical judgment is shown to involve time-consciousness, self-consciousness, causal consciousness and the category of ‘right’ as its universal predicate; to spring from domestic, tribal and religious customs; to be subject to an evolution, whose stages are pointed out, etc. The volitional equipment of the moral self is held to consist in moral freedom, which is discussed most thoroughly in some fifty pages or more, in a way that is not only valuable, but even interesting.

Coming to Part II., the cardinal virtues, defined as the habits of action which men, with practical unanimity, approbate because they are right, are happily classified into virtues of will, *e. g.*, courage, temperance, constancy; virtues of judgment, *e. g.*, wisdom, resignation, justness, trueness; and virtues of feeling, *e. g.*, friendship, hospitality, pity; and Dr. Ladd is careful to insist that the virtues form a unity within the personality of the moral self. To the present writer the accounts of courage, wisdom and trueness seem the most, those of temperance and justness the least successful. In the author’s discussion of virtue three points would probably be received with some doubt. First, are not virtues essentially qualities of character, rather than also (pp. 211, 371) habits of conduct? We no doubt frequently speak of brave actions, as well as of brave men, but isn’t the former a transferred usage? This point is of less importance, and is mentioned chiefly as an introduction to the next. For secondly, are not virtues in part matters of endowment, and not wholly matters of achievement? Indeed, are not genuine virtues, in the last analysis at least, *perfections* of character? Would a man be considered virtuous who did the best he could in view of his capacities, even if that best were tolerably bad? Would he not have to rise to what the circumstances demanded and achieve a standard excellence of conduct? In short, do not the virtues, considered as a whole, give at least a popular doctrine of objective and authoritative morality, as distinguished from the merely subjective morality of the individual conscience? And finally, is not the author’s doctrine that the different cardinal virtues, *e. g.*, courage and wisdom, or justice and mercy, may conflict, that their conflicts are in fact sufficiently inevitable to form practical antinomies, dependent on his doctrine that the virtues are habits of conduct rather than perfections of character? For if they are perfections of character they are wrongly defined if so defined as to

conflict. A man whose courage is of a kind that leads him to incur danger that he should avoid, could hardly be called brave in the *full moral* sense of the word, and similar would be the cases of those whose benevolence leads them to injustice, or whose justice involves them in cruelty. Such men would no doubt in a loose way be called brave, benevolent, and just, but their qualities could not well be called virtues in the sense of perfections of character. Some single supreme principle is no doubt needed to reconcile apparent conflicts, and to make possible the definition of the several cardinal virtues as perfections of character, and probably it is because of the absence of such a principle that Professor Ladd finds himself at a loss to reconcile them.

A further word is here called for regarding 'ethical antinomies,' as it is largely on them as a basis that Part III. rests. Professor Ladd does not rank these with metaphysical antinomies, as he does not consider that any of the contradictory propositions are scientifically established laws. But unless they are solved 'the good man * * * is left hopelessly in the dark as to the real significance and worth of the right, and hopelessly at odds with himself, with his fellows, with his environment, and with the world of reality.' The first antinomy is 'the conflict between the sentient self and the moral self.' Pleasure has value for man; virtue has value for him; and the two interests are in conflict, or at any rate are far from being identical throughout. Second, 'there are almost unceasing conflicts among the virtues themselves.' Then 'there can be no doubt that constant conflicts arise between dutiful regard for one's own interest and a dutiful regard for the interests of others.' And finally, 'there is the eternal contrast, which so often issues in conflict, between the actual realization and the real ideal'; indeed, the men who seem to need it least feel most keenly the 'torment of the ideal.'

These 'antinomies' the author looks upon as left upon his hands by empirical ethics, after that inquiry has done its utmost, and in Part III. he seeks for such aid as the speculative methods of philosophy, especially of the philosophy of religion, can give. Relying on his earlier works to prove that the world-ground is a rational and personal will, he seeks to show that psychology, anthropology and the other empirical sciences fail satisfactorily to explain morality and its antinomies, but that the desired explanations are forthcoming as soon as the Absolute is accepted as at once the source, the sanction and the goal of morality; at least the stress of the antinomies is then eased, for rational ground appears for a willingness to forego loss of pleasure and of personal interest, and to undergo the torments of the ideal.

The author's empirical critics will naturally look upon these conclusions as overdrawn. Many of them will look upon the antinomies as unduly sharpened, and upon the difference between the empirical and the speculative solutions as exaggerated. A social source sanction and goal of morality they would admit to be much less august than a divine, but they would think it quite as truly conscious, and accordingly the same in kind, in the principle of its authority, and in the nature of its efficacy as a solvent of antinomies. Some no doubt will even go so far as to regard society in this rôle as closer and surer, less shadowy and precarious than Professor Ladd's absolute.

But many readers will probably be most interested in some statement that will give them in brief compass some idea of Professor Ladd's general conception of morality. And while any such statement is sure to do the author but scant justice, it may be that the following paragraph, taken from his text, p. 528, will serve the purpose reasonably well, when read in connection with what has already been said.

"For every individual his own ideal of moral selfhood furnishes the criteria, the sanctions, and the end of morality in such manner that if he conforms his conduct to this ideal he is entitled, at the bar of universal moral reason, to be called a good man. By such conformity the individual realizes in his own personal experience the nature of that which is eternally and unchangeably right. *For it is the spirit of devotion to the ideal of personal being in social relations that constitutes the very essence of ethical rightness* [italics Ladd's]. Only it must never be forgotten that this spirit itself involves and absorbs the entire self—involves all the functions and activities of moral personality in its service daily and momentarily, and absorbs them all in the rational pursuit of its more and more perfect realization."

S. E. MEZES.

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Experimental Psychology and its Bearing upon Culture. GEO. MALCOLM STRATTON. New York, The Macmillan Company. 1903. Pp. vii + 331.

To all who have seriously at heart the welfare of experimental psychology such a book as this which Mr. Stratton has given us must be sincerely welcome. The laboratory psychology has been passing through a period of adolescence, during which it has, like other young sciences, experienced multifarious forms of misapprehension, and it is fair, perhaps, to say, that it has suffered quite as much from its ostensible friends as from its enemies. One of the most persistent

of misunderstandings is the conviction shared by many critics, that experimental psychology has little or no bearing upon any of the deeper problems of philosophy. Such an impression is in point of fact based solely upon the failure to distinguish between form and substance. Certainly the chronoscope and the induction coil do not immediately suggest metaphysical interests, but Mr. Stratton's timely book is devoted to showing that when used for purposes of psychological analysis even these material devices, and others of like ilk, may contribute to the solution of philosophical problems. Thus we meet with experimental evidence telling for one conclusion or another in the case of the mind-body problem, the problems of space and time, the problem of personal identity and sundry other philosophical questions. Mr. Stratton has not attempted primarily to popularize his subject. He writes with a firm and scholarly grasp of his material for the person of trained intelligence, who is in some degree at least familiar with the general trend of philosophical thought, especially those phases of it which find their expression in the interests and ideals of contemporary culture. The plan of the book involves, first, the attempt to make vivid and clear the exact procedure in typical psychological experiments; and second, the effort to show how the results so obtained are relevant to certain significant philosophical inquiries. Thanks to a graceful style, this program is carried out with a smoothness and finish which render one's reading unusually agreeable and satisfactory. The philosopher, the psychologist and the layman will all find the work interesting and suggestive. Profuse illustrations do much to enhance the definiteness of the impressions about experimentation.

A brief historical introduction is followed by an admirable statement of the nature and scope of experimental methods. The fatuity of the earlier strictures upon such experimentation, as being inevitably limited to a few problems touching the psycho-physiology of the sense organs, is effectively exposed by citations of results already attained. On the other hand, the absurdly sweeping claims of incidental enthusiasts find no comfort in our author's conservative estimates. Theoretically every psychological problem is susceptible to experimental attack and already wide ranges of the psychological field have been successfully explored by the experimentalist. But there are regions into which his ingenuity has not as yet penetrated and no one can say how long such entrance may be deferred.

In a chapter on mental measurement we have a lucid analysis of the tangled controversial maze which has grown up around this sub-

ject. In a matter where parties are so numerous it is hardly to be expected that the author should unequivocally carry the day for his own view, and he is likely to find among his professional colleagues more dissenters from this part of his text than from any other. The position maintained is that we can and do unquestionably measure mental operations in regard to their temporal, spatial and intensive characteristics. To establish this position Mr. Stratton first undertakes to discredit the compelling force of the *a priori* arguments denying the possibility of mental measurements, after which he falls back upon the practical fact that many such measurements *are* apparently made. In the case of intensive measurements he takes the bull fairly by the horns and maintains, contrary to the more usual view, that the scale by which such measurements are to be judged is in reality a psychical scale and not the scale of physical weights, lights, sounds, etc., constituting the stimuli. Fortunately the practical value of such measurements is not jeopardized by the theory which one entertains as to their ultimate nature. Whether in reaction time tests, for example, we really and primarily measure the time occupied by certain neural operations, or the time of a series of psychical events, is of relatively small importance, provided we can by such methods get at certain of the differences which mark off from one another the processes of sensation, perception, recognition, association, etc. Thus the reviewer holds a somewhat different position upon this matter from that set forth by Mr. Stratton, but this does not detract from his ability to profit by Mr. Stratton's investigations involving measurements. Meantime the obstinate fact remains, to which the author seems hardly to accord sufficient weight, that whatever processes we may *include* in our measurements, the *termini* of all our actual mensuration, whether spatial, temporal or intensive, are physical objects or events. If this fact be admitted, it is difficult to see how one can altogether avoid the conclusion of those who maintain the functional or vicarious theory of mental measurements.

In two chapters dealing with unconscious ideas Mr. Stratton launches a very sane and temperate attack upon the common form of this doctrine whereby we are supposed to possess a sort of psychical homunculus, which steps in now and then to accomplish various remarkable performances, telepathic, hypnotic, etc., for which our ordinary mind seems incompetent. The burden of his argument rests, first and positively, upon the exposure of the inadequacy of the evidence advanced in support of the theory, second and negatively, upon the doctrine of parsimony in scientific explanation. On the other hand,

Mr. Stratton defends a much emaciated form of the doctrine in his contention, based upon numerous experiences, experimental and otherwise, that mental differences exist of which we are not, and apparently cannot be, directly aware. He cites, as illustrating the point, certain experiments of his own in which the reactions to lighted surfaces were found to be different, depending upon the presence or absence of subliminal shadows. The genuineness of such distinctions no one can question, certainly no experimentalist, but they afford no comfort to the believer in the old-fashioned unconscious idea. They are rather unnoticed increments, or nuances, of sensations and ideas.

An interesting account of illusions and their value for psychology as revealing the fundamental features of the perception process, leads on to two rather elaborate chapters dealing with space. The discussion runs all the way from such topics as the spatial perceptions of blind persons to the Kantian doctrine of the transcendental æsthetic. In this connection Mr. Stratton makes use of his own interesting and well-known experiments in which he subjected himself for a time to the distress of prisms inverting the ordinary space relations of the optical field. From these and other experiments he reaches a positive reply to the question which Berkeley and other philosophers have so often propounded. Neither touch nor vision can claim any genuine primacy as avenues of spatial information. Their action is reciprocal and the real world of our psychological space is one constructed through our efforts to harmonize our often conflicting and disparate experiences. The existence of an auditory space Mr. Stratton regards as problematical but possible.

The next two chapters contain a capital account of the important features of memory with its problems of temporal sequence and a discussion of their bearing upon our feeling of personal identity. A chapter on imitation and suggestion affords opportunity for an exposition of the more significant social and psychological phases of these processes brought out by recent writing. Æsthetic phenomena and the affective life in general are given two chapters in which the author has attained a welcome freshness and simplicity in dealing with matters where one is accustomed to meet stale platitude and obscurity.

The connection of body and mind is discussed in a chapter somewhat too brief to be altogether fair to the various relevant facts and theories at present available. To mention but a single point, there seems to be hardly sufficient justice done to such views as those of Goltz and Loeb upon the localization of psychical functions.

A final chapter is largely devoted to a discussion of the problem of the soul as it bears upon the experimentalist's work. Mr. Stratton adopts the position now so commonly held, that psychology needs no *tertium quid* beyond its states of consciousness, and at the same time he makes it abundantly clear that such a doctrine carries with it no necessary prejudice to the reality and sanctity of human personality.

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PHILOSOPHICAL.

The Development of Modern Philosophy, with other Lectures and Essays. ROBERT ADAMSON. Edited by N. R. SORLEY. 2 vols. Edinburgh and London. 1903. Pp. xlviii + 358 and xv + 330. 18 s. net.

These handsome volumes are the posthumous legacy of the late Professor Adamson. The first volume contains a sketch of modern philosophy from Descartes to Hegel, and also the sketch of a theory of knowledge. Volume two covers seven occasional papers, and besides the *Principles of Psychology* covering pp. 161-330. The first volume has an excellent portrait of the author, a memorial 'introduction' by Professor Sorley, and a bibliography (arranged by years).¹

The remarkable thing about these volumes is their maturity of expression and argument, seeing that they are made up of students' lecture notes and had no revision by the lecturer. The pages read with all the deliberate weighing of reasons and choosing of words of a labored composition.

In his views Adamson is one of the sanest and surest of those who reverted to a judicious naturalism largely under the weight of the evolution doctrine. His careful sense of fact and reverence for reality show in all the constructive parts. In the psychology we find a frank acceptance of the genetic point of view and a successful criticism of the logical and faculty doctrine; but yet we miss the definiteness of well-thought-out theory. He usually stops by saying in effect that any formula here or there must take account of development; but having said so much he does not work out sufficiently well-developed genetic principles to solve the problems which the development hypothesis raises. No doubt we miss here just what he would himself have aimed to give had he prepared the manuscripts for publication. Speaking of

¹ The present writer takes interest in the fact that Adamson's last work was the series of articles on logical topics contributed to Vol. I. of the *Dictionary of Philosophy and Psychology* (83 titles).

the psychology only we may say that it is a fair and fine statement of the transition — and its grounds — to the current genetic point of view. Of especial interest and value are the chapters on thought — a topic on which reconstructive theories are in the air — although I find the value mainly critical and the interest mainly personal.

David Hume and His Influence on Philosophy and Theology.

JAMES ORR. *The World's Epoch-Makers.* New York, Scribners (imported). 1903. Pp. viii + 246. \$1.25.

Rousseau und Naturalism in Life and Thought. W. H. HUDSON.

Same, 1903. Pp. x + 260.

These are interesting additions to the series of 'Epoch-Makers'; they are liberal in the matter of biography, and the interpretations are broad and general in the interests of less philosophical readers. The volume on Hume goes into the theological bearings of that philosopher's work.

Naturalism and Agnosticism. JAMES WARD. 2d ed. 2 vols.

London, Black. 1903. Pp. xx + 333, and xiii + 301.

In this edition — more than a year over-due — Professor Ward revises by adding notes addressed mainly to his critics. He again dwells upon details at issue with Mr. Spencer. Apart from the points themselves — and often they are too minute to count much in matters now mainly historical — the personal controversy is too spirited. It seems to the present writer that Professor Ward's original lectures were somewhat weakened by his animus in attacking in hundreds of pages a philosophy which to judge from his epithets was beneath attack! Spencer's work was epoch-making; he is a figure to reverence, no matter whether we agree with the Synthetic Philosophy or not. It is a phenomenon — this way Englishmen turn and rend their greatest living philosopher, seeming to forget that they are breathing a different intellectual atmosphere by virtue of his work! Spencer stands with Darwin — at least out of England! — a glory to the British intellect.¹

In his notes now added Professor Ward touches upon many matters, always with a sure hand and large intelligence; he takes especial

¹ All this apart from my essential agreement with my friend Professor Ward in most of his larger criticisms of cosmic evolution. It is just now reported that Mr. Spencer has been awarded a Nobel prize; outside of England at least such an award would generally be considered appropriate and old England congratulated that she has so fitting a candidate in the moral sciences!

It is indeed with 'reverence' that these lines are revised, being left to stand just as originally written, while Spencer lies dead at Brighton.

pains to cite the best opinion in matters of physical science, even when it is necessary to modify the views expressed in his text. He is to be congratulated upon the wide circulation of the book, as well as upon the fact that he has by common consent made a permanent and very valuable contribution to philosophy. Many besides the writer hope that he will develop in a separate work the outline of the constructive views presented in the Volume II. before us—an outline most suggestive, but yet so sketchy that it is in some respects baffling and obscure.¹

J. M. B.

NOTES AND NEWS.

THE statement made in our last issue, on the authority of the daily press, to the effect that Dr. Scripture has resigned his position at Yale University, is erroneous. Dr. Scripture has been given leave of absence for a year to prosecute his researches on phonetics under a grant from the Carnegie Institution.

WE note in the published account of the past year's work of the Carnegie Institution that but two grants were made to psychologists (apart from certain Research Assistantships). This is certainly not a large 'plum,' and it does not go far toward the realization of the expectations excited by the report of the committee on psychology printed in the First Year-book. We sincerely hope that the present year will see the maturing of plans to develop larger undertakings in this and other subjects.

THE journal *Kantstudien* has issued a circular announcing the preparation of a *Festheft* on February 14, 1904, in commemoration of

¹One of the longest notes in Volume I. deals with the view of evolution worked out recently by several writers, and called by the present reviewer 'Organic Selection' and 'Orthoplasia.' Professor Ward follows out his earlier suggestion that this view runs parallel with his own theory of 'Subjective Selection.' In this note he agrees with the writer (see the recent book, *Development and Evolution*, pp. 48, 108) that the main point as regards the direction or determination of evolution by the individual's accommodations was not enforced by him: but he holds that the process involved, so far as *conscious* selection is concerned, is what he called subjective selection—a statement in which I fully concur. I confess I do not see the force of the criticism of the name 'Organic Selection'; it overlooks the use of 'organic' as adjective to 'organism,' a usage as old and good as that which makes it adjective to 'organ,' *e. g.*, the expressions 'organic world,' 'organic remains,' etc. (see *Century* and *Standard Dictionaries*).

the one hundredth anniversary of the death of Immanuel Kant. The editor, Professor Vaihinger, of Halle, also proposes to organize a 'Kant Society' for the support of the *Kantstudien*, which has been heretofore published at a financial loss. (Annual fee, M. 20, which may be sent in America to Professor J. E. Creighton, Ithaca, New York, the representative of the journal in the United States.)

THERE is also to be a celebration of this anniversary at Königsberg. A tablet is to be unveiled at or near the house in which the philosopher lived.

As all the world now knows, Herbert Spencer died at Brighton on December 8. His remains have since been cremated. The public press has been full of accounts of his life and estimates of his work. Notable among these in America are those of the *New York Evening Post* of December 8 and the *New York Daily Tribune*, the former from the pen of William James. The English papers give full accounts of Mr. Spencer and seem to realize, from the extraordinary appreciations of the press of all countries, that the first contemporary British thinker is no longer living. It is reported that Mr. Spencer's *Autobiography* is ready for press. The present writer has all along been impressed with the lesser honor done Spencer in his own country; and the following incident may serve to illustrate it. Having occasion, while in London in 1903, to gather photographic reproductions of great Englishmen, he inquired for certain of them at the establishment at which this is a specialty — reproductions of paintings in all the great world galleries. It was found that portraits of all other prominent Englishmen in London had been photographed and copies were on sale; but that no photograph of the painting of Spencer, paid for some years ago by popular subscription and then hanging in the Tait Gallery, had ever been taken, because—as said the proprietor — 'it has never been asked for.'

J. M. B.

FULL announcements of the *British Journal of Psychology* (noted in our last issue) are now at hand, containing the 'editorial' of Professor Ward and Dr. Rivers, the responsible editors. The numbers are to appear at irregular intervals, to contain articles only, and to constitute volumes of 450 pp., royal 8vo. The first issue will appear this present month. (London, Clay & Sons; subscription, 15 s.)

The Journal of Comparative Neurology is to be somewhat enlarged in its scope, as its new name, *Journal of Comparative Neurology and Psychology*, indicates. The editorial board remains the

same — President Herrick, and Professors Herrick and O. S. Strong — except that a comparative psychologist, Dr. R. M. Yerkes, of Harvard, is added. A long list of collaborators is announced. We wish the *Journal*, in its new form, a successful and influential career. (C. Judson Herrick, Granville, Ohio ; subscription, bimonthly, \$4.)

The following volumes, additional to those already announced in these pages, have been arranged in 'The Library of Historical Psychology' edited by Professor Baldwin: *Feeling and Emotion*, by Professor H. N. Gardiner, of Smith College, and *Association and Associationism* by Professor H. C. Warren, of Princeton University.

THE following news notes are gathered from the press.

PROFESSOR KUNO FISCHER has retired from active service in the University of Heidelberg.

PROFESSOR HUGO MÜNSTERBERG, of Harvard has been appointed 'non-resident lecturer' in Psychology at Columbia University for the current half-year.

DR. W. McDougall, well-known from his experimental publications, has been appointed Wilde lecturer in psychology in Oxford University in succession to Professor Stout.

THE formation of a German society for experimental psychology is announced in the *Zeit. f. psych.* (33. IV.), to hold its first meeting at Giessen.

NEW BOOKS RECEIVED UP TO JANUARY 7.

Zur Ethik des Gesamtwillens, eine social-philosophische Untersuchung. R. GOLDSCHIED. Bd. I. Leipzig, Reisland, 1902. Pp. vi + 552. Mk. 10.

The Nature of Man. E. METCHNIKOFF. Tr. by P. C. MITCHELL. New York and London, Putnams, 1903. Pp. xvi + 309.

The Philosophy of Hobbes in Extracts and Notes Collated from his Writings. Selected and arranged by J. E. WOODBRIDGE. Minneapolis, Wilson Co., 1903. Pp. vi + 392. [A very much needed, and very badly printed book.]

Esquisse d'un Système de Psychologie rationnelle. È. LUBAC. Pref. by H. BERGSON. Paris, Alcan, 1904. Pp. xvi + 248. Fr. 3.50.

- Response in the Living and the Non-Living.* J. C. BOSE. New York and London, Longmans, 1902. Pp. xix + 198. [A series of papers reprinted from scientific journals, 1900-1902.]
- Experiments in 1893-1896 upon the Colour Relation between Lepidopterous Larvæ and their Surroundings, etc.* E. B. POULTON. Trans. Ent. Soc. of London, Oct. 5, 1903. Pp. 311-374. [Contains very fine three-color plates.]
- Method in Philosophy.* Address before Aristotelian Soc., London, Nov. 2, 1903. S. H. HODGSON. London, Harrison & Son, 1903. Pp. 15.
- Das Seelenleben des Kindes.* K. GROOS. Berlin, Reuther u. Reichard, 1903. Pp. 229.
- Animal Education: an Experimental Study in the Psychical Development of the White Rat correlated with the Growth of its Nervous System.* J. B. WATSON. Chicago Univ. Press, 1903. Pp. 122.
- Evolution and Adaptation.* T. H. MORGAN. New York and London, Macmillans, 1903. Pp. x + 470. [A general work by the author of *Regeneration*, written in an anti-Darwinian sense, and making much of the sort of phenomena described in the earlier work.]
- Freedom and Responsibility.* A. T. HADLEY. New York, Scribners, 1903. Pp. 175.
- Philosophy in Poetry: A Study of Sir John Davies' Poem, 'Nosce Teipsam.'* E. H. SNEATH. New York, Scribners, 1903. Pp. 319. [The poem itself occupies pp. 221-319.]
- Le Langage intérieur et les Paraphasies.* G. SAINT-PAUL. Paris, Alcan, 1904. Pp. 313. Fr. 5. [A comprehensive and well-informed treatise on 'la fonction endophasique' — endophasia.]
- Man's Place in the Universe.* A. R. WALLACE. New York, McClure, Phillips & Co., 1903. Pp. viii + 320.
- Die Gesichtspunkte und die Tatsachen der psychophysischen Methodik.* G. E. MÜLLER. Wiesbaden, Bergmann, 1904. Pp. viii + 244.
- Laura Bridgman.* MAUD HOWE and FLORENCE H. HALL. Boston, Little, Brown & Co., 1904. Pp. xii + 394.
- An Introduction to the History of Modern Philosophy.* A. S. DEWING. Philadelphia and London, Lippincott, 1903. Pp. 346.
- Le Bonheur et l'Intelligence.* OSSIP-LOURIÉ. Paris, Alcan, 1904. P 3 2r. 50..p2.01

- Die soziale Frage im Lichte der Philosophie.* L. STEIN. 2. Auf. Stuttgart, Enke, 1903. Pp. xvi + 598.
- St. Anselm's Proslogium; Monologium; An Appendix on Behalf of the Fool by Gaunilon; and Cur Deus Homo.* Trans. by S. N. DEANE. Chicago, Open Court Co., 1903. Pp. xxxv + 288. \$1.00 and paper 50c. [A needed translation of selected works of Anselm with a bibliography of works on Anselm and selections from prominent expositors of his doctrines. In the series of Philosophical Classics.]
- The Canon of Reason and Virtue* (Lao-Tze). Trans. from the Chinese by P. CARUS. Chicago, Open Court Co., 1903. Pp. 96-138. 25 cents.
- The Psychology of Child Development.* IRVING KING. Introd. by John Dewey. Chicago, University Press, 1903. Pp. xxi + 265. \$1.25.
- Die Lehre vom Denken.* Theil II. A. BASTIAN. Berlin, Dümmler, 1903. Pp. x + 192. [Written by this distinguished anthropologist from the race-history point of view.]
- Recherches cliniques et thérapeutiques sur l'épilepsie, l'hystérie et l'idiotie.* BOURNEVILLE AND OTHERS. (Compte-Rendu du service des enfants idiots, épileptiques et arriérés de Bicêtre pendant l'année 1902. Vol. XXIII.) Paris, Progrès Médical (F. Alcan), 1903. Pp. cxx + 304.
- L'éducation fondée sur la science.* C. A. LAISANT. Préf. d'ALFRED NAQUET. Paris, Alcan, 1904. Pp. 153.

EDITORS' ANNOUNCEMENT.

It is intended that departmental reviewing shall be a prominent feature of the *BULLETIN*. 'Effective editors' will conduct the various departments. New books will have brief characterization pending the preparation of reviews. Concise abstracts of magazine articles are to be printed, and the 'contents' of the journals given in full. Researches in progress are to be reported. An editor will be charged to report, in occasional articles, the 'progress' of psychology as a whole. Items in any department, notices, and announcements may be sent to either of the responsible editors.

THE
PSYCHOLOGICAL BULLETIN

PROCEEDINGS OF THE TWELFTH ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION, ST. LOUIS, MO.,
DECEMBER 29 AND 30, 1903.

REPORT OF THE SECRETARY.

The twelfth annual meeting of the American Psychological Association was held in the rooms of the Central High School Building, St. Louis, Mo., on Tuesday and Wednesday, December 29 and 30, 1903, in affiliation with the American Association for the Advancement of Science and the American Society of Naturalists.

President William L. Bryan was in the chair and in the absence of the secretary, Professor C. E. Seashore acted in his place.

At the regular business meeting held on December 29, the following was transacted. Election of officers for 1904: *President*, Professor William James, Harvard University; *Members of the Council to serve for three years*, Professor Hugo Münsterberg, Harvard University, and Henry Rutgers Marshall, Esq., New York City. The following new members were elected: Professor Frank C. Doan, Ohio University; Professor T. G. Duvall, Ohio Wesleyan University; Professor Willard C. Gore, University of Chicago; Professor T. Harvey Haines, Ohio State University; Professor F. S. Hoffman, Union College; Dr. C. N. McAllister, Yale University; Dr. James Burt Miner, University of Illinois; Professor A. W. Moore, University of Chicago; Dr. R. M. Ogden, University of Missouri; Professor I. W. Riley, University of New Brunswick; Mr.

Warren M. Steele, Yale University; Mr. H. W. Stuart; Professor Edgar J. Swift, Washington University; Professor Norman Triplett, Kansas State Normal School; Dr. E. B. Twitmyer, University of Pennsylvania; Mr. J. B. Watson, University of Chicago.

It was voted that the Council be empowered to fill any vacancies in office which might arise during the year.

The Council presented a report from the Committee on Bibliography which appears below, and recommended that the report be laid on the table and the Committee be continued for another year. The recommendation of the Council was adopted.

A communication was received from Professor J. Mark Baldwin inviting the Association to hold its next annual meeting in Baltimore. A vote of thanks was extended to Professor Baldwin, and the selection of the place of meeting was left to the Council to be decided in conference with the Council of the Naturalists.

REPORT OF THE COMMITTEE ON BIBLIOGRAPHY.

To the American Psychological Association.

Your Committee on Bibliography respectfully reports that it has, through a subcommittee consisting of Professor H. C. Warren, examined the bibliography prepared by Professor Leuba and are unanimously agreed upon the purchase of such portions of Professor Leuba's collection as belong to years prior to 1893, provided that Professor Leuba is willing to sell at a price not in excess of \$150. From causes incidental to the action of a scattered committee and to the necessary preoccupations of some of our members this conclusion was not reached until the end of October, at which time it seemed best to postpone definite action until after the meeting of the Association, especially as the committee conceives that in several particulars the Association may desire to modify its action of a year ago.

The experience of the year has made clear the very great difficulty of carrying out such an undertaking by means of a committee. A small group of men is admirably suited to deliberative action and for the shaping of general plans, but is seriously handicapped in executive action by its numbers, and

labors under almost impossible hindrances when it is composed of scattered members for all of whom the work of the committee must be made secondary to other and more pressing demands. In the opinion of the present committee it is essential that some provision be made for placing the actual management of the work of collecting the bibliography in the hands of a single competent person.

In thus recommending a single executive the committee has not in mind the employing of an expert bibliographer who should do the whole of the work with his own hand, but rather of an agent who could carry on the correspondence necessary to secure the coöperation in this undertaking of the members of the association and others, who could look after the purchase and distribution of cards, could classify the cards when made out, and in general do all the various minor things that are necessary to bring the work to a successful issue.

Such an executive agent might be appointed directly by the association and take the place of the present Committee on Bibliography, and to this the Committee would gladly accede, or the committee might be authorized to employ such a person to do the work under its general supervision.

It would be advisable that this executive agent should not be otherwise employed in such a way as to prevent his giving his full attention to the bibliography or to prevent his moving from place to place as the work of the bibliography might require.

The committee believes that the services of a competent person could be secured for one year for \$1,000. And with that in view it recommends a further grant by the association of \$500 toward the salary of such an executive agent, and the application by the association to the Trustees of the Carnegie Institution for an equal sum for the same purpose.

The committee realizes that many members of the association may deem it unwise to go further with the bibliography at such an increased expense, and they therefore urge upon the association a full discussion, in the light of the facts above presented, of the whole question of collecting a bibliography at all.

If the association should, after discussion, decide to adopt the course suggested above, certain changes will be necessary

in the vote of last year to make the funds then appropriated available for the use of such an executive agent, and in case of such a decision the committee recommends such a vote.

And finally, in order that the field may be clear for any action that the association may desire, the members of the present Committee on Bibliography beg to be allowed to lay down the task imposed upon them and to render their resignations as members of the committee.

Very respectfully submitted,

THE COMMITTEE ON BIBLIOGRAPHY,

by *E. C. Sanford, Chairman.*

REPORT OF THE TREASURER FOR 1903.

DR.

To balance at last meeting.....	\$1,796.63	
Dues of members.....	312.	
Sales of Proceedings.....	.50	
		<hr/>
		\$2,109.13

CR.

By Expenditures for

Printing.....	\$ 36.20	
Assessment for Washington meeting.....	10.	
Proceedings.....	6.11	
Postage.....	18.20	
Stationery.....	6.90	
Clerical Assistance.....	15.70	
Exchange on cheques.	3.	
		<hr/>
		96.11
Balance		\$2,013.02
Accumulated interest on deposits approximate....		240.00
		<hr/>
		\$2,253.02

Audited by the Council and found correct.

LIVINGSTON FARRAND,
Secretary and Treasurer.

ABSTRACTS OF PAPERS.

Address of the President: *Theory and Practice.*¹ By WM. L. BRYANT.

I. *The Failure of Theory.*—When a theory will not work the difficulty lies in the fact that it is not true—not true that is

¹ To appear in full in THE PSYCHOLOGICAL REVIEW, March, 1904.

with a sufficient degree of approximation. An action is always necessarily concrete, subject not only to certain known general laws and to certain known definite conditions but subject to the whole of reality then and there effectively present. No theory completely embraces all the conditions determining any action. Some conditions are omitted unintentionally because of ignorance. Some conditions are excluded intentionally, on the one hand as disturbances which interfere with the accuracy of experimental results, on the other hand as complications which interfere with the possibility of mathematical or logical treatment. The intentional exclusion of disturbing or complicating conditions is not a procedure which requires defense. Its defense is found in the whole history of learning and after that in the history of the practical applications of learning. To make any progress, we must focus for certain things and be temporarily blind to environing things.

It may be, however, that in arriving at a theoretical result, either because of ignorance or because of the very efforts to be exact or to be logical, one will leave out of account conditions which are not in fact insignificant, which will not be absent when the bit of theory is tried, which will be there to upset all my previsions and to bring one to confusion. The air ship will not fly. In such a case, the best fortune is immediate and decisive practical trial. Decisive failure destroys our illusions, if we have them, and sets us looking for conditions which have been overlooked. Unhappily, however, decisive trial of theoretical results is often indefinitely postponed. In this case the scholar must be of extraordinary constitution if he escapes the historic disease of his kind, namely, blindness to realities which his method has not embraced.

I consider two types of this illusion of the scholar, *the illusion of consistency* and *the illusion of precision*. I wish to show how in both cases these illusions spring directly out of the painstaking employment of methods which must be employed to discover the truth and how when they have risen they render the scholar blind to certain aspects of truth which are not insignificant either in theory or in practice.

The greater part of the paper is a detailed discussion of these two illusions and their consequences for theory and practice.

II. *The Success of Theory*.—The question then arises, how may we mediate between abstract aspects or fragments of truth and the requirements of practice. There are two answers to this question which have weight beyond individual opinion.

1. *Concrete science* as developed in the higher schools of technology adds new chapters to theoretical science and at the same time makes necessary bridges between abstract science and practice. In psychology we have some such concrete studies. The writer believes that it is good strategy for the experimental psychologist to supplement this investigation of isolated activities and functions by the investigation of concrete activities and functions as they appear in everyday life.

2. *Experience with affairs* is indispensable. The practical effects of learning come through scholars who are also men of affairs. In such a case the scholar does not confront society with remote academic advice. With all his learning, experience and will he grapples with men and affairs as they are. He is instructed by the affairs which he guides.

In a word the scholar may at a great price become a statesman and when this occurs whether upon a great scale or a small one, we have one solution of the ancient problem of theory and practice.

The Psychology of Æsthetic Reaction to Rectangular Forms.

By T. H. HAINES AND A. E. DAVIES.

The importance of the golden section among rectangular forms, since Zeising, makes it the natural starting point of any investigation into the psychology of the æsthetics of form, although Fechner, Witmer and Angier have shown it to be only an approximation to the facts.

The field of æsthetics is burdened with contradictory theories, *e. g.*, there are (1) what we may call the mathematical theory, (2) the physiological theory, (3) the association theory, (4) the balance of attention theory, and (5) the interpretation or development theory. In such a field there is a loud call for constructive work.

Fechner's card method was improved by Witmer; and ours improves upon the method of Witmer in giving a series of cards

varying in width, serially and only one at a time. Results from twenty-three observers show the existence of several types of form in many cases even for the same individual. They are chosen because of (1) familiarity with the form, (2) associations with the form, (3) a solidity and substantiality in the form, and (4) combinations of these. The difference in types shows at once the error in averaging such results. Such an average destroys all meaning.

To further perfect this method we constructed a simple machine by means of which the observer could make at will in a large black screen before him, by simply pulling one of the two cords in his hands, any rectangle from a square of 100 mm. down to the narrowest slit. This at once gave a better command of the experiment, and it simplified his task, by making it more purely a choice among forms. A more constant state of attention is secured in discriminating the really preferable, because he can hurry over parts of the series which he knows he does not like.

This apparatus was used in two ways. In one the shutter which narrowed the figure moved horizontally, thus giving a figure higher than it was broad, and in the other it moved vertically and so gave a figure broader than high. This comparison gives results parallel in part only to the results obtained by Fechner in his measurements of gallery pictures.

The motives determining the choice of figures with our observers fall into five classes.

1. In the first place, those which seem to rest in the form itself. It is satisfactory. It is substantial.

2. Cases where the sensory data immediately develop an interest. They are *suggestive*.

3. Expectation is definite. These are *associative*.

4. Simple sensory elements make for or against the æsthetic reaction.

5. A purely motor element assumes prominence. These last are largely negative.

In the previous explanation of such phenomena, (3) and (5) have assumed great importance. The insight we have been able to gain seems to show that (5) is greatly over-emphasized

and that one can get underneath the rather general statements of associationism, and see the minuter mechanism of the processes involved. The simple sensory elements (4) prove to be important factors. And in (1) the simple contentment with the form as such (the pure æsthetic) we have the simplest possible case of cogniton coupled with the feeling tone, the elementary liking which is the beginning of all æsthetics. There is probably here the bare scheme of Professor Baldwin's circular reaction. It only starts back. In the *suggestive* cases (2) this circular process goes further. I do reach out to get more of it. I stop at a given form, I do not know why, and it develops. Other times the end of the process grows out of the process and is defined in idea before it is realized in fact. This is the close counterpart of a so-called association.

*The Experimental Study of Mental Fatigue.*¹ By C. E. SEASHORE.

I. Some ideas which we must abolish :

1. The idea that fatigue is a concrete, homogeneous quantity of something which can be measured in terms of the fluctuations in the efficiency of some particular work.

2. The idea that 'only the difficulty, and not the kind of mental work is significant for the general extent of fatigue' (Kraepelin, *Phil. Stud.*, XIX., 479).

3. The hope of obtaining results of wide practical value by gross measurements without a preliminary critique of method.

II. Some legitimate and promising lines of progress.

1. The development of methods of measuring by which the mental work may be recorded for sufficient periods of time, in sufficient detail, and under conditions favorable for introspective interpretation.

2. The analysis of the fatigue curve under controllable conditions.

3. The detailed examination of such factors as are necessarily interrelated with fatigue.

4. The detailed examination of qualitative, intensive, extensive, and temporal attributes of mental work ; also the effect of different degrees of complexity and stability.

¹ To appear in full in an early issue of THE PSYCHOLOGICAL REVIEW.

5. The correlation of psychological and underlying factors, such as physiological, chemical, histological and electrical phenomena.

6. The analysis of the individual fatigue-resistance.

7. The analysis of concrete experience, *e. g.*, a school period, with the object of applying the principles of fatigue for practical purposes.

The Measurement of Individual Differences. By J. McKEEN CATTELL.

The speaker briefly reviewed work that he had already published on the subject, and then considered the methods for expressing individual differences in mental traits in quantitative terms, and the extent to which the distribution of such traits corresponds to the theoretic distribution of the probability curve. Even if all men formed at birth a species in which the traits were normally distributed, this would not continue to be the case when groups had been selected. Thus during school and college and in the subsequent competition, a group of scientific men has been selected which would consist chiefly of those on the positive side of the curve, and they might not themselves form a normal curve of distribution. Their performance may not be due to a large number of small causes equally likely to be positive or negative, but to a few large causes, usually positive. The data compiled by the speaker seemed to show that the performance of scientific men is distributed more nearly in accord with the positive half of the curve, than with the whole curve, and this corresponds with the salaries paid for their services. But this also holds generally if we take the earnings of the whole community.

Measurements and Tests for Children. By E. A. KIRKPATRICK. (Read by title.)

Attributes of Sensation. By MAX MEYER.

The Attributes of a Simple Sensation of Tone. By MAX MEYER.

(The two papers by Dr. Meyer will appear in full in THE PSYCHOLOGICAL REVIEW, the first in March, 1904.)

*The Mechanism of Imitation.*¹ By F. C. FRENCH.

Imitation is often spoken of as an instinct. James, Royce, Tarde, and Baldwin are among the recent writers on psychology who take this view of imitation more or less explicitly. Instincts are due to hereditary paths of discharge in the nervous system. We can understand a definite reflex becoming hereditary, *e. g.*, the act of swallowing. But in the case of imitation we have no single definite act, but an indefinite variety of actions. No one definite set of nerve adjustments could bring about such different activities as the imitations of vocal sounds, hand movements, head movements, etc. Imitation is not a faculty. There is no such thing as 'imitation' but only imitative actions. Our instincts are sensori-motor, imitations ideomotor. Since ideas are not hereditary the acts dependent upon them cannot be. Every imitation is an acquired imitation.

Stout (*The Groundwork of Psychology*, p. 82) says: "Both spontaneous and deliberate imitation presuppose a motor association between the perception or idea of the act to be imitated, and more or less similar movements which the child has already learned to perform." These motor associations may be brought about by (1) instincts (*e. g.*, the child instinctively cries at its own pain, thus associates the sound of the cry with the cry movements and so on the general principle of ideomotor action cries on hearing another cry), (2) random movements (*e. g.*, hand movement), (3) imitations of the child by others (*e. g.*, the imitative smile — the mother smiles when she sees the smiling face of her babe, the child then associated its own motor feelings of the smile with the visual image of the smile reflected on the mother's face, and so can smile when it sees another smile). Complex imitations of the later life are simply combinations of elemental movements already learned. As imagination depends upon ideational experience for its material, so imitation can perform no act for which earlier motor experience does not furnish the elements.

Closely connected with imitation is sympathy. In order to explain the first sympathetic feelings we need only to add to imitation the James-Lange theory of emotions. The child sees another in an attitude of pain or grief, imitatively assumes that

¹To appear in full in THE PSYCHOLOGICAL REVIEW, March, 1904.

attitude, and then the assumption of the attitude excites the corresponding emotion. Even without the James-Lange theory we need not ascribe sympathy to instinct. The child first has certain feelings of its own, they become associated with certain expressive activities, then with these associations established he sees the expression of feeling on the part of others, imitates these expressive acts and so gets the associated feelings. There is no reason for regarding either imitation or sympathy as instinctive. Both can be explained by early established motor associations.

*A Preliminary Paper on the Psychology of the English Sparrow.*¹ By JAMES P. PORTER.

This paper deals with the methods used and results obtained in tests made on English sparrows. A number of different birds of each sex have been tested with a food box to be opened in ways suited to the structure of the animal; Dr. Small's complex maze was also used. Experiments were made on the sparrow's sense of number, so-called; their sense of direction; and their color preferences. With one female bird tests were made on the power to discriminate colors, forms and designs. Some of these latter followed closely those made by Dr. Kinnaman with his two monkeys. A series of observations under standard conditions were made to get some clue as to the English sparrow's method of approaching his food.

The conclusions are as follows: (1) The English sparrow's rate of learning is very rapid. The great reduction in time and number of efforts is made possible by the bird's locating the right part to be worked on. If results are compared with those of Drs. Thorndike, Small and Kinnaman for white rats, cats, dogs and monkeys, the rate of learning for these birds is found to be quite as rapid. This is true even when the birds are tested with the same maze (only smaller) which Drs. Small and Kinnaman used. (2) There is in these birds ample proof of the ability to profit by experience, and some proof of the ability to profit by the experience of others; or of imitation. Additional experiments are needed to make possible an unqualified statement on this point. (3) The first opening of the food box, or

¹To appear in full in an early issue of THE PSYCHOLOGICAL REVIEW.

any other first success, is due to happy accident. There is no sign of reason in the sense of looking ahead and suiting of means to end. (4) These birds very readily form habits, and yet they can change these habitual relations to suit changes made by the experimenter. They simplify ways of opening a door until there is no useless movement left. (5) Their range of attention is probably narrow, and anything not following closely their definitely directed efforts they seem not to profit by. Yet it is surprising how well they attend to the matter in hand. (6) They are persistency itself. Very little resting is done after the bird is inside the maze, and they seem to never tire of making another effort to get in the food box. (7) Any new object they at first carefully avoid until they have tested it. Their fear is not a senseless one. They do not approach the object at once, nor do they leave it alone. The work with them both in the laboratory and outside has brought out their wariness in a striking way. (8) Although the conditions were not the same as for the monkeys, the birds in the number tests often made as many correct choices; also for the color tests for the one female bird tried. With the forms this same female showed no discrimination at all; but with the designs she learned to discriminate perfectly where the monkeys gave entirely negative results.

The biological meaning of the above conclusions for the English sparrow can be best pointed out and discussed after similar experiments have been made with other birds.

The Existential Proposition. By CHRISTINE LADD FRANKLIN. (Read by title.)

The Psychology of Judgment. By JOHN DEWEY.

The paper called attention to the fact that from the standpoint of consciousness as a stream in which there are both continuity and change, the distinctions of the subject, predicate and copula do not appear with the same definiteness as they do from either the logical or the linguistic standpoint. As a contribution, toward the statement of their psychical equivalents there was suggested a certain interpretation of James' well known distinction of the relatively substantive and transitive of the

focal and marginal aspects of the stream. From this standpoint, the subject is those phases which are moving from the fringe into the focus, while the predicate in those phases of the fringe which anticipate what the stream is moving toward, and thus stand for the direction of interest and attention. The 'local sign' of the subject, on this basis, seems to be feelings of resistance and tension; that of the predicate feelings of relief and resolution.

Researches in Progress in the Psychological Laboratory of Harvard University. By HUGO MÜNSTERBERG.

WESTERN BRANCH OF THE AMERICAN PSYCHOLOGICAL
ASSOCIATION.

The Western Branch of the Psychological Association held its second annual meeting in the city of Chicago on November 27, 1903. Seven institutions were represented at the session by fifteen persons. The program contained the following papers:

Some Stereoscopic Problems. By PROFESSOR JOSEPH JASTROW.

The Image. By PROFESSOR GEORGE H. MEAD.

New Features in the Equipment of American Laboratories.
By DR. JAMES BURT MINER.

The Psychology of Advertising. By PROFESSOR WALTER D. SCOTT.

The Definition of Philosophy, Religion and Æsthetics. By
PROFESSOR G. A. TAWNEY.

The Social Psychology of Adam Smith. By PROFESSOR J. H. TUFTS.

The Psychical Development of the White Rat Correlated with the Growth of its Central Nervous System. By DR. JOHN B. WATSON.

Messrs. Moore, Scott, and Smith were elected as the Executive Committee for the ensuing year.

The next meeting will be held at the University of Chicago.

GEORGE A. COE,
Secretary.

AMERICAN PHILOSOPHICAL ASSOCIATION.

The Third Annual Meeting of the American Philosophical Association was held at Princeton, under the auspices of the University, December 29, 30 and 31, 1903. The meeting was attended by over fifty members and others, including members of the American Psychological Association unable to attend the meeting of that Association in St. Louis. The following brief abstracts of papers read were prepared by the Secretary from longer abstracts furnished by the writers for the official report of Proceedings in the *Philosophical Review*.

The President's Address: The Eternal and the Practical. By
JOSIAH ROYCE.

Pragmatism is right in asserting that every judgment, whatever else it may prove to be, is a constructive response to a situation, and is not a mere copying of an externally given object. Nevertheless, in so far as we ourselves observe that our present judgment has only this character we find that we need that it should be more than this, namely, that it should not only be ours, but true. This need for truth is the need that there should be other points of view, other actual judgments, responsive to the same situation, in other ways, of the same object. We conceive that all these judgments ought so to agree as to confirm one another, and so to unite in one system of truth as to characterize harmoniously the same object. These various points of view, in order thus to harmonize, and this ought, in order to hold for all of them, must be conceived as belonging to, and as being included within, a single self, whose common conscious purpose defines the ought to which each of the various judgments is to conform. In so far as we conceive this self as like ourselves transient, passing, variable, its inclusive constructive judgments become, like our own, not genuinely true, but only special points of view, which determine no genuine ought. Accordingly, to conceive our judgments as true, we need to con-

ceive them as partial functions of a self which is so inclusive of all possible points of view regarding our object as to remain invariant in the presence of all conceivable additional points of view, and so conscious of its own finished and invariable purpose as to define an ought that determines the truth or falsity of every possible judgment about this object. If there is such a self, it is invariant and eternal, without thereby ceasing to be expressed in finite and practical activities, such as appear in our own judgments; and our need to make judgments that can be true or false is satisfied. If there is no such self, no judgment is neither true or false. The need for the eternal is consequently one of the deepest of all our practical needs. Herein lies at once the justification of pragmatism and the logical impossibility of pure pragmatism. Everything finite and temporal is practical. All that is practical borrows its truth from the eternal.

Theories of Truth: a Contribution to Critique of Cognition.

By KARL SCHMIDT. (Read by title.)

The paper criticizes the theory of truth which Heinrich Hertz has given in the introduction to his *Principien der Mechanik*. His theory is of the dualistic type and is remarkable in this, that it determines the *degree* of correspondence of a system with its object.

The Relation of Appreciation to Scientific Descriptions of Values. By WILBUR M. URBAN.

The antithesis between appreciation and description is unjustified. No appreciation, still less progressive appreciation, is possible without corresponding description, presentation to consciousness of attitude, as a basis of further appreciation. It is also true that there is no description without some degree of appreciation (purpose) which gives it its meaning. The antithesis really reduces itself to a distinction between two types of description, which may be called appreciative and scientific.

Purpose as a Logical Category. By J. E. CREIGHTON.

An examination of some arguments in support of the view that thought is instrumental or teleological in character and

subordinate to the purposes of practical life. The objections urged against this view were: (1) the ambiguity in the use made of the term 'practical purpose,' which now denotes material ends requiring physical movements, and now includes the solution of purely practical problems; (2) the necessary subjectivity and relativity of the position; (3) its lack of any principle for unifying experience; (4) the sharp opposition, amounting to dualism, between thought and the antecedent experience from which it is said to arise; (5) that fact that a logical and ontological system is presupposed very different from that to which the view in question explicitly appeals.

A Thesis: Hegel's Voyage of Discovery Reaches as its Goal an Insight into the Necessity of Goodness and Righteousness in an Absolute Being and into the Consequent Necessity that the Absolute has the Form of Personality. By WILLIAM T. HARRIS.

Hegel had seen the necessity of goodness and righteousness in the Absolute as a postulate to explain the existence and preservation of the finite. Thus, in the *Philosophy of Religion* (Vol. II., p. 56): "Goodness consists in the fact that the world is. The world does not exist of its own right. It has been given its right to exist. This act of sharing his being manifests the eternal goodness of God." In the *Phenomenology*, Hegel's 'voyage of discovery,' he states this insight with great prolixity, but in terms technical in the extreme.

General Discussion on the Question, What Place has Æsthetics among the Disciplines of Philosophy. BY GEORGE SANTAYANA.

While it would be easy to delimitate any sort of æsthetic field ideally, actual æsthetic interests cannot be covered by any one discipline of any kind. Psychology, in a certain sense, can retract or absorb everything, but only in retrospect and for a third person; æsthetic judgment and poetic activity are in their living interest as much prior to psychology and independent of it, as mathematics or physics can be. Ideal science, on the other hand, cannot absorb all æsthetics, since the psychology of taste

and the history of art are subjects for natural philosophy; nor is there a separable branch of ideal science called æsthetics.

A separable æsthetic science is impossible. What exists is, first, a psychological description of æsthetic experience, and second, all art of rational criticism in which æsthetic values are compared and judged according to the contribution they make, directly or indirectly, to all human good.

By WILLIAM A. HAMMOND.

The original differentiation of æsthetics from other disciplines is Aristotelian, the name Baumgarten's, and the modern statement of the problem Kant's. The general tendency of contemporary æsthetic studies is to make the discipline an empirical science. As a normative science, however, dealing with values, it falls outside of psychology as a phenomenistic science. As a normative science concerned with the standards of beauty, sublimity, etc., and with the psychology of feeling, it is differentiated from ethics, whose concern is with the standards of right and wrong and with the psychology of volition. From sociology it differs in its main concern with the qualitative nature of the æsthetic standard idea and in its concern with individual psychology. From metaphysics it differs in aiming to become a particular empirical science, deriving its lass from induction applied to a specific group of facts; but in relating æsthetic values to the supreme values of life, æsthetics demands ultimately a metaphysics.

By ETHEL D. PUFFER.

The reconciliation of philosophical and psychological æsthetics rests on the following principle: The philosophical definition of beauty must set forth its purpose or function in the universe; philosophy lays down what beauty has to do. But, since it is in our experience of beauty that its end is accomplished, psychology must deal with the various means through which this end is reached. To illustrate: Modern idealism tends to find the function of beauty in the universe a reconciling one, as in Schiller's 'vindication of freedom in the phenomenal world. But reconciliation in its full sense can only take place in imme-

diates experience. The psychologist has then to ask what colors, lines, tones, rhythms, etc., favorably stimulate, and what combinations bring to repose; and any given work of art may be analyzed, and its effect explained, as attaining, or not, to this combination through the effect of its elements on the psychophysical organism according to general psychological laws.

By FRANK CHAPMAN SHARP.

The two objections urged against merging æsthetics in psychology are: (1) The alleged existence of a standard of beauty constituting æsthetics a normative science, and (2) the alleged impossibility of explaining the nature of beauty without metaphysics. As regards (1) it was maintained that, defining the beautiful as those relations of sensations or images which tend to give pleasure, we can admit the possibility of a standard of beauty and objective æsthetic judgments, while holding that this result can be reached by purely psychological methods. As regards (2) an examination of the ambiguity in the Hegelian definition, beauty is the appearance of the idea to sense, showed that the vitality of the view in question was derived from misunderstanding. The true interpretation, namely, the object by its qualities suggests the Idea to the mind, is confused with the interpretation, the Idea actually transfuses the finite object with its presence. The same thesis could be proved for other metaphysical doctrines.

Jonathan Edwards as Thinker and Philosopher. By ALEXANDER T. ORMOND.

The first part of this paper dealt with Edwards' philosophical inheritance; the second contained a reconstruction of his system of thought. The center of the system was found in the doctrine of creation and decrees. The world is the expressly willed manifestation of a divine plan. The motive of the creation is God's complacent and benevolent love. Only spirits really exist, and creation is continuous and identical with preservation. Edwards' doctrines of the fall, original sin, redemption and the union of freedom and determinism were discussed in relation to the central doctrine of creation, and the conclusion

was reached that, while it is plausible to regard Edwards as a 'voluntarist,' if we make his doctrine of the will supreme, he appears in closer agreement with the older thinkers who subordinate the divine will to the divine wisdom, if we make the central motive of his system the doctrine of creation and decrees.

The Concept of Consciousness. By RALPH BARTON PERRY.

The term 'consciousness' is at present used too indiscriminately to mean anything. In its application to the field of psychology it may be understood to signify relativity or inadequacy defined by the corrective standard of objective experience. But consciousness so defined cannot be erected into a metaphysical principle. Psychological idealism undertakes the contradictory definition of being in terms of invalid experience. Transcendentalism appeals from relativity to a supreme corrective experience, but in retaining the term 'consciousness,' really characterizes the latter in terms of the former.

The Analysis of Consciousness. By GEORGE R. MONTGOMERY.

Analysis is not mere division in which the whole, or the relations of the parts in and to the whole, is lost. Its true nature is seen in mathematical analysis by x and y coördinates. With this idea of analysis, the term 'consciousness' as the primary concrete in psychology is to be preferred to the proposed alternatives, the 'given' or 'experience,' because though less naïve, it does not lean to the opposition of ego and non-ego as the principal coördination. The subject is not the supporter of the whole of experience; it can be examined as well as the object. The parts are abstract in relation to the whole and must not lose their reference to the whole.

The Meaning of the Psychological from the Standpoint of the Functional Psychology. By H. HEATH BAWDEN.

The functional view regards consciousness as the tensional phase of action, and as thus developed within action and for the sake of action. There are two questions of fundamental importance: (1) How do unconscious acts become conscious? The reply is that consciousness results from the interruption of action. (2) How do conscious acts become unconscious? The

reply is that habitual acts result from the mechanization of conscious acts.

Psychophysics and experimental psychology attempt to define the limits of this tension and facilitation in action. Physiological psychology and comparative psychology show the types of experience within which such tension arises. Both tend to show that the psychical and the physical are one process, with phases of relative tension and relative equilibrium in adaptation.

The real psychical (as distinct from the psychological) is the process *as process*. The psychical is experience undergoing reconstruction. The psychical as process must be distinguished from the psychical as content. The psychical, which I get through introspection (really retrospection), is a content no different in principle from the physical content which I get through so-called external observation.

The difference between the real psychical (the process) and the physical (or any other phase of the content) is a difference of function only, since any phase of the content is capable of reconstruction. No physical is a fixed content; it is content only in relation to some center of transformation. No psychical is simply and only process; it is the reconstruction of old into new content.

A Peculiar State of Consciousness. By JAMES H. LEUBA.

The state in question is one designated by the writer as 'faith.' This is more than belief in the truth of propositions, and it is not confined to the religious life. It is an emotion of the sthenic type; a pleasurable state of increased intensity of life arising from the desire of higher forms of activity. To the increased intensity of life corresponds a narrowing of the field of consciousness. The two together make the faith-state one of increased suggestibility to the idea connected with its impulses and aspirations; hence belief in these ideas. Faith is a sort of asexual love. Both are late products of human development. Faith arises neither by fortuitous variation nor by adaptation to external conditions, but as a purposive internal adaptation under the pressure of a desire for a mode of life otherwise unrealizable.

The Resemblance of Twins in the Mental Traits. By EDWARD THORNDIKE.

Preliminary report of a study undertaken by means of a grant from the Esther Hermann research fund of the Scientific Alliance of New York. The provisional results were obtained from thirty-five pairs of twins, 9 to 15 years old, all measured and tested by the same person in the same manner. The mental measurements taken were five tests of perception and attention, two of controlled association of ideas, two of rate of movement and two each in addition and multiplication. The degrees of resemblance in the several cases measured by a Pearson coefficient of correlation calculated directly

$$\left(r = \frac{\Sigma xy}{n\sigma_x\sigma_y} \right)$$

or indirectly from a comparison of the difference between twin and twin with that between any child and any other child of the same age (difference of twins = chance of difference $\sqrt{1 - r^2}$), ranging from .60 to .80, leave no room for doubt that such mental traits as those measured are largely subject to the influence of heredity. These measurements further point to the following conclusions: (1) Mental capacities seem as much due to inborn qualities as are physical traits; (2) the opinion that twins are divided rather sharply into two classes, those nearly identical and those little, if any, more alike than ordinary siblings, is entirely at variance with the facts in these thirty-five pairs; (3) the opinion of Galton that physical likeness need not imply mental likeness is supported; (4) even among the mental traits there appears a decided specialization, *e. g.*, twins may be closely alike in tests of perception and very little alike in tests of the associative processes.

An Establishment of Association in Hermit Crabs. By EDWARD G. SPAULDING.

A description of experiments carried on at the Woods Holl Laboratory in the summer of 1903 under the auspices of the Carnegie Institution. Thirty crabs of the species *Eupagurus longicarpus* were made to enter, within a limited time, a dark-

ened chamber within an aquarium to get their food. This afforded opportunity for the formation of an association between gustatory and visual 'constructs.' The ratio of improvement was from .66, 2.3, .66 entering on the first three days respectively in 1' to, *e. g.*, 32, 100 and 100 on the seventh, twelfth and fourteenth days. On and after the ninth day the effectiveness of the association was tested with only the darkening screen; now 24 out of 28 entered on the ninth day, 24 out of 27 on the fifteenth, 22 out of 27 on the eighteenth, within 3'. Thus with one stimulus the crabs reacted as previously with two, and that against a natural positive heliotropism (as appropriately tested). Conclusion, confirmed by control experiments: Either an excitation or a representation of the taste construct takes place as a result of the association.

Report of Work Done at the Yale Psychological Laboratory.

By CLOYD N. McALLISTER.

By means of kinetoscopic camera, photographs of the two eyes were taken during the process of looking at a Müller-Lyer figure. Measurements were taken from a piece of Chinese white placed on the cornea to two fixed spots on the face. A specimen record and diagrams of the results were shown. It was found that the oblique lines in the figure have an influence on the character of the movement. The two eyes do not move in exactly the same way.

The Law of Veracity: a Study in Practical Ethics. By GABRIEL CAMPBELL.

A plea for absolute truthfulness verses utilitarian morality with its tendency to compromise.

Note on the Idea of the Moral Sense in British Thought Prior to Shaftesbury. By JAMES H. TUFTS.

The reference is to Barrow, a preacher commended by Shaftesbury, who in his sermons uses the term 'mental sense' to characterize the moral judgment and emphasizes its immediacy, and who also emphasizes the social instinct and asserts that even a true regard for our own private good will prevent an excessive pursuit of self-interest.

The Chief Factors in the Formation of the Moral Self. By JAMES H. TUFTS.

The sources for the elements of the moral self are: (1) physical, furnishing the instincts and impulses which are driving forces in conduct; (2) social heredity and education, including (a) ends and ways of acting suggested and adopted without reflection or valuation, and (b) ends and ways of action more consciously commended and involving more valuation; (3) the individual's original contribution, including conscious choice and reflective valuation of conduct. This may be due either to the 'back-door' method of a fortunate variation, or the 'front-door' method of reaction by the self to a new situation.

The Summum Bonum. By EVANDER B. MCGILVARY.

The good is the desirable. A thing is called good or desirable only if we actually desire it, or should desire it if we knew it as it really is, *i. e.*, as adapted to satisfy desires that under certain circumstances would arise. The desirable is differentiated from the desired by the fact that when obtained it does not cause regret, or if regret does arise, the regret, in the case of a desirable object, is overborn by the satisfaction. The *summum bonum* may accordingly be defined either as that single object which is most desirable (*supremum bonum*), or as that series of objects which taken altogether as a series is the most desirable (*bonum consummatum*). The *supremum bonum* varies with the individual; the *bona consummata* of different men, though not without diversity, have certain points of identity (= common good) due to coincidence of more or less independent desires, to benevolent desires and to contagiously aroused desires.

Intensity. By WILMON H. SHELDON.

All facts called intensive are such that their amounts can be described only in terms of time or tendency to change. But no transitive fact can be measured, for it does not admit of superposition.

The Scholastic Notion of the Infinite. By L. VAN BECELAERE, O.P.

As regards the origin of the notion of the infinite, the scholastics would maintain, in opposition to Descartes, that it is

acquired by the action of our mind suppressing the notion of limits from the idea of some being. As regards the existence of a quantitative material infinite, St. Thomas seems to have hesitated, though in his *Summa* he denies its possibility either as magnitude or as actual multitude. Some modern neo-scholastics, such as Mgr. Mercier, find the arguments of the *Summa* inconclusive and try to solve the objections, but with doubtful success.

The Present Want of an Educational Ideal. By FRANK SEWALL.

The unity of law on which all science rests implies a unity of reason, the supreme wisdom of an infinite divine personality. This conception furnishes an effective educational ideal because it places before the student's mind the human form, as the form of forms reflecting the divine image; and under it all particulars in education are capable of being marshalled into order and subordination.

The Interpretation of Aristotle, Met. Z. 4. 1029 b 29-1030 a 6.
By WM. ROMAINE NEWBOLD.

The essential point was to bring out Aristotle's denial of true conceptual being to a qualified concept such as 'white man.' The reason assigned by Aristotle for this denial is that the conceptual being is the conceptual equivalent of some thing, but when we have one element qualified by another, the resulting complex is not the conceptual equivalent of a 'this' thing, *i. e.*, of a unitary individual. For the text read *τῷ* for *τῷ* ᾧ, 1030 a 2, 3, and point *εἶναι*, ἀλλὰ τὸ ἱματίῳ εἶναι, a 2; ὅλως; ᾧ οὖν a 3. In a 6 construe *μονον* with 5. *εἴπερ*.

The following officers were elected for the ensuing year: President, Professor George Trumbull Ladd (Yale); Vice-President, Professor Frank Thilly (Missouri); Secretary-Treasurer, Professor H. N. Gardiner (Smith); members of the Executive Committee for two years, Professor J. H. Tufts (Chicago) and Professor H. Heath Bawden (Vassar).

H. N. GARDINER,
Secretary.

THE
PSYCHOLOGICAL BULLETIN

PSYCHOLOGICAL PROGRESS.

BY PROFESSOR EDWARD FRANKLIN BUCHNER,

University of Alabama.

‘To take stock of our progress’—a characteristic phrase of the late great writer, Herbert Spencer—may be the foreword of this department of the REVIEW as it is entering upon its second series of issues. No more interesting opportunity or more imperative obligation can be presented to any field of active scholarship than that of reviewing its modes of doing business and of estimating the net results of all the efforts put forth in its behalf. Nay, more; this is one of the highest duties which is placed upon every higher form of life. Particularly in the domain of science, readjustment, as demanded by any given situation, is the *sine qua non* of progress. Progress may thus come to be actually a direct advance, a tangential detour, or even a definite retreat. Effective readjustment in the interest of what ought to be can be made only in the light of what has been. Prevision requires revision; and revision requires retrospection. That progress may be safe and reasonably rapid, ‘stock-taking’ should be made with some degree of regularity and at intervals of sufficient magnitude to encompass a definite view.

Psychological progress in the history of science presents interesting permutations of facts and conceptions in so far as they can be related in the method of approaching consciousness as an object of study. The results of these permutations stand out definitely in the tenets of the great schools of psychology

which have arisen in the course of modern intellectual history. The views of an individual, or of an age, even, are largely to be understood as the resulting variants derived from the relative introduction of, and the changing emphasis upon, fact, method, and interpreting conception. The object of all psychology can be only one thing, namely, to present knowledge of mind, in its various manifestations. It is sufficient for our present purpose to take note of the fact that one heritage of the twentieth century consists in the great types of psychology which emerged during the past two centuries. The definiteness of what men have wrought in the past is completely evidenced by the historical necessity which compels us now to speak of 'schools' of, rather than individual views in, psychology. The trite distinction between 'the old' and 'the new' smacks rather of dilettantism, and represents the least degree of appreciation for the multitudinous labors which have brought forth such knowledge of mind as the race now possesses. The point we wish to insist upon is the integrity of psychology during all the variations in its more recent historic developments. Take down any of the important and more conspicuous handbooks and treatises on psychology which have appeared in English alone during the past fourteen years; examine their indexes, and the frequency of reference to the names and views of the great contributors to the gradual modern emancipation of the science strikes one as a forceful argument for believing in the constructive integration which has been, and is, taking place. So much, at least, must be admitted by him who is looking for traces of progress.

Six 'schools' of psychology stand out with historic distinctness, each in possession of characteristic achievements. To name them as is usually done is an easy matter; the faculty (or 'orthodox'), the associational, the Herbartian, the physiological, the experimental, and the genetic schools. It is vastly more difficult to secure for them names in terms of definitive adjectives. The first, second and fourth are terms which indicate the characteristic mode of explaining psychological phenomena, so far as observed. The third takes the name of its author; while the fifth and sixth refer chiefly to the method of

investigation, or the arrangement of explanatory material. It would be too much for one to attempt to maintain that these 'schools' arranged somewhat after the order of their historical appearance, succeeded each other in that logical sequence which is absolutely necessary for progress. Some of these dominant conceptions which have shaped our psychologies doubtless reflect the *Zeitgeist* which gave them birth; others may have been intellectual accidents appearing in persevering labor.

Merely to have named these schools is, for the average student, sufficient to characterize them. Our main point, however, is to point to the secret of progress which lies in their sequence. Certainly the first three (and possibly the first four), schools are now historic; and we are living at a time when the last two comprise the distinctive work of psychologists. But there was a time when most men were taught, and taught in turn, the faculty view of mind; when many men could be best characterized by being called 'associationists,' or 'Herbartians,' etc. Now, however, psychology has ceased to employ a single principle of explanation, such as 'association,' but it uniformly recognizes the various facts of mental combination, and assigns association its limited, but due, place in its whole exposition. So it is with the other universalized views. The representative good in each is accepted after its validity has stood the test of criticism, and it becomes a bit of constructive material for the psychology that is to be. The ultimate fusion of these many counter-currents, however, does not result in making the science of mind a *pot pourri*. And at times it may require an unusual amount of optimistic faith to believe that the fierce rivalry between psychological principles will ever fade away, leaving an harmonious kingdom of specialized truth. For purposes of record, we proceed to note a vigorous movement in the history of recent psychology, which, taken in all its bearings, serves well as an illustration of the points just emphasized.

The death of Herbert Spencer on December 8, 1903, at the age of eighty-three years brought to a close one of the most important movements in modern psychology. Just fifty years before he published the protocol of the philosophical foundations

of his system of psychology, an article, 'The Universal Postulate,' in the *Westminster Review* for October, 1853. (The same discussion, much elaborated, appears in the main work.¹) The first edition of *The Principles of Psychology* appeared in 1855. A second edition of the same, greatly augmented and notably altered in arrangement was prepared in 1870. The pointed and varied criticisms made upon his theory led to the third edition of 1880, which varied from its predecessor mainly by the addition of 'Part VIII., Congruities,' in which the author attempted to buttress his conclusions by bringing " 'the several lines of argument to a focus: ' believing that 'the harmony that may be shown to subsist between the doctrines elaborated in the respective divisions, is a strong confirmation of their truth.'"² Such is the brief constructive history of one of the remarkable literary products of psychology during the nineteenth century. So far as our knowledge extends, no 'text-book' edition of this work was ever prepared. It made its appeal to nature, rather than to the student intellect of the age in which it has lived. It became and remained one of the dominant forces in shaping psychological theory, often negatively — for we contend that reactionary opinion is often as potent as positive contribution.

What the movement stood for is best indicated by the fact that the clearest exposition of the culture of the last half century is that system of thought in which this psychology found itself. (This need not say an iota approvingly of that philosophy, but it may imply somewhat respecting the anti-philosophical tendency of that culture.) Viewed from the completion of the 'synthetic philosophy' constructed by its author, *The Principles of Psychology* literally occupies a central position in that system. The metaphysical and biological preliminaries and principles precede, and the sociological and ethical interpretations and applications follow the theory of mind. It might require some stretch of exposition to maintain that his philosophy is psychological. The work appeared at a time when a theory of evolutions, which had hardly become more than an

¹*The Principles of Psychology*, authorized edition, Appleton, N. Y., 1897, Vol. II., pp. 406-427.

²*Ibid.*, Vol. I., p. iii.

academic affair, was being seriously considered with reference to its applicability to the higher order of natural phenomena, to which it has in the meantime been more and more successfully applied. This is not the place in which to question the claim to priority in time, made by the system, nor to detail any derivative relations it may bear to forms of evolutionary theories which had been developed in earlier thought. The most important facts for record are these: psychology was developed by Spencer, not for its own sake, but as a means of exploiting the evolutionary hypothesis held by him; and, also, it was made a handmaid of the philosophy which was to grow up as a result of the method. He applied a theory, rather than studied mental facts empirically. The gain to psychology lay chiefly in the free reconstruction of available facts with reference to principles which were made to do an equal amount of service in all the sciences.

Somehow Spencer gave a definite impulse to 'scientific' psychology. This came largely as a negative result of his thinking, being practically the last of those barons who energetically insisted upon the systematic aspect of psychology. His theory of 'transfigured realism,' oddly enough, is probably to be credited with this result. The negations of the materialists — or the realists — did not appeal to him; nor could he find himself ready to accept the psychology of the idealists. What he could accept from each of these theories was incorporated into his philosophically agnostic compromise. In spite of the attempt to apply continuously the laws of biological evolution to mental processes, he himself could not help recognizing the differences between life and consciousness. This in part is revealed by his recurrent return to the corner-stone of his thinking, 'the dictum of consciousness.'

His definition of psychology, in its more restricted meaning, should not be forgotten. No other modern writer has probably so clearly prepared the way for psychology's emancipation. " * * * Under its subjective aspect, psychology is a totally unique science, independent of, and antithetically opposed to, all other sciences whatever. The thoughts and feelings which constitute a consciousness, and are absolutely inaccessible to

any but the possessor of that consciousness, form an existence that has no place among the existences with which the rest of the sciences deal."¹ To this subjective science there is added the complement of an 'objective' psychology, which treats of the neural basis of consciousness. While attempting to give the science such distinctness, which was only one of the historic forces *sublimating* psychology out of the secondary position it occupied fifty years ago, the wonder is that Spencer could turn around and submerge his own work in the larger metaphysical whole.

In method, the Spencerian movement wonderfully seconded the demand made by Herbart that the individual method in psychology needed a definite supplement. The one went to metaphysics and mathematics, the other to metaphysics and biology; while both made characteristic appeals to experience. Spencer's method in psychology is complicated by his stupendous attempt to apply the same mode of derivation to matter, the cosmos, organic forms, individual consciousness, and to social groups of all orders. Mind is conceived of as thoroughly at home in the physical and organic universe, and, indeed, is a definite part thereof. In short, we have an evolutionary psychology. Consciousness has a cosmic genesis, and its various forms, in developing, parallel those of living organisms.

'The data' of psychology (chiefly in its objective aspect) are supplied by biology through its knowledge of nerve structures and function. The starting point for synthetic psychologizing is the reflex arc *and* a centripetal fibre. The prime duty of psychology is to determine the definite relations between the two series of physical and mental phenomena. Mind, 'as introspectively analyzed,' consists of 'feelings and relations between feelings.' Between nerves and consciousness there exists a parallelism, which while not capable of 'immediate proof,' is the hypothesis that 'harmonizes all the observed facts.' The evolution of mind is the progressive 'adjustments of internal relations to external relations' — the quality which distinguishes the truths of psychology from those of physiology.²

¹ *Ibid.*, Vol. I., p. 140.

² *Ibid.*, Vol. I., p. 391.

Man is a psycho-physical organism, whose history is written in modes of adaptation to environment. Biology thus reaches up into psychology — for life itself is harmony between the outer and the inner worlds.

The Principles of Psychology is made up of a number of parts, in each of which a somewhat different mode of approach is selected, and somewhat different problems of consciousness are treated. These parts fall into two chief groups, viz: 'Synthesis' and 'Analysis.' In the former he studies intelligence as a part of life, but chiefly with respect to the correspondences it constructs in terms of space, time, speciality, generality, complexity, etc.¹ In the latter he traces the organization of modes of consciousness, beginning with reflex action, such as instinct, memory, intelligence, feeling and will — or the progressive correspondences which occur when 'intelligence' appears upon the evolving scene. The process of evolution here is that of definite and successive experiences, which are consolidated by association and habit, usually so-called, but known to him as 'the law of intelligence.'² This progressive association is fed by the constructive streams which issue from the definite functions inherent in the nervous system; for, all mental functions spring from reflex action. All the specialized functions, popularly known as faculties, are simply modes of *organization* of consciousness. This idea of mental organization was probably a purely biological analogy in Spencer's hands; but through his influence it has become a working conception of to-day, stripped of its analogical encumbrances. Also, the progressive, rather than the static, unity of consciousness finds peculiar support in his theory. The most characteristic contention in the part of his theory which deals with 'special analysis' is the claim 'that not only the *form* of thought, but the *process* of thought, is the same throughout.'³

Any degree of plausibility inherent in this evolutionary psychology is vitiated by the limited scope given to it by its author. Its formulæ were applied almost altogether to the intellectual aspects of mind. Spencer remained truly English in accepting

¹ *Ibid.*, Vol. I., p. 385.

² *Ibid.*, Vol. I., pp. 407, 577.

³ *Ibid.*, Vol. II., p. 298.

the intellectualistic view of consciousness. His theory of will, for example, well represents this. Will is only a transformed presentation. The process of psychical evolution is completely traced in will, to which each of all lower modes of consciousness make some contributions, and which he defines as a 'mental representation of the act, followed by the performance of it,'¹ and there is nothing beyond this in it. This view is not merely historic, for it has received marked expositions, in modified form and with a different background, in the writings of at least two very influential American psychologists during the last thirteen years. Another marked imperfection in Spencer's theory is the omission of tracing the complete evolution of the emotions. This seems to have been a matter of convenience for the theory rather than a desire to make the psychology truly representative of the mode of life it was attempting to depict.

The outcome of Spencer's analyses was arrival at that 'doctrine of Transfigured Realism—the last step in that general process by which mind is made a differentiated and integrated division of the totality of being.' Every consciousness is an individualized part of the Universal Power.² This leads on to the philosophical interest in the relation of subject and object, and this psychology of evolution loses itself in the penumbra from which it emerged. It is impossible at this time to make a tabular exhibit of specific influences emanating from this strained and partial theory of mind. The movement is closed; but the spirit of its motif lives stronger than ever in the genetic method and conception to which it gave such a wide preparation.

As a matter of record, we note the appearance during 1903 of the English translation of Villa's *Contemporary Psychology*, by Manacorda (London: Sonnenschein).³ It is a valuable work, which in its critical exposition of all modern psychology, indicates most clearly the net results of the psychological progress, of which a few conditions have been noted in the foregoing foreword.

¹ *Ibid.*, Vol. I., p. 497.

² *Ibid.*, Vol. II., p. 505, vv.

³ It is to be fully reviewed in the BULLETIN.

PSYCHOLOGICAL LITERATURE.

The Origin and Significance of Hegel's Logic. A General Introduction to Hegel's System. J. B. BAILLIE. New York and London, Macmillan & Co. Pp. xviii + 375.

A well-known German professor of philosophy who could himself, on occasion, match any in vituperation of Hegel, once, in a moment of penitence, remarked in my hearing: "After all, it ill becomes us who stand upon Hegel's shoulders, as undoubtedly we all do, to spend our time spitting on the old man's head." Among English and American philosophers consciousness of indebtedness to Hegel has been far more generally and more generously recognized; and as here, even when most discredited, he has usually been respectfully bowed out, and not brutally served, we can make the admission without any compunction of conscience over our bad manners. Yet, in spite of this general conviction of indebtedness to Hegel, practically no one nowadays accepts his system in its entirety, and even the most careful students of his works bring back divergent reports as to his permanently important philosophical achievement, almost the only point of complete agreement being the conviction of each interpreter that Hegel has profoundly influenced *him*, and our age generally. It ought to be of material help in gaining a definite appreciation of Hegel's contribution to philosophy to get clearly before us the historical Hegel. The *Logic* is admittedly the very heart of his philosophy. Dr. Baillie in the work before us would bring out the precise significance of the *Logic* by exhibiting its historical evolution, by showing how it grew up in its author's mind in the course of his philosophical development.

Dr. Baillie expresses the hope that in this way he may succeed in removing the 'initial difficulties' in the way of understanding Hegel, and make it possible to enter the system by way of the *Logic*; and thus the secondary title of the book would be justified. In this we feel the author has hardly been successful. A student 'introduced' to the system through this work would, we fear, not be much inclined to pursue the acquaintance. The development is not traced with sufficient emphasis of salient features, the discussion is frequently diffuse, and the book is not without digressions which, interesting and important as they are in themselves, would prove rather distracting to one seeking entrance to the system.

Dr. Baillie finds the general point of view the same in the earlier as in the later system. Hegel has from the first a strong appreciation of the contrariety among facts, is bent upon interpreting the universe from the standpoint of supreme reality, regards reality from the point of view of the Absolute, and views the Absolute as Spirit (pp. 25-27, 61). This fundamental position is established by no proof whatever. Hegel is led to assume it by his 'deepened appreciation of the nature of the religious and ethical consciousness,' (which gives us the '*Leitmotiv* of his mental history') and he is further influenced by the protestant principle of the worth of the judgment of the free spirit of every man, and by the general trend of modern philosophy with its strong individualism, its conception of the freedom of spirit.

In the first of the three periods which Dr. Baillie distinguishes, (1797-1800) Hegel has not discovered any 'definite method of attaining system,' the idea of 'development' has not dawned upon him, 'dialectic' is not yet a technical term, and the idea of 'reflexion' is most confused (pp. 54-56). 'The real is divided in the usual way into the Self, the World and God.' (Yet we read further down on the same page that for Hegel at this time 'reality is thinking beings' (p. 51). His idealism is 'uncritical' and 'monadistic.' Accordingly he distinguishes emphatically, (*a*) between Logic and Metaphysics, (*b*) between our knowledge of Absolute Spirit and the knowledge which that Spirit has of itself, and (*c*) between the ideal presentation of the real and the real itself. His development in the later periods is simply the story of his overcoming of these distinctions through the discovery of the full significance of the supremacy of mind.

The second period (1801-7) is one of 'criticism'; Hegel is 'becoming conscious of his philosophical position and master of his terms' (p. 58). Speculative science must start from the Absolute. This is now for Hegel axiomatic. It is not a postulate, nor a matter of faith. Rather, it is present in every proof, real throughout and from the first in all philosophy, and in common sense. 'Philosophy is just a laying bare of the content of the Absolute,' and this Absolute is absolute identity (p. 68.) But consciousness has ceased to be aware of itself as only in and for the totality, and has 'fixed' itself as separate from it, and thereby also split the Absolute into fundamental but finite opposites reciprocally limiting each other. This is, we are told, the *terra firma* of Hegel's entrance into philosophy, and 'the groundwork of the mature philosophical convictions to which he now began to give utterance' (p. 70). Understanding isolates aspects of reality and regards them as independent and self-sufficient.

Philosophy, which is the pure activity of reason, would reëstablish the totality of knowledge by exhibiting these aspects as constituting an organic unity, each part of which contains the whole (p. 80). In doing so it must, however, discover the objective self-connection of the content itself, and not impose a plan of connection from without. Hegel at this time agrees with Schelling in holding the absolute identity as the 'indifference point' of subject and object, and in recognizing 'the immediate continuity of the contents of the opposed sciences of the Absolute.' But, for Schelling, these sciences are different ways of stating the objective unity of subject and object, construed on a different basis in each case, in the one case from the object, in the other from the subject. For Hegel, however, mind is not merely mind, but must carry with it the 'self-construction of nature,' and *vice versa*. In working out this view by the developmental method Hegel discovers that these opposed elements are not on the same level, but that mind is higher than nature, and then he returns to his earlier view of the supreme importance of Spirit, which when under the influence of Schelling, he had allowed to fall into the background. And the current of his subsequent thinking is determined by the readoption of Spirit as the fundamental principle. Henceforth he will seek to demonstrate that the Absolute is mind (p. 120).

In the second period Hegel holds that the finite has significance for the Absolute only when and in so far as it is negated (p. 125). Yet these finite elements actually exist, and, therefore, the 'completeness of the knowledge of the Absolute ought somehow to find a place for these finite realities, which would at once do justice to their reality while ceasing to take them as merely finite' (p. 128). The difficulty in which Hegel finds himself at this juncture is partly explained in the fact that he is at this time attempting to make the positive and negative forms of knowledge (*transcendental Anschauung* and *Reflexion*) each do its work independently. In the third period (1807-1816) these are no longer regarded as different and contrasted functions of the mind, but are 'fused into a single process without losing their essential nature (the expression respectively of the positive and negative content and process of reason), yet without preserving their individual distinctness' (p. 155). The process of negating is that of positing, and this by one and the same act of reason. To make this good Hegel must show the supremacy of mind throughout all reality. And, accordingly, in the *Phenomenology* he undertakes to give a systematic proof of the standpoint of Absolute Idealism, and it was 'mainly for this purpose that that work was written' (pp. 140, 153). The *Logic*

'presupposes' the results of this inquiry (pp. 210 ff). But the *Phenomenology* merely gives the modes of experience which the mind possesses, taken simply as existent facts in experience, and criticised and systematized (p. 209). True, it discovers that the one essential reality in all experience is the unity of subject and object, and that the modes of experience are the modes of this unity. But these latter have not been exhibited in the *Phenomenology* in their genesis and in their systematic interconnectedness. These modes of unity *qua* unity must now be taken, stripped of all direct reference to the diversity of experience, and connected in a form determined by their own character. This is the task of the *Logic*, the achievement of which constitutes the central work of the third period. Here the dialectic is exhibited in its ultimate form, since it is operating with a content 'simple and pure' (cf. pp. 156-157). And inasmuch as the notions with which *Logic* deals are not 'mere thoughts,' but are as the *Phenomenology* has shown, the essence of experience as well as of reason, *Logic* deals with ultimate reality and is one with metaphysics (pp. 237-240). The changes which the *Logic* undergoes during this period our author holds to be significant merely as showing that that work is not to be taken as a finished body of truth the validity of which as a whole must stand or fall with every part.

The method in the *Logic*, as in the *Phenomenology*, is 'simply the inner activity of the mind itself.' The same mind 'seeks to express itself in its entirety, and at the same time in a special form.' The process of knowledge thus has its impulse in a felt contradiction, in the contrast between the fullness of the completed life of mind and the insufficiency of any one special mode of it. In passing on to the new and larger experience mind for the first time becomes fully aware of what was implied in the preceding. And so the contrast between the more adequate and the less adequate experience or notion is simply the contrast between mind more completely and less completely expressed (pp. 259-269).

Dr. Baillie tells us in his preface that his method of interpretation will be 'sympathetic,' and he keeps his promise admirably — until he reaches his concluding chapter entitled 'Criticism.' Then the atmosphere changes. The long-pent-up rebellion breaks out, and it looks, at first, as if Hegel's carefully built structures were to be completely demolished. Most of the criticisms offered seem to us, and we speak not as in any sense a partisan of the system, as curiously perverse and impertinent as any that the most 'unsympathetic' critic could devise. Hegel was wrong, we are told, in maintaining that

Logic can give us the content of Absolute Mind, since it deals with the 'pure' universal content of mind, which is but a single aspect of experience (p. 336). He was wrong in identifying knowledge with reality. It was inevitable, Dr. Baillie adds, 'that a scientific inquiry which sought to find out the highest form of experience, should find that form in the Notion of Science itself,' for throughout one has been seeking 'just *the idea of that type of experience (namely, knowledge) which was constructing the whole of experience*' (pp. 340-342; italics the author's). (Does not this statement, if it means anything, lead straight to agnosticism?) Further, we are told, Hegel's attempt to transcend by knowledge the finite consciousness of the knower is altogether futile (p. 344). (Much, we think, might be made of this criticism, but it is certainly not valid for the reason assigned, which is a pure quibble.) Again, the *Logic* has left reality behind. The Notions with which it deals are neither objective, in the sense of 'existent in fact,' nor concrete, nor real; are not adequate to the expression of the reality of nature, or of the self, or of things; nor are they self-constructed. They are but 'the *Fata Morgana* of a philosophical perspective.' (In this criticism our author seems to take the 'Notions' as the Platonists took 'Ideas,' in precisely that form of the theory of ideas that Aristotle demolished, and to be hardly fair to Hegel.) Once more, and worse still, the validity of the method that Hegel employs throughout depends on the validity of the standpoint of idealism; but he undertook to establish idealism by precisely that method. So Dr. Baillie finds here an 'obvious circle' in the reasoning, and concludes that Hegel has not succeeded in proving Absolute Idealism because the *Phenomenology*, in which he undertook to do so, is constructed by a method which presupposes the truth of idealism. Furthermore, the individual thinker is not eliminated, as Hegel supposed. The very principle of 'degrees of truth' rests upon the finitude of the human spirit. There are no degrees for the Absolute *per se*. (We should like to ask, why not? This contention would make the Absolute indeed the 'tomb of the finite'.)

One is somewhat surprised after all this to read that 'the foregoing objections do not seriously damage the real value of Hegel's general position, or of the *Logic* in particular' (p. 363). But if, as our author holds, the *Logic* depends on the *Phenomenology* for its initial presupposition, if the inquiry there undertaken 'alone could give Hegel any new result of his own, as it alone could establish a final philosophical position' (p. 146), and if, as he further holds, the argument of that work is a pure *petitio principii*, this would seem

hard indeed to maintain. Yet, in spite of his strictures, Dr. Baillie thinks Hegel has shown that self-conscious life is 'the Ultimate Reality of Experience,' and as knowledge is found within this reality, knowledge is objective. For then the conditions 'by means of, and under the constraint of which knowledge is carried on, will necessarily be ratified by the whole, of which we as finite knowers are parts' (p. 365). (This would not, however, follow if we are merely 'finite knowers' and 'parts'.)

The simplest expression of Hegel's result is, according to Dr. Baillie that 'knowledge is the realisation of experience in the form of reflexion.' Taking the result in this light, he adds, 'we shall find that most of the objections urged against it above cease to hold.' (This is by no means obvious, and our author does not take the trouble to explain how such is the case. But, if this is so, one can only regret that this 'simple' and 'adequate' expression of Hegel's result was not first brought out, and the criticisms made in the light of it.)

Dr. Baillie has with much skill shown how the problem of the *Logic* is forced to the front in the very effort to solve the problem with which the *Phenomenology* dealt, and also the essential identity of method in these two works. But when he goes on to state the relation between these works in the asserted dependence of the *Logic* upon the *Phenomenology* for the establishment of its 'initial presupposition,' the statement is certainly misleading.

It was perhaps inevitable that in dealing with Hegel just three periods should be distinguished in his development, even though these should not exhibit a clear case of the Hegelian triadic forward movement. But the three periods which our author finds are not marked off with such precision as the general scheme of the book would imply. They do not mark definite steps in the development of Hegel's philosophy, still less in the evolution of the *Logic*, but rather just such a general division of time as might fit the life of almost any considerable thinker who lives to complete his life work. The first stage presents an abundance of the raw materials out of which philosophies are made, and reveals more or less definite philosophical tendencies; the second covers the entire period when the philosopher is whipping these materials into shape and coming into full possession of his own essential contribution, and it includes all the intermediate stages of growth and development up to the conclusion of the *Phenomenology* in which the principle is at last clearly brought to light; the third is given over to the more complete demonstration and elaboration of the principle. The difficulty in making these stages more clearly defined

is seen when our author undertakes to give a general characterization of any one of them, as, for instance, when he tells us that the second period is characterized by the purely negative treatment of the finite, which is certainly not accurate when one has in mind the results of the *Phenomenology*. And, in this connection, it is a significant fact that Dr. Baillie devotes a considerable portion of his discussion of the third stage to the *Phenomenology* (fifty-eight pages, or about one third of this division). Yet this work covers the larger part of the second stage—1803–1806–7, as Dr. Baillie himself gives the dates.

In spite, however, of the criticisms which we are forced to make, we do not wish to minimize the value of this work. It was certainly a happy thought to conceive of throwing light on the *Logic* by showing how it grew up in its author's mind, and Dr. Baillie has in the main been successful in carrying out his purpose, and has made an important contribution to the better understanding of the 'dark philosopher of Schwabia.'

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The Philosophy of Hobbes. FREDERICK J. E. WOODBRIDGE. Minneapolis, The H. W. Wilson Company. 1903. Pp. xxxvi + 391.

This volume contains Chapters I.–VI. of the *Elements of Philosophy*, Chapters I.–XVIII., XXXI., XLIII., of the *Leviathan*, and numerous passages collated from the *Human Nature*, the *Philosophical Rudiments*, the *Liberty and Necessity*, etc., which are printed as footnotes, or, in case of the longer extracts, inserted in the body of the text. Professor Woodbridge does not approve the common practice of lightening the labor of the student, and predetermining his conclusions, by providing him with an elaborate 'Introduction,' and an abundance of expository notes. The object of the supplementary selections is to render such help unnecessary by bringing together, as far as possible, all the materials necessary for the determining of Hobbes's thought. The selections have been made with care and skill, and are an acceptable substitute for the excess of explanatory and critical comment sometimes found in books of this kind.

It may be questioned, however, whether further aid than Professor Woodbridge supplies is not, after all, desirable. A writer so original and paradoxical as Hobbes, and so influential upon subsequent thinkers, cannot be interpreted solely from his own text; account must be taken of the intellectual environment in which he stands. For example, the contract theory of government has had a long history. Is

it to be considered a historical account of the origin of society, or a theoretical exhibition of the nature and grounds of civil order? Is the contract between the ruler and the subject, or between the individual subjects? How can it be binding upon those who have never given personal consent? The answers to such questions given by Hooker, Spinoza, Locke, Hume, Rousseau, Spencer, must have much interest for the student of Hobbes. The doctrine of sovereignty set forth so uncompromising in the *Leviathan* embodies legal conceptions, which, when duly considered, render less obnoxious such extravagances of absolutism as 'The sovereign is not subject to the civil laws,' 'the measure of good and evil actions is the civil law,' 'Nothing the sovereign representative can do to a subject, on what pretence soever, can properly be called injustice or injury.' It would be helpful to a novice to be referred to authorities who would instruct him how to interpret such maxims from a legal or political standpoint. Bentham's *Fragment on Liberty*, Austin's *Province of Jurisprudence*, Sir H. Maine's *Early Institutions*, Sir F. Pollock's *Science of Politics*, T. H. Green's *Lectures on the Principles of Political Obligation*. Such text-books of political theory might be advantageously drawn upon for elucidation and criticism.

Does Hobbes teach that morality is wholly subsequent to the establishment of civil society, that it is purely conventional and institutional, or does he recognize a morality of reason and conscience prior to, and conditional for the morality of social convention? This difficult question must be settled by a careful examination of the apparently conflicting statements found in Hobbes's writings, and most of the relevant passages are included in these selections. In view, however, of the widespread repugnance excited in his day by Hobbes's ethical views — a repugnance so intense that it has been well said that he 'created English moral philosophy by antagonism' — it is desirable that the attention of the student should be called to the interpretations and criticisms of Cudworth, Clarke, Price and Butler.

One is inclined to disagree with Professor Woodbridge's estimate of values when he tells us that he has omitted in the selections, 'the details of his mathematical, physical and political theories.' Surely Hobbes is, above all else, a political theorist. One would hardly reckon his traditional logic and his crude psychology more important than his speculations in the field of politics and ethics. The chapter on 'Method' is rightly included in the extracts; it is essential to a proper appreciation of Hobbes's genius. But the student might well be invited to compare the ideas respecting the nature, the scope, and the

method of philosophy, set forth in this passage and in Chapter IX. of the *Leviathan* with the corresponding and the contrasted ideas in the *Novum Organum* and the *Discourse on Method*.

This volume is a scholarly piece of work and will be of service to students and teachers of philosophy. But it would be still more useful if it were broadened in treatment, and enriched in content, in ways such as have been indicated. The book is indexed. Aubrey's *Life of Mr. Thomas Hobbes of Malmsburie* is prefixed to it.

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Outlines of Psychology; An Elementary Treatise with some Practical Applications. JOSIAH ROYCE. New York and London, Macmillan. 1903. Pp. xxvii + 392.

Professor Royce's excellent book will be valued by teachers for its lucid and helpful applications of psychological doctrine, while psychologists will be interested in it chiefly as an essay toward a system of psychology, in which we catch sight of things in the mass rather than in detail, the woods not being at all obscured by the trees. A real system of the science presented in so narrow a compass and with such clearness and precision is indeed rarely to be found.

In the opening chapters the author sets forth the conditions under which psychology is possible and the methods it employs. Emphasis is laid on physical and physiological connections, and introspection is regarded as merely an auxiliary to what are often called the 'objective' methods of research.

The general features of the conscious life are next described, and the unity of consciousness is made prominent, as against the view which regards it as a 'shower of shot.' Consciousness, the author holds, is not composed of 'elements.' When we analyze a state of mind into its elements, we really then and there bring these elements into existence; they have no existence until we analytically detect them. This doctrine of analysis has such important consequences not only for our conception of the mind, but for psychological method, that Mr. Royce's own words should be quoted: "The elements that analysis detects exist, as conscious states, when they are detected and not before. Not only is this true of the elements that can be isolated by careful experiment or by means of technical training. It holds also of those elements which we can either find or not in a given present conscious state, according as we do or do not choose to attend to them. As has been said, we always observe in any conscious state unity and

multiplicity. But the conscious state contains exactly such multiplicity as we do observe. *The multiplicity that we might observe, and do not observe, belongs to a possible mental state which, at the moment of our failure to observe, we do not possess*" (p. 109; the italics here and in the quotations following are the author's). In analyzing a state of mind, accordingly, we do not discover what is really in the state before our analysis; on the contrary, we *substitute* a brand-new state of mind; and it is only by a 'convenient fiction' that we can speak of the newly-noticed elements as existent previous to our observation of them. The author, it is true, speaks of a 'correspondence' between the new and the old state; but this 'correspondence' turns out to be merely that the two states occur under similar physical and physiological conditions. He seems to believe in no *internal* resemblance in the states themselves; whatever resemblance there is, is entirely in their physical setting.

It is difficult to reconcile the author's doctrine here with his view of the psychological methods, to which reference has already been made. If, as he tells us, introspection is, 'for the scientific psychologist, despite its importance, rather to be used as an auxiliary of the other methods than as a method capable of leading the way' (p. 17), it is surprising to be told so assuredly that a mental state has nothing more in it than its possessor happens to observe. Such a doctrine is certainly counter to the spirit of all 'objective' methods, and is not strongly supported even by introspection.

Nor is it necessary to go to such lengths in order to down the 'shot' doctrine of consciousness. The truth would be sufficiently hedged about if we regarded mental elements, not as self-contained and mutually indifferent objects, like shot, but as ultimate qualitative distinctions that are responsive to one another, and which therefore take on a somewhat different character according as they are in relative isolation or are in this or that particular setting. The total state, it should be added, is more than the *sum* of such elements. They are merely its materials, whereas the state has also *architectural* features. On the whole, it seems probable that analysis changes a state, not so much by putting in elements that were not there before, as Mr. Royce contends, but rather by *taking out* and destroying this architecture of the state. The 'elements' were there all the while; but before our analysis they were subordinate features of a general design; whereas after analysis they are *dissecta membra* and have a different look. As to whether they are, in all strictness, the same elements before and after such violence has been done them — this would give room for

subtle discussion without much fruit. The important point is, that the elements which are cut out by our analysis resemble something in the state before the analysis. The correspondence between analyzed and unanalyzed states is therefore direct, and not round-about through the physical accompaniments merely, as the author maintains. Analysis really tells us something about the unanalyzed states themselves and not about their physiological accompaniments only. If our author's doctrine of analysis were sound, it would mean an end to psychology so far as a knowledge of the constitution of naïve and unreflective states of mind is concerned. So far, then, as Mr. Royce's doctrine is advanced in order to make it warm for the mind-stuff theory, he is certainly adopting expensive means: he roasts the pig by setting fire to the house.

Professor Royce believes, however, that his own account is freed from 'the entanglements of the theory of mental elements' by substituting for the "fictitious mental 'elements' the *elementary cerebral functions*" (p. 208). Association by similarity—as where, to use his illustration, a tune reminds me of another which had a similar harmony or cadence—is explained as an association between similar cerebral elements and not between similar psychic elements direct. There may possibly be no entanglements in calling the neural process corresponding to the cadence or the harmony here an 'element.' But it may well be that such physiological 'elements' are no less fictitious than are their psychological counterparts. The physiological processes corresponding to the cadence or the harmony, are possibly not separate from the processes corresponding to the tones of the tunes. They are, perhaps, as inseparable and as little elementary as are the psychological cadences or harmonies which we say are similar. An association between the neural elements in such a case is as difficult to understand as is an association directly between the two psychological qualities, and no scientific gain is made by assuming that the real bond of connection lies exclusively on the physiological side.

A striking feature of the book is the adoption of a novel classification of mental processes under the terms sensitiveness, docility and initiative. This arrangement corresponds pretty closely to the biological grouping of organic characters into those due to the present environment, those due to past conditions, and those somewhat vaguely referred to as spontaneous or chance variations.

Under the heading sensitiveness, the author groups the direct responses to stimulation, such as sensations, feelings and (with more reserve) images. In the treatment of space, he makes much of the

'tropisms' described by Loeb. Royce feels that these tropisms provide the basis for a primitive experience of orientation, and that particular spatial experiences are but differentiations of this. As regards feeling, Mr. Royce goes with Wundt to the extent of rejecting the notion that feelings differ merely with respect to pleasure and pain. But instead of adopting Wundt's farther 'dimensions,' namely, 'excitation-depression' and 'tension-relief,' Mr. Royce substitutes for these the single contrast of 'restlessness-quiescence.'

Under docility are considered all those processes which give evidence of the effect of past actions — perception, memory, discrimination, social imitation and opposition, conception, reasoning. Association is an important aspect here; and association, even in the form of association by similarity, as has already been pointed out, is mainly a matter of neural habit. In treating of perception, conception and discrimination, as indeed throughout the volume, prominence is given to our motor reactions. Even Weber's law is regarded by the author not as relating directly to our sensations, but as a law of motor reaction. According to Professor Royce, I feel the sensations *A* and *B* to be different in case "I respond to *A* in a way different from the way in which I respond to *B*. If I cannot perform the act, I cannot make the conscious discrimination" (p. 271). We are thus given a theory of sensory discrimination analogous to the James-Lange theory of emotion. As in the one case the emotion is due to the physical response, so in the other our conscious discrimination is thought to be due to a difference in this response. While it is easy to agree with Mr. Royce in interpreting Weber's law as a law of discrimination and not as a law of sensation merely, objections at once occur to the farther step of making the discrimination in this case a matter of reaction. For we still have to explain the fact that we discriminate certain differences in our reactions, and not others. A difference of reaction is not, of itself, sufficient to account for our conscious discrimination. For probably to no two stimuli do we ever make two exactly similar reactions. The reactions must be enough different for us to *feel them to be* different; and we are practically where we were when we began. The discrimination of light sensations, for example, may be *aided* by differences in the accompanying motor processes, but its law is not thereby reduced to a law of our motor functions.

The social aspect of docility is set forth with force and persuasiveness, as might be expected from one who has contributed so valuably to this side of psychology. Over against social imitation there is set up the fact of social opposition. "The preservation of a happy

balance between the imitative functions and those that emphasize social contrasts and oppositions forms the basis for every higher type of mental activity" (p. 279). And in regard to the importance of social life generally for our intellectual growth, he holds that 'all the special processes of thinking, such as those usually discriminated as conception, judgment and reasoning, * * * result from the effects of social stimulations' (p. 285). And again, "the whole method of the reasoning process has come to the consciousness of men as the result of disputation. * * * If the process of conception is the formation of a plan of conduct, the process of *reasoning results from trying so to portray this plan as to persuade other men to assume it*" (pp. 295-296). Professor Royce assists us to appreciate the influence of social stimulation; yet one cannot but feel that it would be difficult to defend him from the charge of over-statement in such passages as these. There is no sufficient warrant for giving so exclusive importance to the social environment, at least for the lower stages of the intellectual life. If, as the author says, "we bring out the essence of the reasoning process when, in an appeal to a careless child who has done some mischief, we say 'See what you have done,'" then it is probable that non-social situations often work toward the same end.

By initiative Professor Royce does not mean will. He has in mind a large group of adjustments, many of which are involuntary, many of which are purely intellectual, that occur when our habits are broken up or modified, and a real advance is made toward a more perfect adjustment to our environment. Such breaks with the past are, as with Professor Baldwin, closely connected with the 'try, try, again' reactions; but Professor Royce attributes less importance to pleasure and pain as the main-spring of such acts, and emphasizes the other 'dimension' of feeling, namely its side of restlessness. The author is careful to warn us that by initiative he does not mean any actual origination in a free-will sense; he does not mean that anything mental occurs without ample antecedents. He would mark by the term initiative simply those variations that have an outer appearance of origination, where the readjustment can be attributed neither to the present stimulation nor to the past habits or heredity of the organism. Professor Royce's classification as a whole is attractive, and while the old tripartite division may be able to hold its own against his, yet the new grouping is a welcome addition to our ways of arranging the special processes of the mind.

The volume certainly commands one's admiration, its doctrines are so well considered and are set forth with such lucidity and force.

Yet while the reader's feelings are pleasureable, it must be confessed that they are (to use our author's terminology) occasionally of the pleasureable-restless type. But if the book at times stirs the spirit of opposition as well as of imitation, it is an indication of Professor Royce's power to preserve in the reader that happy balance of opposing forces which, as already expressed in his own words, is the basis of every higher form of mental activity. The book is an important contribution to psychology, and can be commended for its richness of contents and its grace of form.

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Philosophy in Poetry. E. HERSHEY SNEATH. New York, Scribners 1903. Pp. ix + 319.

The Mind of Tennyson. E. HERSHEY SNEATH. 2d ed. New York, Scribners, 1903. Pp. xii + 193.

In the first of these volumes Professor Sneath presents a study of Sir John Davies' philosophical poem 'Nosce teipsum.' In the second he gives an exposition of Tennyson's philosophical position. If Tennyson's is the better poetry, Davies' is the closer reasoning. The contrast between the doctrines of the two men is most striking. Tennyson represents the man who, familiar with modern science, still retains his belief in religion, but seldom attempts to establish his beliefs by argument. Davies, living in the Elizabethan period, presents the scholastic view of things and the scholastic method of establishing these views. He was poet, lawyer and statesman, finally reaching the position of Lord Chief Justice. In the poem here discussed, he presents in rhymed quatrains of heroic decasyllabic verse a 'complete philosophy of mind.' It is remarkably good metaphysical poetry and contains much good close reasoning. Its chief value is historical. "For the history of philosophy it is of great significance, as it enables the student to understand the psychology and philosophy which were current before the introduction of the philosophies of Descartes, on the one hand, and of Hobbes and Locke on the other." The nature of knowledge and of the soul furnish the main topics for discussion.

Professor Sneath has in a very thorough scholarly study presented the views of Davies and traced them to their sources in the writings of Calvin, Nemesius, Cicero and Aristotle. The entire poem is printed in the appendix.

The new edition of the *Mind of Tennyson* contains few changes. In this book again we have a very scholarly work. Tennyson's phil-

osophical development, his early orthodoxy, his period of doubt, his attempt to support his religious beliefs by reasoning, and his final adoption of a faith philosophy, all these are admirably presented with abundant citations from Tennyson's works. Tennyson's philosophical discussions are grouped under the problems of God, freedom and immortality.

Both these volumes are of interest and value to students of the history of philosophy and the history of poetry.

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PSYCHOLOGY OF RELIGION.

The Contents of Religious Experience. JAMES H. LEUBA. The Monist, Vol. XI., No. 4, July, 1901.

Observations de psychologie religieuse. TH. FLOURNOY. Archives de Psychologie, II., 8, October, 1903.

Professor Leuba's article is one of the series of papers on the psychology of religion coming from time to time from his pen. The paper is, as the author states, a mere survey of the materials he had in hand, consisting of a number of autobiographical accounts of religious experience, "with the unpretentious purpose of gathering a few general impressions which may serve as a preparation for the more systematic investigation to come. It is, accordingly, little more than samples of the data collected, accompanied with a few comments." The fourteen religious autobiographies transcribed illustrate almost as many types of religiosity, and give one a glimpse of the varieties of religious experience.

The comments fall for the most part into two classes — the first pertaining to the relation of intellectual belief to religious life. "The frequent inconsistencies," writes Professor Leuba, "the unmeaning explanations, and the oft-recurring negative answers, indicate how little reflection is given to religion, how much it is a matter of uncontrolled impulse. * * * The supremacy of the fundamental life impulses over the directions of the intellect, of the unconscious over the conscious, affirms itself with uncontestable significance in these records; not what is objectively real or what is logical, but that which ministers to the approved needs and desires is the 'religiously' true." After pointing out, in the documents he has collected, the influence that the desire or 'will to believe' often has over religious conviction, and the inclination to construct one's ideas of the Deity *according to one's own needs*, the author concludes: "Truth for the natural man, is

that which secures the result wanted; its criterion is affecto-motor efficiency. Whatever regard we have for objective truth and logical consistency is evidently due to the practical benefits derived from conforming our conduct to their requirements." The fact that these comments are abstracted from actual religious experience bars them from the realm of the commonplace. Indeed, the chief value of Professor Leuba's work is, that it is a serious effort to find out the *real* contents of the religious consciousness of our contemporaries, and thus to transform empirical opinion about religious life into scientific knowledge.

The other class of comments relate to the meaning or end of religious activity. We cannot do better than give in the author's own words what seems to him the chief philosophical conclusion of his paper.

"The end of religion is not the worship of God as some like to put it. * * * The fact is that when God, conjured up by the needs of the worshipper, appears before him, his hands stretch forth in request for power or mercy, not in adoration. And, preposterous as it may seem, it is yet true that he cares very little who God is, or even whether he is at all. * * * The truth of the matter may be put this way: *God is not known, he is not understood: He is used*—used a good deal and with an admirable disregard of logical consistency, sometimes as meat-purveyor, sometimes as moral support, sometimes as friend, sometimes as an object of love. If He proves himself useful, his right to remain in the service of man is thereby vindicated. The religious consciousness asks no more than that. Not God, but life, more life, a larger, richer, more satisfying life, is in last analysis the end of religion. The love of life at any and every level of development, or, to use another phraseology, the instinct for preservation and increase, is the religious impulse. It would appear, then, that there is at bottom no specifically 'religious' impulse; the preservation and increase of life is the moving impulse as well of religious as of secular activity. * * *

"How could men have to come to think that 'the vital element in all religions is the conviction that the existence of the world, with all it contains and all that surrounds it, is a mystery ever pressing for interpretation?' On the contrary, the mystery of the world is resolutely thrust aside by consciousness in so far as it is, and as long it remains, religious. * * * The pious soul may, and often does, leave its supplicating attitude to turn for a while to philosophy, but it then ceases to be religious and becomes philosophic. For a moment it yearns,

it desires, it supplicates, it wills; for another moment it is critical and asks whys and wherefores — then religious, now philosophic, in as close succession as you please. In the twinkling of an eye it passes from the one to the other attitude; they alternate but they cannot coexist. They differ just as much and in the same way as desiring differs from thinking, or willing from reasoning. Considered merely from its intellectual side, the religious attitude postulates, the other inquires."

In the *Observations de Psychologie religieuse* M. Flournoy has made a valuable contribution to the data available for the psychological study of religion. The paper consists of six religious autobiographies, with sundry remarks and explanations by the author relating to the various points touched upon in the different accounts. There is nothing in the experiences set forth that is striking or remarkable — one finds in the data merely the commonplace and normal experiences of commonplace and normal persons. Indeed M. Flournoy states at the outset that 'it is with ordinary and commonplace natures that psychology and its practical applications (pedagogy, etc.) are concerned primarily, in the endeavor to understand and guide these; and the analysis of extraordinary cases is of importance only as it leads to a more far-reaching knowledge of the ordinary human mind.'

"The accounts," says M. Flournoy, "are too disparate to admit of any general conclusions apart from those dealing with the relation of intellectual beliefs (dogma, theological conceptions, etc.) to the more deep-seated phenomena of the emotional and volitional order." Apart from the documents themselves, the chief interest of the paper centers in the comments which the author makes upon this relationship. He finds two extreme types that illustrate very clearly the differences that can exist between religious persons in respect to the rôle played by doctrinal belief. Between these extremes one finds an infinite diversity of intermediary positions.

"There are persons," M. Flournoy writes, "for whom a fixed and well-determined doctrinal system is felt to be a necessary condition, a *sine quo non* of religious life. * * * This type of individual gives the central place in his religion to a system of intellectual affirmations, swallowed whole through a faith in some external authority, and serving as the touch-stone, as the regulator, of all his moral and religious life. For these, religious evolution consists mainly in ridding themselves of the intellectual shell that surroundings and education have put upon them, in order to leave their immediate inner experience free to expand in whatever way it will." A mysterious

reality, inaccessible even when it is present to one, which falls under no intellectual category, not even that of personality, but a living reality that calls forth one's prayer and answers it, that stimulates one to acts of courage, that goes to the very root of one's being, the source of life and joy—this holds the central place in the life of these persons, and performs functions essential to them—one may almost say biological functions. On account of its value and vital importance to them, these persons do not hesitate to accept such experience as true. They find a purity and a transcendence in their religious life that satisfies their needs.

M. Flournoy likewise calls attention to the fact that the 'doubts' so often referred to by religious persons, are never doubts of an intellectual nature. "These have to do with one's inner state, with the question of one's own safety, not with the truth of dogma." The latter are not questioned in the least. Religious evolution and crises take place in the deep vital sphere of the affective and moral nature, not in the realm of dogmatic belief. This point—that religion concerns itself with life rather than with the logical accuracy of the intellectual beliefs—is made by Professor Leuba also, in the article reviewed above.

M. Flournoy emphasizes another point insisted on by Professor Leuba—namely, the demand on the part of the individual that his religion recognize and satisfy his needs. "It is a constant psychological phenomenon that the gaps, the inconsistencies, even the contradictions of a system are no obstacles to its acceptance by all those who find in that system the counterpart of their own religious experience, the echo of their feelings, and the satisfaction of their needs. It seems that just that quality, the response to the many vital needs of the individual, is the only essential of such a system, and in proportion as it possesses this, he lets pass the inevitable incoherence which is to be found in every attempt at metaphysical systematization, from that of the humblest to that of the most profound thinker."

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EXPERIMENTAL.

Studies in the Psychology and Physiology of Learning. EDGAR SWIFT. American Journal of Psychology, Vol. XIV., pp. 201–252.

In this doctor's thesis are recorded the results of an experimental study of learning under the three heads of acquisition of skill, acquisition of information, and getting of motor control.

I. *On Tossing and Catching of Balls.*—Two balls were kept going in the air by means of the right hand. The object was to see if this kind of learning would show a typical curve. Six subjects were tested, each having ten trials daily. Four of these were trained until their average number of catches per trial exceeded 100 for two successive days. The curves for all show a striking similarity.

The left hand was tested at the beginning and then again at the end of each day's period of work for several days. Two of the main results were especially interesting (1) the concavity of the right hand curves toward the vertical axes, indicating slow progress at first, followed by more rapid improvement, and (2) progress by jumps but no one particular plateau of considerable length. These characteristics do not agree with the Bryan and Harter curves found in the learning of telegraphy. The left hand curve resembled the right but its progress was much more rapid. The gain is ascribed partly to transference of method and partly to the direct effect of training on symmetrical portions of the nervous system. The subjects improved their methods of tossing and catching with no further conscious selection than general effort to succeed. Five monthly tests, made after the experiment closed, brought out a new gain in skill instead of a loss. The explanation offered by the author, that the mind grows to modes in which it is exercised and that this growth may continue after cessation of practice is not satisfactory. The experiment is, at any rate, not sufficient to prove it. It may possibly have been due to the fact that twenty-four hours was not the most favorable period of rest and that consequently the highest point of skill did not appear during the experiment.

II. *On Learning Short-Hand.*—This was selected because of its analogy with the experiments of Bryan and Harter—as likely to produce a similar curve. The writer, the only subject, studied for about ten weeks, an hour and a half a day. Daily tests were made. During the period of learning the symbols, the curve shows a rise like that in the telegraphic curve. As it was not found in the preceding experiment, the author concludes that it appears only when symbols of some kind are being learned, and that after that first spurt, the curve of learning is concave until the physiological limit is approached. Nothing like a plateau is found. Instead retardation and progress alternate. Automatization goes on through the whole process. Any continued arrest in progress is to be explained, the writer thinks, by emotional factors such as the painful drudgery and depressing monotony accompanying efforts which are not bringing forth appreciable

results. Unfavorable physical condition, variation of maximum effort, and overstrained attention affect the score as well as in the previous experiment.

III. *On the Origin and Control of the Reflex Wink.* — The control is considered first and with adult subjects. A wooden hammer striking against plate glass near the subject's face, furnished the stimulus. A long series of experiments brought out the following results. (1) The eye reflex is a complex reaction, the result of visual and auditory sensations and the final effect seems to be greater than the sum of the separate effects. (2) The reaction is reduced by the closing of the ears, by contraction of the muscles near the eyes, by attention on inhibition, or by distraction of the attention, this last having only temporary effects. (3) No effect is produced by moderate fatigue or by adding. (4) Training gained by the above muscular contraction improves the control when the attention is directed toward inhibition of the wink.

The experiments were then continued with two babies as subjects, the object being to investigate the origin of the reflex wink. Excessive sensitiveness to auditory stimuli is found to last until about the fiftieth day. The first response to the stimulus is a general organic one in which the eyes participate. About the sixtieth day, the wink becomes a distinct auditory reaction and other bodily responses cease. About the eightieth day the visual reflex begins and as it increases, the auditory decreases. Experiments made on four university students and a five-year-old boy show no essential difference in reaction after five years of age. The writer points out that the elements of reflex reaction are evidently given by heredity but their adaptation to ends has to be learned. He does not discuss why the wink, which is supposed to have teleological significance for the eye alone, appears first as an auditory response and only later as a visual reaction.

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The Influence of Accommodation and Convergence upon the Perception of Depth. J. W. BAIRD. *American Journal of Psychology*, 1903, XIV., 150-200.

This renewed attempt at settlement of the time-honored, vexatious, insistent problem of the criteria of tridimensional vision represents, so the writer tells us, almost four years of intermittent work. For our purpose the article may be considered as divided into two parts, historical and experimental.

The historical section, occupying one third of the space, gives a summary, partly critical, of earlier investigations and theoretical and experimental conclusions, from the nativistic, empirical and genetic standpoints. This summary is good reading, it is far less open to the charge of needless repetition characteristic of the latter part (especially pp. 173-177); it is the best available digest in English, and exhibits greater perspective than Arrer's, while not entering so completely into certain details. But it does not suffer from over-completeness; indeed it omits numerous references which directly contribute to the discussion of the problem. *E. g.*, to mention a few names (or references): Witasek (*Zeitsch.*, 1899—movement sensations purely hypothetical); Wundt (*Stud.*, 1898, 44—reversible illusions, offering specially favorable objective conditions, not referable to accommodation; the difference between planospective and perspective seeing not temporal nor contained in the processes themselves); Le Conte Stevens (*Am. Jour. Sci.*, 1881, 444—modification of depth by the pseudoscope is merely from change of tension in the rectus muscle, *i. e.*, variation of convergence, a conclusion really reached earlier by Brewster, *The Stereoscope*, 216); Loeb (*Archiv für die gesamte Physiologie*, 1897, 278—paralyzing the power of accommodation by atropin does not affect reversions); Hoppe (*Psych.-phys. Opt.*, 210—theory of muscular transposition). Experiments with lenses (*e. g.*, McDougall) and colors (*e. g.*, Thompson) also have bearings—the latter furnishing a strong argument, so it seems to me, in favor of the position the author finally reaches.

The statement that 'approximately adequate test' (s) have been made only by Wundt, Hillebrand, Arrer and Dixon shows a rather disparaging estimate of the labors of Hueck and Meyer. Judged by our standards of to-day their shortcomings are evident enough, precisely as ours will be to the investigator of the latter part of the century. Hueck and Meyer were pioneers in a difficult task! Yet they reached a conclusion we still accept. They did not isolate the factors, but while later experimentalists have striven with commendable zeal to do this, it is still doubtful, at least to me, if this has been accomplished with complete success.

The main burden of the experimental part is to prove that 'accommodation constitutes the essential criterion of depth in (the) monocular experiments.' The apparatus and the method employed for this purpose duplicate Hillebrand almost throughout. Dr. Baird carried through five groups of experiments with considerable detail, one of which consisted in the absolute estimation of distance, the results of

which justified him in rejecting the negative position of Wundt and Hering respecting this capacity in the condition of the test. His results also show that in starting the movement in the gradual method before exposure was made he has improved upon Hillebrand, although it is proper to observe that Dixon found that when the card was at rest it was reported to be moving. Apart from minor details, very valuable in themselves, it cannot be said that Baird contributes any new data or results. What the paper gives is a confirmation of substantially all the experimental results as such found in the three earlier investigations with substantially the same apparatus — by Hillebrand, Arrer and Dixon. This prompts me to remark that the limits of this method of procedure have already been reached; that future experimenters should not repeat it, but proceed along other, and improved lines.

I regard Dr. Baird's case in favor of the influence of accommodation as the strongest thus far offered, especially with respect to his theoretical arguments. Yet his own tables would force him to the admission, which he seems to make (p. 193), that its rôle is merely nominal as compared with convergence: the binocular estimations are often several times more accurate and less variable. They also show that the sensations from the relaxation of the ciliary muscle, for which he argues, are usually very weak compared with those from contraction. But, to take Baird's position, one might argue consistently with the results that to tighten the ciliary and loosen the suspensory ligament must yield stronger sensation data than to loosen the ciliary and tighten the ligament, owing to the operation of the former upon the choroid, which thus arouses larger irradiations; and that the heightened binocular accuracy comes from the 'range of accommodation.' But the experimental situation is not so simple.

To come to close quarters. The conclusion that is announced, 'that accommodation is the determining factor in monocular vision,' be it true or false, really oversteps the experimental data, and rests on certain premises — in the opinion of the writer. (1) It is assumed that the accommodation factor was adequately isolated in the monocular series. The results stand or fall on the validity of this premise. There are reasons for doubting it. Granted that the connection between accommodation and convergence is loose; perfect isolation demands that there be none. But Dixon's special tests rather show that the connection is too close to be ignored. He was forced to modify his opinion, or at least to suspend judgment. Baird's results would be consistent with this view; for the greater inaccuracy of monocular

estimations would be due to impaired efficiency of convergence when one eye is closed, and the introspections, almost throughout, indicate no difference. So that (2) Baird's introspections are scarcely adequate to the conclusion. They are for all except two subjects of the 'immediate character,' with no conscious groundwork. But to make appeal to a judgment of immediacy, incapable of *self-analysis*, is to argue on the basis of the unknown because the known is not immediately apparent. It is the nature of the elements in fusions to drop from consciousness. Thus while no other factor may have been consciously recognized this is not tantamount to saying that none other may have been operative, especially if the experimental conditions did not rigorously exclude the latter possibility. The introspections themselves make us suspicious. Baird's subject *B* 'inferred nearness from distinctness' (p. 185). This case may be considered quite special, because of normal hyper-inertia of accommodation. But this seems to represent the type for Dixon's observers. His single exception (*C*), on which he largely bases his argument, depends on a time difference, which he *infers* depends on ease of accommodation; while Baird's striking exception (*G*) depends on strain sensations, also inferentially connected with the ciliary muscle. That they may arise from convergence strain may be argued on the basis of one of Dixon's subjects whose ciliary muscle was paralyzed, but who could, notwithstanding, judge distance correctly in the conditions of the test. Baird's introspections rather make against his acceptance of nativism as respects relative binocular localizations (p. 198), while rejecting it for monocular vision. In his results both are equally 'nativistic.' In any event, they only warrant a rejection of nativism of product, of the Kantian schemata, of an absolutely agenetic, fixed, conceptual space, empty, finished, all-containing and all-accommodating to all phenomena. So that we may still hold to a genetic nativism, a nativism of process, function or modes. Consciousness responds 'nativistically' in a certain way to its stimuli; it functions space-wise all along, but the little fragments of space experience pass through successive stages of modification and elaboration.

What, therefore, as it seems to me, is imperatively necessary to validate (or invalidate) the conclusion as an indubitable experimental 'result' is (*a*) experiments on persons whose function of accommodation is suspended, entirely if possible; (*b*) practice experiments on the non-accommodating and accommodating eye, differences between which should be significant; (*c*) monocular experiments apart from binocular, to prevent transference of effects; (*d*) fixation points

minimizing to the utmost blurring and dispersion effects. Probably small points of incandescent wires, varying in size and intensity with the distance at which they are placed, so as to be like the standard in both respects, would fulfill the requirements. Any difference in the dispersion images from these would thus seem to be wholly due to differences of distance; and the eye would turn reflexly to the small, bright stimulus, thus expediting the process of accommodation, for the accommodating eye at least. I venture to raise another objection to the Hillebrand apparatus. The eye localizes a black patch at a greater distance than a white. Suppose this should involve a difference in accommodation; to fixate the line determined by the overlapping of the white and black edges would, then, seem objectionable. How far valid this objection may be I cannot say.

A minor discrepancy may be noted. The rate of movement is given on p. 174 at 10 cm. in 7"; on p. 177 at 7 cm. in 10'.

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Attention Waves as a Means of Measuring Fatigue. W. B. PILLSBURY. *American Journal of Psychology*, 1903, XIV., 277-288.

This adds another to the numerous pieces of illuminating work which have recently appeared from the Michigan laboratory. Professor Pillsbury now addresses himself to the task of determining whether attention waves exhibit diurnal variations in length analogous to the physiological cycles, and whether variations in the attention cannot be employed as a valid register of the progress of the stages of fatigue in the day's work, from morning to night.

The results indicated an affirmative answer to the first question, which corroborates the earlier conclusions obtained by other investigators. A longer total fluctuation is correlated with maximal attention efficiency. The important supposition is made, that the ratio of attention efficiency to inefficiency is dependent on the efficiency of the cortical cells, while the duration of the total wave is correlated with the Traube-Hering fluctuation.

The answer to the second question — of more interest to the reviewer — is affirmative also, and suggests practical considerations. Professor Pillsbury considers that the results — given individually for the six subjects experimented upon at four stages during the day — indicate four types of workers: (1) Evening workers, (2) morning, (3) those with two periods of maximal efficiency, (4) those entirely irregular throughout the day and from day to day. The evidence, so

far as it goes, shows that the efficiency in the evening is greatly increased by a reduction of morning work, *i. e.*, work earlier in the day, whether by lessening the quantity or substituting an easier type of work; that, within the period of observation, ten to fifteen minutes, the familiar 'warming-up' or 'second-wind' phenomena are not so evident, if at all, in the evening records, or, in other words, that in the stage of general fatigue the exhaustion is rapid, and shows little tendency to recovery. Pillsbury's short periods perhaps minimize this tendency. The organism, when pressed to the utmost, as we know from experience, manifests a remarkable ability to take a firm brace. Sometimes when we are most tired, after a long siege of laborious endeavor, we apparently attend most easily or spontaneously.

Very striking is the increase in attention efficiency with these fluctuations caused by an hour's sleep during the afternoon. The evening efficiency is nearly equal to the morning efficiency, while ordinarily there is a loss of from forty per cent. to sixty per cent., as seen in the other tables. This strongly confirms, we may note, the pedagogical position that periods of relaxation should be multiplied, and shortened, to insure maximal efficiency. The increase in the efficiency-time with the Masson disc is so striking that a prolonged systematic experiment on this point alone is urgently needed. We assume, of course, that the visibility-periods are trustworthy indices of attention efficiency; but a source of error is the progressively growing tendency to subjectively rhythmize the fluctuations. This one record may be an extreme case. No doubt types would be discovered here, especially as between the trained, inured adult worker (*e. g.*, the author's subject, *P*, a disciplined adult) and the young, undisciplined adolescent, a distinction resting largely on differences in neural plasticity. Our pedagogy is of only slight practical moment until it has correlated the fatigue curves with the individual's genetic stages and with individual types, for, so far forth, we may define the problem of pedagogy to be this: to legislate rules on the basis of which the maximum result of discipline may be obtained with minimal fatigue. But the fatigue limit is not a point, but a zone, an elastic range always short of pathological fatigue. Professor Pillsbury's contribution suggests a valuable method of attacking a wide problem.

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BOOKS RECEIVED FROM JANUARY 7 TO FEBRUARY 7.

Die Gesellschaft. E. V. ZENKER. Berlin: Reimer, 1899-1903. Bd. I., pp. xii + 232. Bd. II., pp. ix + 134. M. 5 and M. 3. [The first volume has the subtitle '*natürliche Entwicklungsgeschichte der Gesellschaft*'; the second, '*die sociologische Theorie.*' In the second the Preface refutes the charge of 'eclecticism' brought by critics of the first, and describes the author's point of view as one rather of 'synthesis.']

Wörterbuch der philosophischen Grundbegriffe. F. KIRCHNER. Fourth ed., revised by C. MICHAËLIS. Leipzig, Dürr'schen Buchhandlung. 1903. Pp. vi + 587. M. 5.60.

L'Origine dei fenomeni psichici. G. SERGI, 2 ed. Turin, Bocca, 1904. Pp. x + 367. [Two new chapters are added to this well-known book, one on 'Biological Heredity' (ix), and the other on 'The Basis of Sociology' (App. to Chap. XVI.). The revisions include the insertion of certain illustrative figures. Recent work does not seem, however, to be taken account of: there are no allusions to the books of Ll. Morgan, James, Thorndike, Mills, K. Groos, Hobhouse, etc.]

Philosophie als Denken der Welt gemess dem Princip des kleinsten Kraftmasses. RICH. AVENARIUS. 2d Auf. Berlin, Guttentag, 1903. Pp. 85. M. 1.50. [This is an unaltered reprint of the first edition, described further as 'Prolegomena zu einer Kritik der reinen Erfahrung.']

Die Grundlehren der Psychologie vom Standpunkte des Voluntarismus. N. LOSSKIJ. German by C. KLENKER. Leipzig, Barth, 1904. Pp. vi + 221. M. 6. [By a Russian author, Privatdocent in the University of St. Petersburg.]

Esquisse d'une Éducation de la mémoire. J. J. VAN BIERVLIET. Gand, Siffer. (No date.) Pp. 126. 2 fr.

Educational Psychology. E. L. THORNDIKE. New York, Lemcke and Buechner, 1904. Pp. vii + 177. [Described in the preface in these terms: "The book attempts to apply to a number of educational problems the methods of exact science. I have therefore paid no attention to speculative opinions and very little atten-

tion to the conclusions of students who present data in so rough and incomplete a form that quantitative treatment is impossible.]

Psychology and Common Life. F. S. HOFFMANN. New York, Putnam, 1903. Pp. viii + 286. [“The object,” says the preface, “is to select the most important facts * * * of psychical research, describe them * * * and point out their bearing upon the interests of everyday life.” Psychic research is broadly understood; but still the use of the term ‘psychology’ without qualification in the title seems misleading.]

Sociology, the Science of Human Society. J. H. W. STUCKENBERG. New York and London, Putnam, 1903. 2 vols. Pp. xi + 408 and vi + 339. [An elaborate treatise by the late Dr. Stuckenberg, following up his *Introduction to the Study of Sociology*.]

The Nature of Goodness. G. H. PALMER. Boston and New York, Houghton, Mifflin & Co., 1903. Pp. xi + 247. \$1.10 net.

Ultimate Conceptions of Faith. G. A. GORDON. Boston and New York, 1903. Pp. xix + 399. \$1.30 net.

Journal of Addresses and Proceedings of the National Educational Association. Boston, 1903. University of Chicago Press, 1903. Pp. 1080. [Contains the usual variety of papers and discussions arranged by departments. Those on ‘child study’ and ‘special education’ (especially defectives), will interest psychologists. Separately bound comes also the *Year Book and List of Active Members*.]

Philosophie des sciences sociales. I. Objet des sciences sociales. RENÉ WORMS. Bibl. social internationale, No. XXVII. Paris, Giard et Brière, 1903. Pp. 230. 6 fr.

Transitional Eras in Thought, with Special Reference to the Present Age. A. C. ARMSTRONG. New York and London, Macmillans, 1904. Pp. xi + 347.

Report of the Commissioner of Education, 1902. Vol. II. Washington Government Printing Office, 1903. Pp. vii and 1177-2447. [Contains, besides a great variety of domestic topics, important reports on education in Porto Rico and Alaska.]

Travail et Plaisir. Nouvelles Études expérimentales de psychomécanique (avec 200 figs. dans le texte). CH. FÉRÉ. Paris, Alcan, 1904. Pp. 476 (large 8vo.)

NOTES AND NEWS.

A NEW *Journal of Experimental Zoölogy* is announced, to be edited by a board of authorities representing different universities; managing editor, R. G. Harrison, Johns Hopkins University. It will appear four times a year at irregular intervals. In scope it is designed to cover experimental morphology and the problems of general biology. Address: Managing Editor, *Journal Experimental Zoölogy*, Wolfe and Monument Sts., Baltimore, Md. \$5 and \$5.50 (foreign) net per vol.

WE note the appearing of the first number (January 7, 1904) of the *Journal of Philosophy, Psychology and Scientific Methods*, published by the *Science Press* (Garrison, N. Y., and Lancaster, Pa.),¹ which publishes also the *Popular Science Monthly*. The editor is not explicitly named, but editorial communications are to be addressed to Professor F. J. E. Woodbridge, Columbia University. So far as the new journal does not in its scope occupy ground already covered by existing publications, nor duplicate the work of the contributors to other journals, it is to be welcomed as an ally in our common cause. It would seem, however, that in its reviewing department it is likely in a measure to repeat what is fully done by *Mind*, the *Philosophical Review*, and this REVIEW, and also what is in part done by the *Internat. Journal of Ethics* and the *Monist*. In external appearance it is somewhat like this BULLETIN, which continues the page, paper, etc., so long familiar to the readers of the PSYCHOLOGICAL REVIEW.

THE fruitful activity of the French psychologists and philosophers is indicated by the new serial publications now coming from Paris. Besides the *Bulletin de la Société française de Philosophie*, we have the *Bulletin de l'Institut général psychologique* (six issues a year; just completing its third volume), the *Bulletin de la Société libre pour l'Étude psychologique de l'Enfant*, and most important of all the *Journal de Psychologie* advertised in this issue of the BULLETIN. Among the collaborators we find the most distinguished names: for example, M. Pierre Janet is editor-in-chief of the *Journal*; a committee (d' Arsonval, Ribot, Boutroux, etc.) of the *Bulletin de l'Institut*

¹The 'Science Press' is, or was shortly ago, Professor J. McK. Cattell, of Columbia University.

général; M. Léon, editor of the well-established *Revue de Métaph. et de Morale*, is also sponsor for the *Bulletin de la Société française*; while M. Binet, who publishes the valuable *Année psychologique*, is one of the editorial commission of the *Bulletin* of the Child Study Society. All of these publications are valuable. We publish in our next issue an account of the *Vocabulaire* appearing in the Philosophical Society's *Bulletin*.

IN the *Bulletin* of the *Institute général* (Vol. III, 1903), we note many important papers presented to the various sections (it will be remembered that the Institute is made up of sections each devoted to a branch of psychology — zoölogical, social, experimental, etc.); Among them, 'The Artificial Speech of Birds' and 'Reasoning by Cats' (de Vevéy, No. 1), 'Inter-Psychologie' (Tarde, No. 2), 'Character' (Malapert, No. 3), discussions on 'Imitation in Birds,' 'Intelligence of Cats, etc.' (Giard, Hachet-Souplet, No. 3), 'Hypnagogic Images and Entoptic Phenomena,' etc. (Delage, No. 3), 'Space Perception' (Rousseau, No. 3), 'Methods and Apparatus for the Measure of Sensations of Relation' (Toulouse and Vaschide, No. 3), 'Alcoholism' (a symposium, No. 4), 'Action of Electricity on Living Matter' (d'Arsonval, No. 5), 'Intelligence in Man and Animals' (de Vevey, No. 5), 'Sense of Direction and Automatism' (Sollier, No. 5), and others.¹ The literature of psychology is analysed and reported promptly in the successive numbers. The Institute is to be congratulated on its important work of synthesis in psychology. It is to be regretted that the two American university psychologists who were enrolled in the list of patrons felt obliged to decline (one of them, at least, on account of the unprofessional character of some of the other American representatives: the names of those now acting are Morton Prince, Elmer Gates, James H. Gore, May Wright Sewall, Van der Naillen).

We note the rapid appearance of the successive volumes of *The New International Encyclopedia* (Vols. I. to XIV., Dodd, Mead & Co.). The philosophy and psychology are in the hands respectively of Professors McGilvary and Titchener of Cornell University — sufficient guarantee of adequate treatment. The volumes have many new and interesting features. Full notice of the articles falling within the scope of the REVIEW is reserved until the work is completed.

Professor Mark Baldwin's *Story of the Mind* is being translated into Spanish by Professor Julian Basteiro of the *Instituto de Toledo*.

¹ All in Volume III. The contents of Vol. III., No. 6, issued in January, 1904, will be found in the section devoted to the Reviews.

WE learn that Professor James Ward, of Cambridge, has been asked to give a course of lectures in the University of California Summer Session, this year. His coming would seem to present an opportunity for securing him at some of the other Universities as well, and additional invitations to lecture, if sent at once, might indeed make it possible for him to accept the California appointment. At any rate he may expect a most cordial welcome on this side the water.

THE following items are taken from the public prints:

PROFESSOR G. S. FULLERTON, of the University of Pennsylvania, has been named Professor of Philosophy in Columbia University, New York.

PROFESSOR D. IRONS returns to Bryn Mawr College this spring after a leave of absence.

DR. MINER and Dr. Messenger, both of Columbia University, New York, have become respectively Instructor in Illinois University and Professor in the Winona (Minn.) High School.

DR. J. H. BAIR has been appointed professor of psychology in the University of Colorado (succeeding the late Professor Allin).

PROFESSOR ROYCE, of Harvard, is to lecture on philosophy at Columbia University this spring. Professor Ormond of Princeton has finished his course of lectures in the same series.

DR. WILLIAM OSLER has been appointed Ingersoll lecturer at Harvard for this year. He will lecture in May on 'Science and Immortality.'

DR. JACOB COOPER, Professor of Philosophy in Rutgers College, died on January 31.

THE local committee of the Geissen Congress of Experimental Psychology, meeting April 18, are Professors Groos, Siebeck, and Sommer, any one of whom may be addressed at Giessen.

CONTENTS OF THE JANUARY MAGAZINES.¹

PSYCHOLOGICAL REVIEW, XI., 1. The Participation of the Eye Movements in the Visual Perception of Motion: *Raymond Dodge*. An Inquiry into the Nature of Hallucination, I.: *Boris Sidis*. The Limits of Pragmatism: *J. Mark Baldwin*. The Sexual Element in Sensibility: *W. I. Thomas*. Dr. Morton Prince and Panpsychism: *C. A. Strong*.

PSYCHOLOGICAL BULLETIN, I., 1. The Chicago School: *William James*. Janet's Obsessions et Psychasthénie: *H. N. Gardiner*. Ladd's Philosophy of Conduct: *S. E. Mezes*. Stratton's Experimental Psychology: *J. R. Angell*. Philosophical. *J. M. B.* Notes and News. Books received.

PHILOSOPHICAL REVIEW, XIII., 1. Aristotle's Posterior Analytics: *John Watson*. The Reality of the Finite in Spinoza's System: *Eliza Ritchie*. Rationality and Belief: *A. K. Rogers*. Review of Books: Haldane's *The Pathway to Reality*: *William Caldwell*. Baldwin's *Dictionary of Philosophy and Psychology*: *W. A. Hammond*. Cresson's *La morale de la raison théorique*: *George S. Patton*. Busse's *Geist und Körper*: *W. B. Pillsbury*. Everett's *The Psychological Basis of Religious Faith*: *W. G. Everett*. Summaries of Articles. Notices of New Books. Notes.

MONIST, XIV., 2. Primitive Rome: *G. Sergi*. Ants and some other Insects (concluded): *August Forel*. The Still Small Voice: *Editor*. A Buddhist Genesis: *Albert J. Edmunds*. The Higher Criticism: *George W. Gilmore*. The First Buddhist Council (with prefatory note by *Albert J. Edmunds*): *Teitaro Suzuki*. Literary Correspondence. France. *Lucien Arréat*. Criticisms and Discussions: Physics and Metaphysics: *Paul R. Shipman*. Book Reviews and Notes.

INTERNATIONAL JOURNAL OF ETHICS, XIV., 2. The True Democratic Ideal: *W. Jethro Brown*. Relativity and Finality in Ethics: *Thomas C. Hall*. The Toleration of Error: *Eliza Ritchie*. Proverbial Morality: *Robert A. Duff*. Crime in England: *Samuel J. Barrows*. The Cynics: *John Mac Cunn*. The Individualism of

¹It is intended that this section, coming at the end, shall roll out like a continuous sausage, to be broken off at any link—always 'continued in our next.'—Ed.

Marcus Aurelius: *W. A. Watt*. The Spring of Salvation: *H. B. Alexander*. Discussion: Remarks on Professor Leuba's Criticisms: *James H. Hyslop*. Rejoinder to Professor Hyslop: *James H. Leuba*. Book Reviews: Spinoza's Political and Ethical Philosophy: *Robert A. Duff*. Dissertations on Leading Philosophical Topics: *Alexander Bain*. The Psychological Elements of Religious Faith: *Charles Carroll Everett*. La Religione Morale dell' Umanita: *Giovanni Cesca*. Il Pentimento e la Morale Ascetica: *Zino Zini*. Social Origins and Primal Law: *Andrew Lang* and *J. J. Atkinson*. Life and Labor of the People in London—Religious and Social Influences: *Charles Booth*. The Pathway to Reality: *R. B. Haldane*. Life in Mind and Conduct: *Henry Maudsley*. A History of the Problems of Philosophy: *Paul Janet* and *Gabriel Séailles*. Man and the Divine Order: *Horatio W. Dresser*.

JOURNAL OF NERVOUS AND MENTAL DISEASE, 31, 1. On Contrary Actions: *A. Pick*. A Case of Aphasia with loss of Memory of Nouns (Sensory Anomia) with Autopsy: *Charles L. Dana* and *Joseph Fraenkel*. Bony Sensibility: *Philip Coombs Knapp*. Optic Neuritis of Unknown Origin: *Howell T. Pershing*. Society Proceedings. Book Reviews. News and Notes.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNES-ORGANE, XXXIII., 6. Die Empfindlichkeit des Ohres: *H. Zwaardemaker*. Zur Psychophysiologie der Mundhöhle nebs. Beobachtungen über Funktionen des Tast- und Schmerzapparatus, etc.: *F. Kiesow*. Zur Frage nach der Fortpflanzungsgeschwindigkeit der Erregung im Sensiblen Nerven des Menschen: *F. Kiesow*. Ein Beitrag zur Frage nach den Reaktionszeiten der Geschmacksempfindungen: *F. Kiesow*. Literaturbericht.

ARCHIV FÜR DIE GESAMTE PSYCHOLOGIE, II., 2, 3. Untersuchungen über den Einfluss der Geschwindigkeit des lauten Lesens auf das Erlernen und Behalten von sinnlosen und sinnvollen Stoffen: *Robert Morris Ogden*. Zur Psychologie des Lesens bei Kindern und Erwachsenen: *Oskar Messmer*. Versuch einer Analyse der Scham: *Richard Hohenemser*. Literaturbericht.

REVUE DE PHILOSOPHIE, IV., 1. La Science et l'Esprit scientifique: *Georges Michelet*. Fénelon métaphysicien. Oeuvres inédites. I. Première rédaction de la troisième lettre sur divers sujets de métaphysique et de religion: *Eugène Griselle*. Ve Congrès de l'Institut international de Sociologie: *Edouard Gailleux*. Analyses et Comptes rendus. Périodiques. Bulletin de l'enseignement philosophique. Fiches bibliographiques.

THE
PSYCHOLOGICAL BULLETIN

THE EXPERIMENTAL STUDY OF MENTAL
FATIGUE.¹

BY PROFESSOR C. E. SEASHORE,

University of Iowa.

In the allotted time, I will try to point out (I) some errors and (II) some lines of progress in the experimental study of mental fatigue.

I.

1. Among the ideas which must be abolished, I count first the idea that fatigue is a concrete, homogeneous quantity of something which can be measured in terms of fluctuations in the efficiency of some particular work. While it may seem self-evident that it is erroneous, this idea in some form or other has nevertheless pervaded most of the investigations up to date. Few investigators seem to have had any glimpse of the constellation of factors of which fatigue is one and to which it is necessarily related. 'Nervous disease' was at one time supposed to mean something particular; now it means a thousand particular diseases, and is regarded more or less in connection with every disease. So fatigue must be conceived of in the light of its constituent elements, its concomitants, and its conditions before we can say that the experimental study has been founded.

2. The idea that fatigue is general. This idea is best formulated by Kraepelin and is sanctioned by him in the following words: "Fatigue through mental work is, so far as we know,

¹ Read at the meeting of the American Psychological Association, St. Louis, December 29, 1903.

a general fatigue. As especially Weygandt's study on the effect of change in mental work has shown, the fatigue through a particular activity also reduces the capacity for such work as is brought about through quite different mental activities. Thus the necessity of rest and sleep arises at certain times regardless of whether the same or changing work has provoked it. Only the *difficulty* and not the *kind* of mental work is significant for the general extent of fatigue."¹

Here Kraepelin is evidently wrong both in regard to fact and in regard to the supposed significance of that fact. True, fatigue varies with the difficulty of the work, but it also varies with the kind of work. Kraepelin himself questions Weygandt's methods; and, even if we accept Weygandt's particular conclusions, *e. g.*, that it is not always restful to change from reading Latin to the memorizing of nonsense syllables, that is of little significance to us on account of the presence of so many common elements in the two processes. With crude means of measuring, one should experiment first upon large factors. During the past year the students in the Iowa laboratory have demonstrated by several lines of experiment that the kind and the degree of fatigue both depend upon the kind as well as the degree of mental exertion.

As regards the significance of this tenet, Kraepelin asserts that if fatigue varies with the kind of work, we must seek as many kinds of measurement as there are kinds of work. That by no means follows. If a watch were made automatically by a single machine, it would be necessary to have as many different machines as kinds of watches one wanted made; but if watches are made by common tools in the hands of intelligent workmen, it is possible to make many kinds of watches with the same tools. So, if the elements in fatigue are regarded separately, a large number of kinds of fatigue may be measured by a comparatively small number of means.

This error rests in part upon the first, although Kraepelin is perhaps as free from the first error as any experimenter has been. It seems like a desperate effort to meet a supposed practical situation—the need of general fatigue measures. The

¹ *Phil. Stud.*, XIX, 479.

fact that Kraepelin has fallen into this error is going to make it a persistent one.

3. The hope of obtaining results of wide practical value by gross measurements without a preliminary critique of method. The study of fatigue may lead to important practical results. That assumption has naturally had the effect that most of the carts along the road of progress have been ditched, for the simple reason that the cart was run before the horse; the attempt to draw practical conclusions at the first step has been put before patience and skill in adaptation of means.

Speaking of the æsthesiometer experiments on school children, Kraepelin says that the conclusions are 'in der Luft'; the essential truth to be found in them is such as the experimenter has read into them from his general knowledge. The ergograph method, the Ebbinghaus method, and others fall practically under the same ban. And here he is probably right. He might have gone further than he has in applying the same criteria to the large practical generalizations which are based on experiments upon adults for immediate practical purposes.

We have no right at present to waste time and energy in mass experiments upon school children, *e. g.*, for the purpose of laying a foundation of a reconstruction of school the curriculum, before we have legitimate means. I see two results of such experiments: they have aroused common sense observation of the curriculum (that is good); and they have brought discredit upon experimental psychology (that is bad). In saying this I would not discourage special fatigue tests on school children; but from sweeping conclusions to order, preserve us.

II.

The following seem to me to be legitimate and promising lines of progress.

1. The development of methods of measuring by which the mental work may be recorded for sufficient periods of time, in sufficient detail, and under conditions favorable for introspective interpretation. The mere discovery of a method of measuring a factor is an achievement in itself, and the report upon it should not be hidden in a vague preliminary reference to it in the

announcement of a generalization grounded upon some fragmentary intimation in the experiment. Where no two men can use the same method, there is no science. Our fathers laid the foundations for the discovery of truth in formal logic. Our duty is as much greater as our opportunities are greater. In no other department do I see more need of the development of a technique than in the study of fatigue.

2. The analysis of the fatigue curve under controllable conditions. Kraepelin has pointed the way in an admirable and encouraging manner. Given a continuous and detailed record of an hour's work, this may be analyzed into its constituent elements, as in the illustration he has given of an attempt to approximate a separation of the 'Uebung, Ermüdung, Anregung, Gewöhnung, and Antrieb.' (I give the German names because they have received specific definitions.)

3. The detailed examination of such factors as are necessarily interrelated with fatigue. Dr. Bair's study of the Practice Curve is a good illustration. Dr. Paul Ranschburg's study of Inhibition is another.

4. The detailed examination of qualitative, intensive, extensive, and temporal attributes of mental work; also the effect of different degrees of complexity and stability. The senses give us a qualitative series; characteristic differences in fatigue to sight, hearing, smell, etc., are evident. The psychophysics of each must be worked out separately, but with a wholesome reference to the whole. There are salient differences in fatigue after emotional work, intellectual work, and exertion of the will.

It is also possible to isolate fairly characteristic types of complexity, first, as regards richness of consciousness, and, second, as regards mental level.

Then again distinctions may be made on the basis of organic stability of the process, as when we compare instinctive activities with those which involve radically new organization.

5. The correlation of psychological and underlying factors, such as physical, chemical, histological, and electrical phenomena. If the attention wave varies with fatigue, as Professor Pillsbury has demonstrated, we may ask, what are the physiological factors which condition that variation? What feature

in the mental work is it that causes the physiological state? What chemical processes may be traced? What is the cell modification? Are there characteristic electrical variations?

6. The analysis of the individual fatigue-resistance. The same work exhausts different individuals in different ways as well as in different degrees. In this fact lies a long series of problems. What are the weak points in the individual power of resistance? May these be reduced to types? In other words this involves the diagnosis of exhaustion-psychoses of common forms, such as occur in ordinary life. But here, as in all other psychology, individual psychology is futile unless based upon a developed general psychology.

7. The analysis of concrete experience, *e. g.*, a school period, for the purpose of applying the principles of fatigue. We may ask, what fatigue processes are in action? By what are they counteracted, apparently and actually? What senses have functioned, and under what conditions? What is the nature of the emotional coloring, what rhythms are present, and what are their relations to the individual temperament? What other elements of change are involved, and under what conditions of sequence, concomitance, and combination do they occur? In short, instead of lumping the activity as a chaotic mass, the activity may be analyzed into its constituent elements and its conditions traced. Then we are prepared to apply the laws of fatigue synthetically.

This program rests upon sentiments which are expressed after a careful review of the work up to date, and after some experimenting. It seems worth while to express these 'sentiments' in view of the fact that there is current a healthful tendency to make concrete situations in life the object of psychological study and that this will give an impetus to superficial and misdirected experiments regardless of previous failures. The program is a plea for foresight, a comprehensive view, patience, and results that shall have wide practical application, especially to the economic distribution of mental work.

PSYCHOLOGICAL LITERATURE.

RECENT TENDENCIES IN THE THEORY OF THE PSYCHICAL AND THE PHYSICAL.

Theory of the psychical and the physical presents many phases in recent thought. On the one hand, the problem is still discussed more or less in its original ontological form, in which mind and matter are regarded as different orders of existence, one being more real than the other, or both being equally valid phases of an underlying reality. The writings of Schultz, Strong, Marvin, and Stratton illustrate this tendency. The chief difference between recent and older writings of this sort is that the arguments have become more detailed and more subtle. On the other hand, the problem is being approached by certain other writers rather from the methodological point of view. The attempt is made to get back of the problem as it is ordinarily stated, in the hope that an investigation of the setting of the problem may suggest the line along which to seek a solution. In this group may be put the recent writings of Ostwald, Maudsley, Forel, Baldwin, Adamson, Mackenzie, Ladd, Mead, Dewey, and Bawden.

Of course, it is impossible in any absolute way to separate the ontological and the methodological sides. Nor do these recent discussions reveal any such complete separation. But there is an evident tendency to free the methodological statement sufficiently to objectify the problem. The very significance of the shifting of the attention thus to the presuppositions of the problem is that thereby we get a better understanding of the problem itself, *i. e.*, the methodological considerations are instrumental, not final. What the ultimate solution, in terms of some new conception of the nature of the problem, will be, it is perhaps premature to attempt to foresee. But that this is the true logic of the current controversies is shown in the attempt of such a writer, for example, as Ostwald¹ to reinterpret the whole of reality from the dynamic standpoint, *i. e.*, from the standpoint of the energetic physics. And if recent psychology is right in its insistence upon activity as the fundamental category of experience, and in its insistence that all conscious states are acts, here is a basis for the reinterpretation of the whole philosophy of the psychical and the physical.

¹W. Ostwald, 'The Philosophical Meaning of Energy,' *International Quarterly*, Vol. VII., No. 2 (June-Sept., 1903), pp. 300-315.

Professor Ostwald conceives of consciousness as related to neural energy somewhat as motion or work is related to the lower forms of energy. The transition from the neural to the psychical is the same in principle as the transition from the physical to the neural. But consciousness is not identified with all forms of energy, only with neural energy in the organism and then only under certain conditions. To the objection that the psychical is not amenable to description in terms of energy, he replies that the concept of energy is itself much more 'geistig' than it is material in its implications, and, furthermore, that all our attempts to conceive the psychical in other terms have uniformly failed or landed us in unintelligible paradox.

He says that the difficulty of psychophysical parallelism grows out of an erroneous statement of the problem. Going back to this concept of energy, which he regards as having rendered unnecessary the concept of matter, he would generalize it for a dynamic interpretation of the whole of reality. From this point of view, an atom is rather an equilibrium of forces than a material unit in the old sense of that term. On the same principle, the concept of mind as a separate existence or substance is rendered unnecessary, or, as he puts it, the concept of the psychical is 'subordinated' to the concept of energy.

In other words, he defends a doctrine of psychical energy, 'only we must perforce regard it as much more complex and difficult to state the conditions under which psychical energy arises than those concerning the rise of electrical energy.' "I deem it possible to subordinate to the idea of energy the totality of psychical phenomena." "In all that we know of intellectual processes, there is nothing to hinder us from regarding them as a particular form of energetic activity" (p. 313).

In various quarters the energetic theory is making itself felt as a philosophical doctrine, and we may expect in the near future a reinterpretation of many of our fundamental concepts, in philosophy as well as in science, from this point of view. The main defect in Professor Ostwald's doctrine, as pointed out by the present writer in another place,¹ is in demanding that the reconstruction of the concepts shall take place too exclusively on the psychological side. The reconstruction must be mutual. The concepts of physics need to be revised in the light of psychological categories as truly, though possibly not so extensively, as those of psychology by physics.

¹ Bawden, "The Necessity from the Standpoint of Scientific Method of a Reconstruction of the Meaning of the Psychical and the Physical," *Journ. of Philos., Psychol. and Sci. Methods*, Feb. 4, 1904, pp. 62-68.

It is interesting to find the emphasis thrown upon methodological considerations by Maudsley in his recent book, '*Life in Mind and Conduct*.'¹ Only an insight blurred by the astigmatism of prejudice will fail to see more than a mere materialism in the following utterances. "Nobody nowadays resents the notion that the bread which he eats is converted into bodily strength and energy, but most persons, being wholly ignorant of minute matter and its forces, deride the notion of its conversion into mental energy, albeit the scientific theories of ether-waves and ether-whorls tend steadily to render the conception less startling" (p. 24). "That physical and chemical activities stop abruptly at the edge of a living particle is simply incredible; it is easily credible that, entering it, they undergo a change into new and stranger complexes" (p. 26). "Such orderly transition does not mean that life is no more than physics and chemistry." "As if, forsooth, life would suffer depreciation and not be the wonder it is to its conscious self by being linked in unbroken continuity with physics and chemistry, and to trace the evolution of one thing into another were to say that the one thing is the other" (p. 27). "Now to say of one mind that it thinks differently on something from another mind * * * is to say that the structure of it in relation to the object differs. * * * For in no case is the object which is perceived and thought either outside or within *the* mind, as ordinary language implies, it is *mind* then and there active, the synthesis or product of subject and object, the *thing* and the *think* in one: there exists no separate mind to lay hold of and think on an external object, but a concrete brain brought into suitable contact with the particular external object makes the particular thought or mind" (p. 40-41).

The current parallelism in many instances really stands nearer to materialism, in regarding the mind as a thing, than does much of the modern materialism so-called. The latter speaks of consciousness as the property of a particular structure, the brain, regarding consciousness as simply the name which we apply to a certain interplay of energies in that organ. If this involves a radical revision of our conception of the nature of energy, the sting of materialism is drawn.

Forel² defends the identity theory as against parallelism and emphasizes the former as the only legitimate and indeed the indispensable.

¹ H. Maudsley, *Life in Mind and Conduct*, 1902, Macmillan, especially Chapters I. and II.

² A. Forel, 'Beispiele phylogenetischer Wirkungen und Rückwirkungen bei den Instinkten und dem Körperbau der Ameisen als Belege für die Evolutionslehre und die psycho-physiologische Identitätslehre,' *J. f. Psy. u. Neurol.*, I., 3, pp. 99-110.

able metaphysical basis for comparative psychology. He criticizes the parallelistic theory under cover of which such men as Bethe, Loeb, and others develop a purely mechanical interpretation of animal behavior. His own account of the identity theory is not altogether consistent but is preferable, to his mind, because it makes it possible to carry down the psychological interpretation to these lower forms. That parallelism is often accompanied by a virtual materialism is without question, and is a further reason for looking for the solution of this problem along the line of reflection upon the scientist's technique rather than by the adoption of any particular brand of metaphysics.

A number of books have appeared in the last three years of a general nature in philosophy in which the authors have defined their positions on this question. Professor Mackenzie, in his *Outlines of Metaphysics*,¹ from the standpoint of a *genetic idealism*, regards all existing theories as to the relation between mind and matter as unsatisfactory, crude, and even absurd, because they "leave the most fundamental problem untouched, that of really understanding what mind and matter mean for us. What we have to do is rather to take these as elements in the totality of our experience, and to try to see what place belongs to each within the concrete system of our world. They are not themselves terms which can be used in any ultimate solution of the universe, but rather names for certain aspects of that reality which it is our business to try to understand" (p. 93).

Similarly the late Professor Adamson, in *The Development of Modern Philosophy*,² says: "It must, therefore, be considered whether the relation really involves any such independence [of the two realms], whether we are not exaggerating a partial truth in representing body and mind as two series of events, two distinct realms of existence, which come somehow into combination. Certainly our general methodical maxim, nowhere to admit in reality an absolute division, would lead us in the contrary direction. Whatever independence they appear to possess must not be absolute. Both must be capable of representation as forming parts of one and the same process of actual existence. Whether the mode of describing the mental life which gives it the position in our consciousness of a realm of existence distinct from and, as one puts it metaphysically, outside of the mechanical, is not a misreading of the actual nature of the inner life itself" (Vol. I., p. 354). "There seems, then, nothing to contradict * * *

¹J. S. Mackenzie, *Outlines of Metaphysics*, Macmillan, 1902.

²R. Adamson, *The Development of Modern Philosophy, with Other Lectures and Essays*, W. Blackwood & Sons, 1903, espec. Vol. I., pp. 338-358.

the supposition that, in the process of change, a certain configuration has this character of inner reference which constitutes the fundamental feature of psychical existence" (Vol. I., p. 356).

And Professor Baldwin, in his recent writings,¹ has called attention chiefly to the setting of the problem. His theory of 'genetic modes' outlines a new standpoint from which to approach the whole subject, and is a good illustration of what is meant above by the shifting of the interest to the methodological phase. In this doctrine the teleological factor is given a fundamental place in the conception of scientific method, and this has its implications for the revision of our conceptions of both matter and mind.

In an article on 'Mind and Body from the Genetic Point of View,'² he discusses the relationship of mind and body from the standpoint of the genesis of the distinction in individual development. The distinction first appears reflectively in the third of his three stages: objective, subjective, ejective. Here the concepts of mind and matter appear as strictly correlative and at the same time incompatible or incommensurable. Hence the author defends parallelism as against interactionism. But he recognizes that this is not a solution of the problem of their relation, and outlines, in a tentative way, his own solution which he calls 'æsthenomic idealism'—'that in æsthetic appreciation we reach a form of immediacy of experience in which the dualism of external and subjective is blurred and tends * * * to disappear' (p. 246).

One point in Professor Baldwin's discussion is of great importance, his critique of the idea of 'the supposed primacy of the subjective.' It does not follow 'that because the world as well as the self, the body as well as the mind, is a construction from data of presentation—that therefore, the subjective factors are entitled * * * to greater primacy and ultimateness with reference to the universe as a whole than those which we ordinarily denominate objective and external' (p. 225-6).

Another important conception in Professor Baldwin's article is the distinction, with which he has already made us familiar in his other

¹J. Mark Baldwin, *Dictionary of Philosophy and Psychology*, Macmillan, 1902, art. 'Mind and Body'; same in *Development and Evolution*, Chapter IX. (in part).

²PSYCHOLOGICAL REVIEW, May, 1903, Vol. X., No. 3, pp. 225-247.

³This seems to be the source of the misunderstanding of the 'functional view' of the relation between the psychical and physical by Professor Creighton, in his article on 'The Standpoint of Experience,' *Philos. Rev.*, Nov. 1903, espec. pp. 607-610. See critique of this article by Miss Kellogg, below, in this number of the BULLETIN.

writings, between the agenetic (equational) and the genetic (progressional) statements of the nature of reality. This distinction he otherwise expresses by the antithesis between the retrospective and the prospective, the mechanical and the teleological. Of course, such a distinction is itself only a new dualism, but it has this superiority that it is a dualism of method, not of existence. On the side of method, this question of the relation between the agenetic and the genetic statements of experience is just the deepest problem of the present logic of science. The great value of such a discussion as this of Professor Baldwin is that here the problem may fairly be said to have consciously entered into the methodological phase.

The instrumental character of the distinction is brought out most clearly in the recent writings of Professor Dewey and Professor Mead. While not giving an explicit exposition of the subject, Professor Dewey's point of view may be gathered from the discussion in his *Studies in Logical Theory*.¹ He here outlines a standpoint which we find developed in detail in Professor Mead's article on the 'Definition of the Psychical.'²

Professor Mead approaches the question from the standpoint of the functional psychology. He undertakes to show the true meaning of objectivity and subjectivity, and to show the meaning of the psychical in relation to these. "The subjective is that which is identified with the consciousness of the individual *qua* individual." "Objectivity is the characteristic of a cognitive process which has reached its goal" (p. 77). "The definition of subjectivity will depend upon the function which a theory of logic ascribes to the individual consciousness in the formation of the judgment" (p. 78).

The views of Wundt, Külpe and Münsterberg, on the one hand, and of Bradley, Ward, Stout and James, on the other, are examined and discussed. He restates the problem, after an exposition and criticism of their views, in the following form: "Shall we assume, with Wundt, that the psychical elements arise from the analysis of reflection and that the result of that reflection is to substitute for the original object, first, a conceptual physical object which never may be actual — may never be presented — and, second, a still actual psychical content which has been withdrawn from the object (Münsterberg's position here is methodologically the same); or shall we say with Külpe, that in a unitary experience reflection *reveals* a mechanical

¹ *University of Chicago Decennial Publications*, Second Series, Vol. XI., espec. pp. 38-39, 52-54, 127.

² *University of Chicago Decennial Publications*, First Series, Vol. III., Part II., pp. 77-112.

and an associative order, of which the mechanical or physical statement is methodologically the determining side, by relation to whose elements all the associative or psychical elements must be determined as correspondents, recognizing further that reflection reveals — does not create — this distinction, since ‘images,’ feelings, and volitions have always been necessarily subjective; or with Bradley and Bosanquet, shall we consider the psychical merely the phenomenal appearance of the material which, to be cognized or rationally used in conduct, must cease to be psychical and become universal, and maintain therefore that reflection does not create or reveal the psychical, but ceaselessly transforms it, and that the psychical is an abstraction which can never appear in its own form in a cognitive consciousness, but must remain simply a presupposition of the theory of the attainment of knowledge by the individual; or with Ward, shall we assert that the subject of psychical experience and of objective experience are the same, that the transcendental *ego*, who has masqueraded in ethereal clothes in a world all his own, is nothing but the everyday *ego* of psychology; above all, that he is to be unquestioningly accepted as one phase of the subject-object form of experience, although he is neither the empirical self of psychology which can be an object, nor yet a mere ‘function of unity,’ and although, further, this pious refusal never to put asunder subjectivity and objectivity is in crying opposition to the fact that half the time subjectivity signifies the denial of objectivity, and although it is not possible consistently to define the psychical by its reference to the subject end of a polarized experience when the subject is hardly more than an assertion which perpetually dodges definition; or with James, shall we take up again with the soul and a dualistic theory of knowledge, in order that the psychical may mirror the whole possibly known reality, and when we have entered into this rich heritage, shall we promptly send the soul into another and a metaphysical world and politely dismiss the dualistic theory of knowledge as a great mystery, while we dally with plural selves and spend our psychical substance in phenomenalistic analyses and teleologically constructed objects; or shall we attempt some other definition of the psychical which will orient it with reference to immediate experience, to reflection, and the objects and conduct that arise out of reflection, and which will vindicate the relation of the psychical to the individual and that of the individual to reflection” (pp. 92–93)? His readers may be thankful that Professor Mead did not add the weight of his own theory to the already overburdened sentence which we have just quoted.

In his own theory, he says, "it is possible to regard the psychical, not as a permanent phase, nor even a permanent possible aspect of consciousness, but as a 'moment' of consciousness or in a conscious process, and which has therefore cognitive value for that process" (p. 93). The question of real importance, in his view, does not concern the content of the psychical, but the way in which it appears. The psychical, negatively viewed, appears as the break or interruption in action. Viewed positively, the psychical is the process of the interaction of the various contents in the process of their reconstruction. "A successfully thrown ball means to us distance covered, weight of the ball, momentum attained, an entire objective situation. A mistake in the weight of the ball will give rise to a disorganized phase of consciousness, which will be subjective or psychical until it is readjusted" (p. 102). This psychical process of readjustment Professor Mead identifies with the copula of the logical judgment.¹

Professor Ladd, in a *Brief Critique of Psychophysical Parallelism*,² maintains that 'the hypothesis of psychophysical parallelism sorely needs reëxamination by its advocates,' and that 'it cannot be stated in any form which will satisfy the demands for explanation of the phenomena.' He, also, starts with the dynamic character of experience, within which there is a '*diremption* of the experienced phenomena by the activity of the discriminating consciousness' into things (including the body) and the self. These two 'classes of phenomena, or experiences,' appear to be related, and the relation *seems* at least to be an ontological one, a causal relation. This ontological way of regarding the relation is most deeply rooted in our very nature. It is the source of all philosophizing. "When, then, either physicists or psychologists, or both acting in conjunction, deny the validity of the ontological interpretation of the psychological facts, they * * * should be called sharply to account." "Not one of the modern advocates of the hypothesis * * * has ever given evidence of having bestowed the needed criticism upon the categories which the statement of the hypothesis necessarily involves" (p. 377). The very idea of a *parallelism* of the psychical and the physical is 'either unintelligible, or

¹ Three papers by the present writer, which interpret the distinction functionally, may be mentioned in this connection as representing this same general point of view: Bawden, 'The Functional View of the Relation between the Psychical and the Physical,' *Philos. Rev.*, Sept. 1902, pp. 474-484; 'The Functional Theory of Parallelism,' May, 1903, pp. 229-319; 'The Meaning of the Psychical from the Point of View of the Functional Psychology' (shortly to be published in the same journal).

² *Mind*, July, 1903, pp. 374-380.

inadequate, or plainly false.' "The explanation which discriminating 'ontological consciousness' gives of this experience refers the two classes of phenomena, thus related, to two real beings * * * reciprocally influencing each other in a unique way" (p. 378). "What science discovers is not 'parallelism' but an infinitely subtle and complex network of relations." The emphasis in this paper, also, is on the presuppositions of the problem, but with an obvious leaning toward the interactionist and ontological interpretation.

Professor Stratton also comes to the defence of interactionism in Chapter XIV. of his *Experimental Psychology and Culture*.¹ He criticises parallelism from three sides: from the standpoint of physiological psychology, from the special difficulties presented by the case of sense-perception, and from the standpoint of the theory of evolution. Under the first point, the history of cerebral localization is cited as supporting the view that consciousness must be in some sense the cause of action. The second is a critique of parallelism. The third is the argument of F. H. Bradley, that parallelism is 'a doctrine of the uselessness of the soul.' His own positive arguments in favor of interaction are: (1) that there may yet be discovered a quantitative causal relation between stimulus and sensation. Elsewhere in the book he says that extensity is an attribute of all consciousness and makes this the basis for asserting the possibility of mental measurement in the literal sense. (2) Causation simply means sequence, hence by consciousness 'we mean simply the total set of circumstances under which any event regularly occurs'; therefore 'mental events may be, on occasion, numbered among the causes of physical acts, and *vice versa*' (p. 286). (3) Solomon's argument that interaction is not inconsistent with conservation of energy, since 'the influence of the mind might be, not to add to the energy of the brain in any way but simply to redispense it' (p. 288).

What, to the reviewer, seems the most important consideration in these arguments is the basal assumption as to the nature of mind, which runs through them all. On a previous page this is made explicit. "We all have an instinctive feeling that our mind reaches out into our very skin, and is in the actual presence of the objects that touch us. * * * But the more prosaic, and yet, after all, more wonderful fact is that the mind receives only indirect reports of what is going on without. The cortex of the brain, with which our consciousness is connected, lies in darkness, deep in its coatings of tough membrane and skull and flesh, and connected with the outer world only through the medium of long and delicate fibers that bring in

¹The Macmillan Co., 1903.

messages from the outposts of sense. It is as if a person were secluded in an inner chamber and learned of the outside world only by an inconceivably elaborate system of wires and signals. * * * The mind must distinguish the various impressions from different parts of the skin, or from the innumerable points on the surface of the eye, and refer each to its proper place in the external world" (p. 123-4). The same assumption seems to underlie the author's contention that the psychical has both the qualities of duration and extensity (Chapter III.) which have been denied it, for example, by Professor Münsterberg.

He criticizes parallelism as follows: "Sense-perception is the crux of parallelism and will some day, I fear, be its death. * * * When you are startled from a reverie by some crash in the street, caused, let us say, by a falling sign, your sudden mental impression (this theory has to assume) is not caused by the physical disturbance without, but by some mental processes essentially disconnected with the outer world. While physical nature has been rusting away the fastenings and stirring the wind that brings down the sign, the inner processes of your own mind * * * have been silently preparing to call forth sound-sensations * * * just in the nick of time when the sign falls * * * When one remembers that not a shred of evidence exists of any antecedent mental processes that might cause the sensations of noise * * * he begins to appreciate something of the enormity of this theory" (pp. 280-1).

Sensation and volition are the test cases for any theory. They are, as it were, half in and half out of consciousness. At least this is the implication of much of our current psychology, in which the stimulus and the response are conceived as extra-mental, while the sensation and the idea (or volition) are the intermediate mental occurrences. Sensation is viewed as a mental state stimulated from without and the volition as a mental state which in some unknown way produces or is accompanied by an outward overt act. But, as Professor Dewey and Professor Mead have pointed out,¹ the fundamental assumption here is wrong. Stimulus and response (ether vibration and muscular contraction, for example) form a continuous series with what we call the intermediate inner process, and ought to be interpreted from this standpoint. Conscious states are acts as much as ether waves or muscle twitchings. Only from this point of view is it possible to avoid the pseudo-problems which otherwise appear, of which this citation from Professor Stratton's book furnishes an instance.

¹ See discussion of this point in Professor Mead's paper, pp. 98 f.

According to Professor Marvin,¹ the physical stimulus (the cause) has a twofold effect, a brain-state and also a sensation. The latter is wholly different in kind from the former, yet the law of casuality (which here also is identified with mere sequence) is conceived to hold between these two otherwise incompatible facts or events (p. 279). Elsewhere in the same book (*e.g.*, p. 176), however, he seems to support a purely mechanical or 'scientific' conception of psychology. "Ultimately science must hold that its ideal explanation of mind would be physical." "Our mental life must be interpreted ultimately in relation to the physical world." "The ideal psychology is a physiological psychology."

Professor Walter Smith² tells us that "the objects of cognition, so far as given in cognition, are not to be distinguished from the soul. The proposition, 'the soul is red,' seems absurd only when a pigment is thought of as something separate from consciousness, and the soul is likewise regarded as a surface abstracted from thought. As a matter of fact the redness is not in the object; it is in a state of consciousness. The qualities of things are given to us in terms of our conscious life. The mind which sees red is in that act red. And in the same way, extension is an idea or a conscious experience, and therefore the thought of extension is an extended thought. To quote Mr. F. H. Bradley, 'The idea of the extended has extension, the idea of the heavy has weight, the idea of the odorous has smell.'"

According to Schultz,³ we must go back to the Kantian standpoint for a true solution of the problem. He approaches the problem from the standpoint of the transcendental idealism. There is only one reality and this is idea. There are not two phenomenal manifestations of this reality, but two different modes of knowledge or ideas. These forms of knowledge are metaphysical *a priori* elements of consciousness—conditions of the very possibility of experience. These forms or ideas are of two sorts: the one ordered in time (our sensations and thoughts); the other ordered in space (the objects of the external world, including my own body). Both are ultimately subjective or mental, but the latter have the peculiarity of externalizing as objects. The problem of the relation between brain and consciousness is thus the problem of the relation between these two kinds of ideas.

Like Kant, he finds the connecting link between the two in time. The relation between brain and consciousness is a temporal parallel-

¹ W. T. Marvin, *Introduction to Systematic Philosophy*, Macmillan, 1903, espec. Chaps. XIV., XVII., XX., XXX., XXXI.

² W. Smith, 'The Idea of Space,' *Philos. Rev.*, Sept., 1903, p. 503.

³ P. Schultz, 'Gehirn und Seele,' *Zeitschr. f. Psy. u. Physiol. d. Sinnesorg.* XXXII., Heft 3, u. 4, pp. 200-258.

ism. His discussion of the Kantian forms of perception is a good illustration of the limitations of the view. He uses the figure of a lens whose refracting surfaces determine the form which the light rays take in passing through it. 'This form,' he says, 'is given once for all; it is there before light rays fall upon it and it matters not whether they ever do fall upon it; it is before all experience and given independently of all experience' (p. 218). This appeal to 'Urformen' of the mind as lying logically back of all spatial and temporal experience, and thus conditioning the very possibility of a science of objects in space and time, is defective chiefly in that it treats the psychical as a fixed content. Why this *a priori* character in the relations of the subject to the object which is not reciprocated in the relations of the object to the subject?

He makes much of the distinction between things which can be *perceived* and things which can be *thought* only. We can think the hyper-space of the metageometry, but we cannot perceive it. We can think the psychical and physical as parallel but we cannot perceive such a parallelism. Two things to be perceived as parallel must lie beside one another in space. But the psychical is not spatial, hence the parallelism cannot be one of perception, but one of thought only.

The author follows Kant also in saying that psychology cannot be a science in the strict sense because it cannot state its phenomena in exact quantitative form (p. 240 f.). He calls attention to the peculiar fact that it is just where the psychical facts, on general agreement, are most immediately given, namely in one's own consciousness, that the methods of exact science break down or are inadequate. But the question is, Is this to be interpreted as expressing some inherent peculiarity of these facts, which renders them incapable of exact investigation, or does it simply reflect the imperfection of our present scientific methods of dealing with such a complicated subject-matter? The inherent limitations which Schultz finds grow out of the ontological view of the nature of consciousness which, in spite of his disavowal, really underlies his discussion.

The real issue appears in the following sentence: 'Aber die körperliche Natur ist nur ein Teil, ist nicht die ganze Natur' (p. 240). Of course the material world is not the whole of nature if by material one means the blind, inert, mechanical side, leaving out the intelligent, dynamic and purposive. But it is just the significant advance in the physical-scientific view of the world that in the idea of energy we are reading back into nature these very factors which in the older view of the 'material' world were excluded. The problem is the deeper one

of reconstruction of fundamental concepts in physical science. 'Back to Kant' has often served its useful purpose both in philosophy and in science just because Kant was in so many respects ahead of the philosophy and science of his age. But there are coming to be some problems which can no longer be solved by harking back to the transcendental idealism of the great Königsberger, and this problem of the relation of the psychical to the physical is one of them.

Last but not least, we come to the theory of 'psycho-physical idealism' so ably expounded by Professor Strong in his recent book, *Why the Mind has a Body*.¹ It deserves a more extended discussion than is possible within the limits of this article. The attempt will be made to deal only with certain points of a general nature.

The standpoint is one which had been put forward by Dr. Morton Prince in certain writings² a number of years ago, but it receives an entirely independent treatment by Professor Strong and is set forth in a most attractive and persuasive form. It is, as some one has said, 'idealism that out-Herods Herod.' The world is a world of things-in-themselves, and these things-in-themselves are conscious experiences. This, the author says, is the true panpsychism. Matter, organism, brain-states are symbols only. The contrast between the mental and the physical is that between reality and phenomenon, substance and shadow. Your brain is simply a shadow cast by my consciousness. My brain, if I could see it, would, likewise, be simply a shadow cast by my own consciousness, which is the reality. Thus are the tables turned on epiphenomenalism.

A query is apt to arise in the minds of some readers right at the start, with regard to the title of the book. Perhaps the author intended it to be so. It would seem, on any assumptions that the biologist at the present time is willing to make, that it is equally relevant to ask why the body has a mind. The biologist to-day regards it as possible to give a scientific explanation of an organism without any direct reference to consciousness. To many lower organisms, in fact, he even denies the presence of consciousness. There are few who are willing to maintain that even the highest plants have a mental life. Most of the scientists who speculate on the problem regard the mental and the conscious as having arisen out of non-mental and unconscious nature by some as yet unknown process which does not conflict with the law of interconvertibility of energy. The scientific biologist, in other words, generally assumes, if he does not frankly assert, that there

¹ C. A. Strong, *Why the Mind has a Body*, Macmillan, 1903.

² Cf. discussion between Dr. Prince and Professor Strong in the *PSYCHOLOGICAL REVIEW*, Nov. 1903, pp. 650-658; Jan. 1904, pp. 67-69.

were organisms before there was consciousness, that there was body before there was mind. This is the very obvious implication of the nebular hypothesis and of evolution by natural selection. The problem for the biologist thus would seem to be why the body has a mind.¹

The author, in the preface, promises that his theory will enable us 'to settle the controversy between the interactionists and the parallelists in a way satisfactory to both parties.' This adds zest to an appetite already keen from a reading of the title and a glance at the table of contents. And whatever one's final decision with reference to the substantiation of the author's claim, the reader will follow the argument from cover to cover with an unflinching satisfaction with the way in which it is said.

The author presents a somewhat new classification of theories. He first classifies them as realistic, dualistic, materialistic, idealistic, spiritualistic and phenomenistic. These are ultimate or metaphysical theories. He then rearranges them to correspond with the empirical mind-matter theories which he sets forth in the first part of the book. These empirical theories are: (1) interactionism: (*a*) psychophysical dualism (naïve and critical), (*b*) psychophysical phenomenism — interactionist form. (2) Automatism: (*a*) psychophysical materialism (naïve and critical), (*b*) psychophysical phenomenism — automatist form. (3) Parallelism: (*a*) psychophysical monism (mind and body equally real or unreal), (*b*) psychophysical idealism (mind real and body phenomenal — the author's view).

The deepest gulf is that between parallelism and its rivals. "The great question is not in what direction the causal influence runs, but whether the relation of mind and body is such as to permit of causal relations at all" (p. 4). The author finds the reconciliation in the doctrine of psychical causality. He denies that physical causation is the only type of causation. The parallelism, he says, extends to the causal relations (p. 85). The theory reveals its ontological character, of course, at this point.

The value of the doctrine thus turns upon the general conception of reality and of consciousness. Reality is defined (on p. 194) as 'something that exists of itself and in its own right, and not merely as a modification of something else.' Material objects are denied reality because they are dependent upon consciousness, while consciousness is asserted to be a reality because it 'exists in its own right,' and is not, in turn, dependent upon these objects.

¹ And Professor Baldwin's account of the genesis of the distinction in the individual would suggest that the problem is just as relevant in this reversed form there also.

But does not this really beg the whole question, since consciousness itself is just the subject-object relation? Of course, if consciousness is taken in the exclusive sense, as including objects-of-consciousness, it is reality that 'exists in its own right,' since it is just everything. But if consciousness is taken as the form or process of experience, as contrasted with its content of objects, then consciousness is just as much of an abstraction (and therefore dependent) as material objects.

The same difficulty appears in the author's view of the relation of the individual mind to other minds. His atomic view of the individual mind leads him to reject phenomenalism, which tends to solipsism, and to accept the existence of things-in-themselves. "Thoroughgoing phenomenalism makes no provision for knowledge of the minds of other men and animals" (p. 215). But are minds mutually exclusive, as both of these theories assume? The question here is really a genetic one — psychogenetic and sociogenetic. What is individuality? Are there any different grounds for believing in a fixed psychical individual than for believing in a fixed biological individual? Before we can adopt either the phenomenalist metaphysics or the metaphysics of things-in-themselves, we must have some clear notion of what we mean by the individual and how the distinction of the individual and society (other individuals) arose, starting from a stage in which these are still fused or merged. We must ask what is the function of individuality in the conscious life of the race.

As would be expected, metaphysics, on this view, is essentially different in principle from science. "The two are different in kind and mutually independent * * * asking unlike questions" (p. 231). "Metaphysics differs fundamentally from empirical science in that it takes cognizance of and investigates a kind of knowledge never dreamt of by the latter, namely, knowledge of the non-empirical. As the real universe falls apart into two contrasted segments, my consciousness and what is not my consciousness, so there are inevitably these two kinds of knowledge, these two opposite positions of the mind towards reality" (pp. 231-2).

In conclusion, attention may be called to the striking differences of opinion which prevail upon almost every phase of this subject, differences only partially illustrated in the views here brought together. This in itself is hopeful only as suggesting that the problem is passing into a new phase. On the one side, we see fundamental principles like those of causality and conservation of energy brought into question and attempts made so to restate them as to account for the psychical as itself an efficient form of energy, consciousness even being

endowed with extensity in the hope that this will bridge the gap. On the other hand, the transcendentalists and phenomenologists agree in affirming the utter incompatibility and incommensurability of the psychical and the physical, some asserting and others denying the timeless and spaceless character of consciousness. Interactionism still has its advocates, but they have not met the objections of the parallelists. But on the other side, the attempt to keep parallelism as a scientific hypothesis separate from parallelism as a metaphysical doctrine has signally failed, those who have most strongly defended this distinction themselves falling into metaphysical snares the more harmful because unsuspected.

In a general way, it may be said that the concept of function is superseding that of cause in the conception of the problem, with the result that attention is being turned from the problem as stated in its historical forms to a study of the terms of the problem and what they imply. This turning to the methodological presuppositions of the problem is most promising, and suggests that its true solution will be found in the very process of thus attempting to restate it. To the present writer, it seems that the difficulty as to the nature of the soul resolves into the question of the re-thinking of matter in more dynamic terms. The concepts of 'mental activity,'¹ 'mental process,' 'the stream of thought,' all show that consciousness is coming to be conceived in more dynamic terms. Consciousness is action in its reconstructive phase, and psychology is the attempt to state the laws of a psycho-mechanics, the conditions and the limits of tension in the reconstructive phase of action. And the doctrine of 'unconscious mental states,' which has come in for so large a share of discussion in recent controversy over this subject,² becomes significant as indicating this irresistible movement toward the re-thinking of both sets of categories, each in terms of the other. Such phrases are, of course, mere contradictions in terms until we see in them this implicit recognition of the essential identity of the psychical and the physical. Not until physical science (including biology) and psychology get together in the investigation of reality in the use of some such concept as activity, energy, action, process, will such palpable absurdities as 'unconscious feelings' and 'unconscious ideas' vanish before the light of a true scientific analysis.

¹ Cf. Bawden, *The Brain in Relation to Mental Activity*, New York Teachers Monographs, Vol. IV., No. 4 (Dec., 1902), pp. 35-45.

² Cf. Stratton, *Experimental Psychology and Culture*, Chaps. IV. and V.

H. HEATH BAWDEN.

Geist und Körper, Seele und Leib. LUDWIG BUSSE. S. 482. Leipzig, 1903.

The author has already taken an active part in this 'Streitfrage' by articles in the *Zeitschrift für Philosophie und philosophische Kritik*, of which he is the editor, as well as in several brochures bearing directly on the subject. In this work he has undertaken two main tasks: (1) To give a statement of all the possible theories relating to the connection between mind and body, and (2) to establish his own theory which is that of interactionism and simultaneously to refute the various forms of the rival hypothesis of parallelism. The first task is performed very carefully and impartially. As to the execution of the second, we cannot think that the author has been more successful than on previous occasions in driving parallelism from the field.

Having proved to his own satisfaction that parallelism cannot be put forward merely as a working hypothesis, but that it involves a metaphysical doctrine; further that the parallelism between physical and psychical must be of a thorough-going and universal character, which brings with it as a necessary consequence panpsychism; and that it is most in harmony either with a realistic monism such as Spinoza's or with a complete dualism (pp. 67-118), Professor Busse proceeds to a detailed examination of the doctrine extending over two hundred and fifty pages. The assertion put forward by Paulsen, amongst others, that psychophysical parallelism is a necessary consequence of critical phenomenalism or transcendental idealism, he regards so far from being established that he considers it may be questioned whether the two doctrines are mutually compatible. But the argument that critical idealism, by making the material world a phenomenon of mind, cuts at the root of the parallelism which was designed to meet the difficulty of the connection between physical and psychical, there being then no longer two different 'things' to correlate, seems to prove too much. For it would follow similarly on any idealistic, just as on any materialistic basis, that there could then be no problem of interaction.

The modern interpretation of the principle of causation has been frequently held by recent writers to exclude the possibility of an interaction between physical or physiological events and psychical processes. The author, however, maintains that it is neither the causal principle nor the concept of causality in itself, but other principles which have been supposed to be inseparably connected with or else falsely identified with the causal principle, which have led to this inference. These are the principles of the conservation of energy and the self-containedness of physical causation. Before examining their

extent and validity, the weakness of parallelism is exposed by considering some of its inevitable consequences.

Amongst its unacceptable consequences are the automaton theory and psychological atomism ('pluralistische Seelenlehre,' p. 208 et seq.), the first of which cannot be escaped as some 'idealistisch-denkender Parallelister' would have us believe by a reference to the idealistic metaphysical foundation of their theories; nor by critical or neutral monism, which involves a perpetual oscillation between the idealistic and realistic standpoints according to the requirements of the situation (Riehl). The unity of consciousness, it is maintained, demands an unified subject, the basis of which is a soul-substance; and the author quotes with approval similar views of Professors James and Ladd. He endeavors, though not quite convincingly, to refute two objections against the substantiality of the soul, one of which urges that the soul itself must be extended, the other requiring a 'seat' of this substance. He points to the inconsistencies of thinkers like Wundt and Paulsen, who, while denying the substantiality of the soul, yet fall back on the unifying and all-inclusive will as the foundation of their idealistic theories (p. 339). For what else, as he asks pertinently is this 'einheitlicher Wille,' which both Wundt and Paulsen regard as the ultimate essence of men and things in general, than the soul-substance, the manifestations of which are psychical phenomena in another aspect (p. 339)? But, indeed, it would not be easy to say what exactly the views of Wundt are in regard to the problem under discussion. Passages could readily be quoted from his writings that would tend to support equally well both interactionism and parallelism.

The mind-stuff theory is according to Professor Busse an unavoidable consequence of psychophysical parallelism, and is escaped by Riehl, Ebbinghaus and Wundt only through inconsistencies (pp. 345-378). Though not maintaining that parallelism necessitates the postulate that 'die inhaltliche Bedeutung der psychischen Vorgänge sich auf der physischen Seite wiedergeben lassen muss,' he holds there is a residuum (*Rest*) remaining on the psychical side which can be correlated with nothing on the physical. This is the synthetic activity or function of consciousness. Now psychophysical parallelism, it is argued by the author, involves that mechanical associationist psychology which resolves, or at least attempts to resolve, the whole psychical activity into a mechanism of psychoses ('Psychomen'). And there further arises the difficulty of reconciling the independence of the laws of logical thought with physico-chemical uniformity. To attempt to solve this 'antinomy' by falling back on

an original preëstablished harmony between the physical and psychical series is, of course, hopeless. The alternative, however, of either surrendering the independence of logic or giving up parallelism, will scarcely be admitted by all parallelists — nor is it demanded by all critics of parallelism — just as they will certainly not universally accept the statement that a mechanical psychology and psychophysical parallelism necessarily go hand in hand.

Seeing that the theory of parallelism is pressed with such serious difficulties, the question naturally presents itself whether some other rival view cannot maintain itself better. Why not the 'Wechselwirkungslehre'? It is held by numerous investigators that certain fundamental propositions of physical science stand in the way of its acceptance, above all the principle of the conservation of energy and its corollary, the principle of the self-sufficiency of physical causation ('Geschlossenheit der Naturkausalität.') Now if it could be shown that these laws are reconcilable with the theory of the interaction of mind and body, then not only would the strongest objections to its acceptance be removed, but the strongest arguments for the contending theory of parallelism would be simultaneously undermined.

The author examines the principle of self-containedness of physical causation first, which we think is a reversal of the correct systematic order, it being ultimately based on the principle of the conservation of energy. That the former principle is not self-evident is obvious; nor is it, according to Professor Busse, 'der Ausdruck einer erfahrungsmässig feststehender Thatsache'; nor even 'ein auf Grund eines sicheren und unanfechtbaren Induktions-schlusses aus Thatsachen der Erfahrung abgeleitet' (p. 387); but a mere prejudice or dogma, nothing more than an article of some scientists' creed, which is not proved for organic changes. Indeed we are told that the attempted proof is in some cases a *petitio principii* (p. 398); and that the principle implies in addition the concept of a finite universe, 'eine abgeschlossene Totalität des Weltganzen,' a concept quite metaphysically transcendent.

In dealing with the principle of the conservation of energy, two interpretations of it are, says the author, to be noticed and distinguished: (1) Its assertion of the constancy of energy — 'Konstanzprinzip,' (2) its assertion of equivalences of transformations of energy — 'Aequivalenzprinzip.' The principle of the constancy of energy cannot be harmonized, as he frankly admits, with any form of the doctrine of interaction. He points out (1) the groundlessness of Stumpf's attempt to regard the psychical as itself a form of energy (to which also Külpe seems inclined), as well as (2) the impossibility

of introducing the idea of a 'Wirken ohne Energieveränderung,' from which result both the double-cause and the double-effect theories (pp. 417-437) and finally (3) the untenableness of the hypothesis suggested by Sigwart and recently more than once urged again, of a 'Richtungsänderung bestehender Bewegung (oder Energie) ohne Energiezuwachs,' according to which the soul might conceivably guide or set free potential energy without increasing its actually existing amount (M. Wentscher). But there is another way out of the apparent difficulty. For according to the author the constancy of energy depends solely on the 'Geschlossenheit der Naturkausalität,' which is not proved. And the first law itself is not capable of empirical verification; for no one can actually show that the energy of the universe is constant. If it fluctuated slightly in amount, who would be the wiser? On the other hand, the principle of the equivalences of energy is quite reconcilable with the theory of interactionism, since it involves no idea of an 'abgeschlossene Totalität der Natur." Like all other laws of nature, says Professor Busse, it leaves the question undetermined what takes place when, instead of body acting on body, body acts on a soul or *vice versa*. The principle of equivalences merely asserts that where reciprocity of action exists between material things, whatever quantity of physical energy is used, is supplied (or replaced) by an equal amount of physical energy or of 'some other kind' of energy! But what sort of energy will that be which is not physical? Having once dismissed the concept of psychical energy, of which we can speak indeed only through a metaphor, as well as the idea of 'Richtungsänderung ohne Energievermehrung,' how is it possible to harmonize the 'Einwirkung des Psychischen' with the principle of equivalences or with the principle of excluded perpetuum mobile? The author's views assuredly require some further elucidation on this point. He inclines to the view which limits the validity of the last-mentioned principle to the sphere of inorganic phenomena; from which it appears to us that he fails to understand its intimate connection with the principle of the conservation of energy. Finally, notwithstanding his polemic against metaphysical propositions and dogmas, he has resort to a supernatural agency, which is one of those scientifically uncontrollable principles that will do almost anything you please. "Sicher wird der Weltgeist, wenn er der Welt im Momente, da sie stille steht, einen neuen Anstoss geben will, sich weder durch den Respekt vor dem Grundsatz der Unmöglichkeit des Perpetuum mobile, noch durch die Pariser Akademie, welche diese Unmöglichkeit aussprach, daran hindern lassen" (p. 473). As if the sole founda-

tion for this principle were a mere dictum of the French Academy of the year 1775! The author's utterances can hardly be held to be a philosophical refutation of a scientific principle; nor can his concept of a 'Weltgeist,' implying as it does that of a 'Weltganzes' also, be considered less metaphysical and dogmatic or better established than those interpretations of the principle of the conservation of energy which he sets aside.

The limitation of the perpetuum mobile principle to inorganic phenomena stands at the present time for a mere possibility which finds much of its support in the existing ignorance of the exact relations between organic and more especially between cerebral changes. Admitting what seems a rational requirement, that where psychical processes manifest themselves in connection with organic changes the latter must differ somewhat in character from those cases of physical change where no psychical factors appear, still this would by no means imply as a probable consequence that, in regard to the conservation of energy, brain changes differ in principle either from those occurring in other parts of the human organism or from those of a physico-chemical nature. No actual observations are forthcoming to render such a supposition plausible. The principle of the conservation of energy embraces the totality of measurable phenomena, and an ineluctable consequence of it is, that physical effects must be referred exclusively to physical causes by which they are completely determined. To put forward the last statement as, at least, a heuristic principle is certainly legitimate until a negative instance is indubitably established, *i. e.*, until either it is shown to be impossible to discover the physical causes of observed physical changes or a definite case of the interaction of psychical factors is proved. Professor Busse does not maintain that either has, as yet, been accomplished. The telegram-argument already urged by the author on previous occasions and again repeated (pp. 310-321) is assuredly overworked as an argument for the indispensableness of a soul-substance, which would resolve the supposed difficulty only by introducing another.

To conclude, the arguments of the book, if not always convincing, are on the whole clearly presented, and the tone of the criticisms is objective. The style is rather diffuse, and there is some unnecessary repetition of the arguments. It is noticeable that Professor Ward's instructive discussion of psychophysical parallelism (*Naturalism and Agnosticism*, Vol. II.) is not mentioned; although the standpoints of the two thinkers seem in many respects essentially similar.

PHILOSOPHICAL DICTIONARIES.

Vocabulaire philosophique, published in the *Bulletin de la Société française de Philosophie*, 1902-1903.

Wörterbuch der philosophischen Grundbegriffe. F. KIRCHNER. 4th ed., ed. by C. MICHAELIS. Leipzig. 1903.

The French Society for Philosophy, it is well known, arranged in 1902 for the publication of a dictionary of terms called *Vocabulaire technique et critique de la Philosophie*, to be prepared by a committee. We are now in receipt of the first four parts of the vocabulary printed in the regular issues of the *Bulletin de la Société Française de Philosophie* at intervals. The numbers already devoted to the vocabulary are Vol. ii., 7, 8 (July and August, 1902), iii., 6, 7 (June, July, 1903); they comprise the text A to C (inclusive). With the text, which has been composed so far largely by MM. Belot, Couturat, Delbos, Lalande, there is printed term by term the remarks, criticisms, and suggestions of a large number of other authorities, including many of the best known writers of France. The sections before us comprise in the aggregate 136 two-column pages from which we may estimate the entire *Vocabulaire* complete, with the comments at about 800 pages — a single handy volume.

In the first part the editors print their preface and announcement, from which we 'get a line' on their intention. They distinguish four topics in what may be called the philosophical interest: Psychology, Sociology, the Normative Sciences, and Philosophy proper or Metaphysics. The vocabulary is to be devoted mainly to the two last; but it is to include the philosophical or general terms of psychology and sociology, inasmuch as philosophy itself rests upon the conceptions of those more special disciplines. But the technical and special terms of psychology and sociology are to be excluded (examples given: *Myopie*, *Hyperhémie*, *Apprentissage*, *Juridiction*). The more literary usages of terms are also not taken up (*e. g.*, *Angoisse*, *Affectation*).

The difficulty of maintaining such a rule of division is apparent in the text — quite apart from the justification of it in theory.¹ In theory

¹ *E. g.*, *Capital* (economic) is included; it certainly is not so philosophical a conception as *Jurisdiction* (in law). *Myopia* is as eligible as the special term *Arbitre* for Luther's view of the dependence of the human will on divine Grace. Other cases of such doubtful inclusion are *Animal*, *Aura*, *Claustrophobie*, *Chrématisique* (Landry). In this and the other criticisms which follow the present writer fully recognizes the necessity for limitation of scope in such a vocabulary, and for rigid adherence to the rule once adopted; but if the limitation in any case is arbitrary, the practical enforcement of it inevitably leads to inconsistencies.

the average demand of students and workers is no doubt safe as a measure of supply; but it is the interest of the particular user of a work which criticises it for not giving him the term which, just from the fact that he needs to look for it, is likely to lie a little beyond the line of the average; at any rate, the practical utility of such a work is, I think, in geometrical ratio to its inclusiveness.¹

Having adopted such a field of work, the editors lay down the following rules of procedure (freely translated and abridged):

1. To cite only such texts as contain a definition, or are necessary to justify a rare or doubtful meaning.

2. To give for each term its nearest foreign equivalents; and to add definition and texts in case of such foreign words only as have already become international (*Absolut*, *Archtyp*), or in cases in which the equivalence of meanings is established (*Âme*, sense of *ψυχή* in Aristotle).

3. To propose, wherever feasible, one or more roots suitable for the formation of terms for an international language (by the rules of derivation of some existing artificial language).²

4. To give historical definitions only when they correspond to expressions still to be met without explanation in contemporary writers, or are necessary to the understanding of present day meanings (*e. g.*, excluded, *Acervus*, *Adiaphorie*; included, *Achille*, *Âme du Monde*.)

And in explanation: all that might be called 'encyclopaedic' is rigidly excluded; only that is introduced which is necessary to establish and further meanings actually in use.

A work constructed by such rules and by such a committee will have undoubted value; the first fascicles prove this. The present writer, speaking as one having some experience (and as one whose *Dictionary* is frequently cited and drawn upon) finds the program essentially reasonable and fair. It joins hands, indeed, with the *Dictionary of Philos. and Psychol.* in certain features: the equivalent renderings in four languages,³ the conception of philosophy as a wider synthesis of knowledge, on one hand, and a system of valuations, on the other hand; the explicit recognition of the modern spirit, from which follows the exclusion of unnecessary historical citation and of all

¹ Of course, the bulk and cost of the larger work is the penalty of inclusiveness, as is seen in the present writer's *Dictionary*, and it is possibly enough to have one such case of extreme lexicographical 'pragmatism.'

² Esperanto is had in view: the language which is making great headway (a London journal of Esperanto has recently been established). Cf. the editor's remarks on the advisability of this feature, following an objection by M. Bernès, in the first section of the *Vocabulaire*, p. 156.

³ In which the *Dictionary's* equivalents are generally followed.

erudition in and for itself ('scholarship' put on exhibition); the inclusion of the general conceptions of science in most of its branches (*pace* the program!'); the coöperative feature, by which objectivity is gained.

Accordingly, in this preliminary notice, we may offer felicitations to the *Société de Philosophie* on the fine result of its undertaking. An exhaustive appreciation and criticism may be deferred until the later parts appear.

In the Preface to Kirchner's *Wörterbuch*, the editor gives a slight account of the author, Friederick Kirchner, who died in 1900. The present edition is described as a '*Neubearbeitung*,' so many are the changes now made. Appended is a useful *Zeittafel*, or date-list of the philosophical writers, no biographical matter being included in the text. This is an interesting way of giving the least possible, in the least space, under the head of biography. The volume should serve a good purpose to others besides 'The German Student' to whom it is dedicated.

J. M. B.

THE STANDPOINT OF EXPERIENCE.²

The point of view of Professor Creighton in this article is fundamentally teleological. The emphasis is on the whole directed against the abstract separation of such pairs of categories as thought and experience, subject and object, knowledge and will. The subject contains the object: thought is the moving, integrating factor of experience, it is emotional and volitional as well as cognitive. The vital and all-inclusive problem of modern philosophy is that concerning the nature of experience. Whatever account is given, it cannot be referred to the facts as a test of its adequacy, for 'the nature and correct reading of the facts is the very point at issue,' since there are no fixed facts external to experience. And any attempt to determine the nature of experience before it is corrupted and transformed by thought must prove futile, because 'experience always exists for a mind and to be a mind is just to meet the object with conceptions and practical pur-

¹ Biology, which is hardly 'normative,' nor yet to be classed under Psychology or Sociology, is liberally treated (*e. g.*, *Loi de Baer*, *Bionomie*, *Atavisme*, *Accommodation*). Indeed, the *Vocabulaire* may say, *Nil scientiae a me alienum puto!* Anthropology has place (*Animisme*, *Clan*); Physics is not passed by, *Cruciale (expérience)*, *Cinétique (énergie)*; nor are Economics (*Capital*), Pathology (*Coprolalie*), Mathematics (*Arithmétique*), Theology (*Arbitre*). For this the *Vocabulaire* will certainly be criticised by the pedants—cf. the reviews of the *Dictionary* by Latta (*Int. Jrl. of Ethics*, 1903), and Ritchie in *Mind* (suspending this word pedant, however, in speaking of the dead).

² J. E. Creighton, 'The Standpoint of Experience,' *Philosophical Review*, XII., 6, pp. 593-602.

poses.' "We must cease to regard experience as a mere lump or matter upon which thought works *ab extra* as upon something foreign to itself." Experience is, in reality, a process of transformation and adjustment aiming at logical consistency and practical ends.

This general statement is followed by a more specific discussion in which the author makes and develops three negative propositions: (1) "Experience is not a stream of subjective processes, existing as mental modifications in a particular thing called mind." In order for there to be any experience, the object has somehow to be brought into connection with the subject. Historical criticism of philosophy shows that this cannot be done if we set the contents of experience over against the experience itself. 'There is no independent object outside of thought' and there is no thought in itself existing in abstraction from the contents of the experience. (2) "The relation of subject and object in experience cannot be adequately expressed in terms of cause and effect." For the causality category postulates the mind as a 'consciousness-thing' receiving impressions from independent external objects. But this is a relation that was shown to be untenable in (1). It is obvious then that when we abandon the causal standpoint and admit that subject and object are related in a more essential and intimate way, we are throwing aside interactionism, parallelism, and the copy or representative theory of knowledge. (3) "The mind is not one particular thing separated from other things but as a true individual contains within itself the principle of universality." "The mind is able in one indivisible act to differentiate itself from things and to relate them in the unity of its own life." Thus taking our standpoint within experience we find that we have no problem of uniting subject and object. "Experience is at once both subject and object."

He then contrasts this internal standpoint with that of the special sciences which regard experience as 'a collection of objects over against the scientific observer.' Thought works upon these objects in an external way. But this is not experience as we actually live it, nor is it the experience with which philosophy has to do. The actual experience is 'a living process of thought and the being of the world.' The internal point of view is teleological. Objects are related to us through our ideas; they are bound up with our feelings and practical purposes. Reality is a means of realizing our complete interests, practical, scientific, ethical, æsthetic. Nor does this view destroy the objective character of reality as it may seem to do upon first consideration. For, after all, the purposes of the subject are real only as de-

terminated by the concrete situation. Our purposes transform the facts and in turn the facts give shape to our purposes. The process of experience is thus an organic interplay of the two.

The rest of the article seeks to establish the transcendent character of self-consciousness, and in so doing it is concerned with the interpretation and criticism of the proposition which asserts that mind is a function of the object; that subject and object are simply functions in experience. First, the author says it is pertinent to ask what is the whole of which they are the functions, and the reply is that the concrete experience is that whole. To consider subject and object as ontological distinctions is to hypostatize them. But the author contends that this organic view can be held only from the internal standpoint, that is, 'it is only in virtue of self-consciousness that we are able to speak of experience as an organic unity.' Self-consciousness is thus 'unique and all-important.' "By becoming conscious of the objective relations and of its own life in connection with these relations, it thus raises itself above the mere process of experience."

But in this statement is not the author arguing against himself? For to say that self-consciousness is something more than experience is to say that after all the standpoint of experience is not the 'all-inclusive' problem of philosophy. More than that, the author is himself abandoning the internal standpoint of experience, for he is looking from the standpoint of self-consciousness out upon experience. Surely, nothing is gained by postulating another subject back of the subject for that only raises again the original difficulty of relating this ulterior subject to an object. From an 'internal' standpoint subject and object are organically related on his own statement, but this introduction of a 'unique and all-important self-consciousness' denies to the subject, what is asserted to be necessary of the object — that each must be interpreted in terms of the other. From the standpoint of the earlier part of the paper, subject and object are what they are only in and through each other. "Not only is there no object without a subject but it is equally true that there is no subject without an object." 'Experience is at once both subject and object' from the internal standpoint. Subject and object "are two inseparable elements within experience itself." "Experience is the living process of thought and the being of the world." From the standpoint of the last four pages of the paper, the object is what it is only because of its relations to the subject; but the reality of the subject has to be backed up by a transcending principle called self-consciousness.

A. LILLIAN KELLOGG.

VASSAR COLLEGE.

A Critique of 'Fusion.' I. MADISON BENTLEY. American Journal of Psychology, XIV., 3-4, pp. 60-72.

Systematic psychology stands in need of the concept 'fusion' not only as a means of organizing the results of psychological analyses of the last twenty years but as a setting to a new mass of experimental data. The term has played an important part since the time of Herbart, who first gave it a psychological application, but at present it is so woefully ambiguous that an historical criticism seems necessary. For Herbart, fusion was an hypothetical reconciliation of the two antagonistic tendencies of mind, unity and opposition, the process of welding opposing ideas, taking place the more or less readily according as the ideas were more or less similar. Herbart made his conclusions the basis of an explanation of tonal complexes which is significant now only from an historical standpoint as the initiatory movement in this direction. Volkmann saw a contradiction in this notion of a synthesis of unlike ideas and substituted the conception of acts of ideation which since they are not qualitatively different only inhibit each other while their residua fuse into one act. However, this obviously did not settle the point at issue, namely, qualitative fusion. Theodor Lipps held that the coalescence was due to the limitation of mental force; that it was essential if the ideas were to be brought to consciousness that they sacrifice independence to coalescence ('total fusion'). The degree to which ideas will fuse depends upon their likeness, intensity, attention, practice. Besides total fusion there is a 'continuous fusion,' a coincidence of total fusion and of slight qualitative independence, which underlies spatial and temporal perception. H. Ebbinghaus accepted the idea of total fusion but held that it was the nervous processes which fused, thus giving rise in consciousness to a single content which may be analyzed. In C. Stumpf's interpretation there is a radical change. Fusion is now defined as the union of sensational contents so as to form not a sum merely but a more or less organic whole made up of distinguishable but inseparable parts. It depends entirely upon the qualitative moment, not upon intensity, attention, etc. Consonance and fusion are identical. Stumpf's discussion is largely confined to tonal complexes. Külpe extended the term to other than auditory sensations and to emotions and impulses. Fusion and colligation are coördinate; the former refers to the combination of elements qualitatively different, the latter to the combination of elements which differ in duration and extension. For Wundt fusion is a function of apperception; it is a fundamental form of simultaneous association.

So much for the historical résumé. The author now explains

fusion in terms of qualitative incorporation, of which the peculiarity is 'their unitariness, their organization, and the presence of unique characteristics not to be found in the incorporated elements.' "It is the direct apposition of qualities without the introduction of spatial or temporal connectives." It is not identical therefore with consonance as Stumpf held it to be, 'for consonance is only one of several moments that contribute to the unity of the tonal complex.' Nor is the fusion of Ebbinghaus, which is the converse of analysis, identifiable with this interpretation. Wundt's type is not synonymous, because it covers space and demands a dominating element. What is derived from the history of the conception of fusion is first the "Herbartian doctrine of the closer and more remote union of ideas; from Stumpf a mass of empirical data regarding the structure of sensational complexes; Külpe gives thus a systematic setting of the facts, and Wundt acquaints us with the enormous influence of attention upon the synthesis of mental formations. And these are all indispensable data for a complete doctrine of fusion."

A. LILLIAN KELLOGG.

VASSAR COLLEGE.

EXPERIMENTAL.

The Relation of Motor Power to Intelligence. T. L. BOLTON,
American Journal of Psychology, XIV., 351-367.

This paper, suggested by the evolutionary theory of motor development, is an attempt to show that tests of motor power may be used as measures of intelligence or of mental alertness. A large number of good and poor children of eight and nine years of age were tested with regard to the following points: (1) Rapidity of voluntary control as determined by the number of taps made in five trials of five seconds each; (2) steadiness in standing as shown by the ataxiagraph; (3) steadiness and precision of movement with either hand as tested by passing a needle between strips of brass. All of the tables show strikingly that with brighter children, motor power increases with age. Poor children show slight advance. In fact, in the precision test, the eight-year children of this class surpassed those of nine years by as much as the nine-year-old bright children surpassed those of eight years in the same class. Moreover, the bright children showed increasing power of growth through practice and increasing power to resist fatigue. The poor children became fatigued very quickly.

In the PSYCHOLOGICAL REVIEW for July, 1903, R. L. Kelly publishes a set of experiments, which, though different, bring out practi-

cally the same results as those of Dr. Bolton. Experiments such as these are valuable as preliminary work. They should lead to a more careful analysis of the problem and to a separation of the many factors involved. The problem of individual differences is so complicated that much careful experimentation is needed before pedagogical applications can safely be made.

WINIFRED HYDE.

BRYN MAWR COLLEGE.

Die reproducierte Vorstellung beim Wiedererkennen und beim Vergleichen. A. MCC. GAMBLE und MARY WHITON CALKINS. Ziet. f. Psych. u. Phys. d. Sinnesorgane, Band 32, S. 177 und Band 33, S. 161.

This work was done at Wellesley College. The first part gives an account of the authors' attempt to repeat Lehmann's experiment in which he sought to prove that recognition rests upon associated thoughts alone. Some slight variations were introduced in his method. Three practiced and twenty-one unpracticed reagents were given an average of 47 odors and they were instructed to write down in serial order all the thoughts which each odor called up in mind, to mark every pause in the course of the thoughts that were reproduced, to note the odor as known or unknown and to underscore the name when it occurred to them. The outcome is brought together in a summary at the end, the main points of which are: Recognition does not rest upon reproduced thoughts: (1) Since such accompanying thoughts, which are not only clear, but correct, are often present in the consciousness of the unknown; (2) since associations, clear enough to be reproduced, are not present in all cases, where recognition is distinct; and (3) since in the cases in which the reagents noted the serial order they generally declared that the accompanying thoughts followed the recognition. The question of the essential nature of recognition must remain inaccessible for statistical treatment. The analysis of the result "leads to the conviction that 'unknownness' is a clear and positive conscious content and not merely the absence of recognition."

The second part deals with the importance of names for the consciousness of likeness and of difference. This experiment also was a repetition with modifications of one by Lehmann. The particular purpose was to avoid certain sources of error which are pointed out in Lehmann's work. There are two parts. In the first comparisons were made between the members of several graduated series of gray and blue papers and of colored fluids, and in the second odors divided in two groups were compared with one another. Each member of

the series was compared with itself and each member of the series. The odors the reagent pronounced 'like' or 'different' and the colors 'like,' 'brighter' or 'darker.' The reagents learned names for one of the groups of each series. The purpose was then to determine whether the names assisted in making the identification or the discrimination. The important conclusions are: (1) Associated word representations are neither essential for the consciousness of likeness nor for that of difference; (2) in experiments of this kind such word representations have a tendency to accentuate the consciousness of difference and to inhibit the consciousness of likeness. "The experiments belonging to this part of the work are moreover closely bound up with the problems of the first part. Since it is indifferent whether the consciousness of likeness is identical, or not, with that of knownness, nevertheless the two are closely connected. Therefore if to the consciousness of likeness word representations are in no wise necessary, then one can scarcely declare that the consciousness of knownness needs such word representations. Accordingly the preceding investigation concerning the importance of word representations confirms the conclusion that recognition rests not entirely upon reproduced thoughts."

T. L. BOLTON.

Blickrichtung und Grössenschätzung. ALFRED GUTTMANN. *Zeitschrift f. Psych. u. Physiol. der Sinnesorgane*, XXXII., 333-345.

Apropos to the theory of the moon illusion, experiments patterned in the main after those of Zoth were arranged to determine whether the mere elevation or depression of the line of regard modified the apparent size of terrestrial objects. Uncertainty as to distance was eliminated by exposing the objects observed on a perimeter. The author's average error in setting pairs of lines so that a pair at the center of the perimeter should appear equal to a pair 40° above the center was 3.66 per cent. of their total separation. Depression of the line of regard, on the contrary, gave practically no error. A comparison of circular areas produced by iris diaphragms showed a similar underestimation of the area exposed 40° above the center, amounting to 3.53 per cent. of its total diameter.

While these errors, even if further experiments permitted their generalization, are too insignificant to account for the moon illusion, they have no little interest of their own. Methodologically it should be remembered that the extreme position of the eyeball is an artificial condition that would seldom occur and never be maintained in normal vision, even when observing an object at the zenith.

RAYMOND DODGE.

WESLEYAN UNIVERSITY.

BOOKS RECEIVED FROM FEBRUARY 7 TO MARCH 7.

- Descartes Directeur Spirituel. Correspondances avec la Princesse Palatine et la Reine Christine de Suède.* V. DE SWARTE. Préf. par E. BOUTROUX. Paris, Alcan, 1904. Pp. 292. 4 fr. 50.
- The Educational Theory of Immanuel Kant.* Trans. and ed. by E. F. BUCHNER. Lippincott Educational Series. Philadelphia and London, 1904. Pp. xiv + 309. [Most fittingly issued on the Kant anniversary, February 12. The editor's Introduction occupies 97 pages.]
- La Parole intérieure.* V. EGGER. 2^d ed. revised, with a new preface. Paris, Alcan, 1904. Pp. vii + 324. 5 fr. [A reproduction of the first edition (1881) with little change.]
- L'Absolu, forme pathologique et normale des sentiments.* L. DUGAS. Paris, Alcan, 1904. Pp. 183. 2 fr. 50.
- System des religiösen Materialismus.* I. Wissenschaft der Seele. H. THODEN VAN VELZEN. Leipzig, O. R. Reisland, 1903. Pp. x + 467.
- Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States for the Year 1902.* Washington, Gov. Printing Off., 1903. Pp. 487.
- Index Philosophique: Philosophie et Sciences Annexes.* N. VASCHIDE & VON BUSCHAN. 1^{re} Année, 1902. Paris, C. Naud, 1903. Pp. x + 345. [Contains 4,623 titles covering a wide field and arranged under 54 subject-headings, or 70 including subdivisions; the classification appears convenient for reference and is in general logical, though the reason for placing Epistemology, Logic, and Metaphysics at the very end of the list is not clear. The compilation and proof-reading is remarkably thorough, the only noticeable blemish being the irregularity in the use of the German 'Umlaut,' *e* being sometimes but not always substituted.—H. C. W.]
- The Evolution of Theology in the Greek Philosophers.* ED. CAIRD. Gifford Lectures. 2 vols. New York, Macmillans, 1904. Pp. xvii + 382, and xii + 377.

NOTES AND NEWS.

WE note that psychology in America has significantly reached the *Festheft* stage, as witnessed by the appearance of the 'Commemorative Number' of the *American Journal of Psychology*, July-October, 1903, in honor, for the most part, of President G. Stanley Hall's services to the science. (Note added by E. F. Buchner to his article on 'Psychological Progress' in our last issue, but received too late for insertion).

SIR LESLIE STEPHEN, the English essayist, philosopher, biographer and editor, died on February 22, aged 72, at his home in London.

PROFESSOR JAMES WARD has accepted this invitation given him by the University of California to lecture in the summer session at Berkeley. He expects to reach this country about the middle of May or thereabouts. His address is: 6 Selwyn Gardens, Cambridge, England.

THE Kant Centenary was celebrated on February 12th with more or less elaborateness at various places. The Königsberg program included the unveiling of a tablet by the Prussian Minister of Education, Dr. Studt, a message from the Emperor, a donation from the public treasury of \$2,500 for the 'teacher's aid fund,' and the founding by the town of Königsberg of a prize for philosophical essays. At a special meeting of the British Academy Dr. Shadworth Hodgson read a paper on Kant. An interesting program was carried out at the University of Alabama under the direction of Professor Buchner, whose book *Kant's Educational Theory* was also issued by the Lippincotts appropriately on the centennial day. At Columbia University Dr. Felix Adler gave an address.

THE second International Congress of Philosophy will be held at Geneva, September 4-8, 1904, under the Hon.-Presidency of E. Naville, and the Presidency of J. J. Gourd. There will be both general and sectional meetings (five sections). Communications may be addressed to M. le Dr. Ed. Claparède, 11, Champel, Geneva, Switzerland. Details of the program will be published later on.

AN official account of 'the origin and purpose of the [British] Sociological Society' has been issued by the provisional committee. The Society has been organized and its work begun. The Chairman of the large provisional committee was Mr. E. W. Brabrook; the Hon. Sec. of the Society is Victor V. Branford (5 Old Queen St., Westminster, E. C., London).

THE Southern Society for Philosophy and Psychology was organized February 23 at Atlanta, Ga. Its officers are: President, Professor J. Mark Baldwin, Johns Hopkins University; secretary-treasurer, Professor Edward Franklin Buchner, University of Alabama; council, the president, the secretary, Dr. William T. Harris, Washington, D. C., Mr. Reuben Post Halleck, Louisville, Ky., and Professor A. Casewell Ellis, University of Texas. The aim of the organization is to promote the welfare of philosophy and psychology in southern institutions. E. F. BUCHNER, *Sec.*

THE following items have appeared in the papers:

PROFESSOR BENNO ERDMANN, of Bonn, has been called to the University of Tübingen.

PROFESSOR EDWARD ZELLER, the famous historian of Greek philosophy, has just celebrated his ninetieth birthday (January 22).

PROFESSOR FRANK THILLY, of the University of Missouri, has been called to the chair of psychology at Princeton University, made vacant by the resignation of Professor J. Mark Baldwin.

MR. W. H. DAVIS (Princeton, A.B.), Fellow of Columbia University, has been appointed instructor in philosophy at Lehigh University. Professor Lightner Witmer will continue to serve another year as acting professor in that institution.

W. G. SMITH, Ph. D., of King's College, London, has accepted the position of Lecturer in Experimental Psychology in the University of Liverpool.

DR. C. S. MYERS, of Cambridge, has been made Lecturer in Experimental Psychology in Dr. Smith's place at King's College, London.

PRESIDENT CARL A. SWENSSON, of Bethany College, Lindborg, Kan., who for many years occupied the chair of psychology and philosophy at that institution, died on February 16.

THE following promotions have recently been made at Teachers' College, Columbia University: Dr. Edward L. Thorndike, from adjunct professor of psychology to professor; Dr. John Angus MacVannel from instructor in the philosophy of education to adjunct professor.

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à propos d'une brochure récente : *F. Rauh*. La Démocratie devant la science : *Bouglé*. Sur la théorie géométrique du Général de Tilly : *G. Lechalas*. Vers le positivisme absolu par l'idéalisme par Louis Weber : *E. Chartier*. L'idée de Patrie. *A. Fouillée*. La langue universelle : *A. Lalande*. Nécrologie. Livres nouveaux. Revues et périodiques. Thèses de doctorat.

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BEITRÄGE ZUR PSYCHOLOGIE DER AUSSAGE, I., 3. Die Aussage als geistige Leistung und als Verhörsprodukt : *William Stern*, (I.).

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE, XVII., 17. Weitere Beiträge zur Lebensgeschichte George Berkeleys : *Theodor Lorenz*. Sur une prétendue faute de raisonnement que Descartes aurait commise : *J. Chazottes*. Locke, eine kritische Untersuchung der Ideen des Liberalismus und des Ursprungs nationalökonomischer Anschauungsformen : *Georg Jaeger*. Entwicklung der arabischen und jüdischen Philosophie im Mittelalter : *J. Pollak*. Die Lehre von der Bildung des Universums bei Descartes : *A. Hoffman*. Jahresbericht.

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PROCEEDINGS OF THE SOCIETY FOR PSYCHICAL RESEARCH, XVIII., 47. Proceedings of General Meetings. On the Types of Phenomena Displayed in Mrs. Thompson's Trance : *J. G. Piddington*. On certain Unusual Psychological Phenomena : *John Honeyman*. Editorial Note.

JOURNAL OF MENTAL SCIENCE, I., 208. The Mental and Moral Effects of the South African War, 1890-1902, on the British People :

R. S. Stewart. The Relation of Mental Symptoms to Bodily Disease, with Special Reference to their Treatment outside Lunatic Asylums: *Nathan Raw.* Mongolian Imbecility: *C. H. Fennell.* Short History of St. Luke's Hospital: *William Rawes.* Gossip about Gheel: *Conolly Norman.* The Relationship of Wages, Lunacy and Crimes in South Wales: *R. S. Stewart.* Clinical Notes and Cases. Occasional Notes. Reviews. Motor, Visual and Applied Rhythms: *J. B. Miner.* Le Goût: *L. Marchand.* L'Imagination: *L. Dugas.* Le Mouvement: *R. S. Woodworth.* Epitome. Progress of Psychiatry in 1903. Epitome of Current Literature. Anthropology. Neurology. Physiological Psychology. Etiology of Insanity. Clinical Neurology and Psychiatry. Treatment of Insanity. Sociology. Notes and News.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNES-ORGANE, XXXIV., 1. Untersuchungen über die Herabsetzung der Sehscharfe durch Blendung: *Alfred Borschke.* Untersuchungen über psychische Hemmung. 3te Artikel: *G. Heymans.* Ueber Farbenkenntnis bei Schulkindern: *Marx Lobsien.* Leib und Seele: *C. A. Strong.* Literaturbericht. XXXIV., 2. Das Geschmackvolle als Besonderheit des Schönen und speziell seine Beziehungen zum sinnlichen Geschmack: *C. M. Giessler.* Ueber die Abhängigkeit der Pupillarreaktion von Ort und Ausdehnung der gereizten Netzhautfläche: *G. Abelsdorff* und *H. Feilchenfeld.* Das Leuchtturmphänomen und die scheinbare Form des Himmelsgewölbes: *Felix Bernstein.* Literaturbericht.

REVUE PHILOSOPHIQUE, 1904, 2. L'Évolution comme principe philosophique du devenir: *Kozłowski.* Saint-Simon père du positivisme (1st article): *G. Dumas.* L'hypothèse du 'retour éternel' devant la science moderne: *G. Batault.* Expériences sur l'activité intellectuelle: *Lapie.* Analyses et comptes rendus. Revue des périodiques étrangers.

BRITISH JOURNAL OF PSYCHOLOGY, I., 1. Editorial. On the definition of psychology: *James Ward.* On binocular flicker and the correlation of activity of 'corresponding' retinal points (two figures and twelve diagrams): *C. S. Sherrington.* A sixteenth century psychologist, Bernardino Telesio: *J. Lewis McIntyre.* The sensations excited by a single momentary stimulation of the eye (six figures and plate 1): *W. McDougall.* Note on the principle underlying Fechner's 'paradoxical experiment' and the predominance of contours in the struggle of the two visual fields: *W. McDougall.* Proceedings of the psychological society.

THE
PSYCHOLOGICAL BULLETIN

VARIABILITY OF REACTION-TIME.

BY ROBERT M. YERKES,

Harvard University.

In an examination of the literature on reaction-time, for the purpose of discovering the relation of average reaction-time to variability, and of both to the quality and intensity of the stimulus and the other conditions which determine the time and constancy of reaction, I have been surprised to find that little attention has been given by most investigators to the variability of their results. The early investigations in this field were made, it would appear, for the sole purpose of determining the absolute time of certain mental processes. And this is not strange in view of the fact that until the astronomers proved the existence of the 'personal equation' mental processes were thought to be too quick for measurement. Psychologists therefore came to problems of the time relations of mental processes with special interest in the duration of the psychic state, and practically no interest in the constancy of reactions. An historical survey shows that investigators were content, early in the development of this line of work, with the presentation of the average reaction-times of their series; no mention was made usually of the range of variability, or of the constancy of the reactions. Somewhat later it became the custom to state the extremes between which a series of reaction-times varied, the range; and it is now common to find the average deviation of results, as well as the average reaction-time, in papers on this subject. In only one paper, that of Jenkins and Carlson on the

nerve impulse in molluscs,¹ have I found the *Standard Deviation* used as a measure of variability.

Inasmuch as *variability*, or the degree of constancy with which a reaction occurs is, for certain purposes, of equal value with the average reaction-time, it is strange that it has not received more attention. Wherever comparisons of results are to be made it is necessary to take into account the variability as well as the time of reaction; hence, from comparative physiology and psychology comes the demand for the uniform determination of such a statistical quantity for the measurement of the constancy of reaction as will be most serviceable.

This paper has been written for the purpose of calling attention (1) to the importance of variability in reaction-time statistics; (2) to the need of choosing statistical methods in accordance with the nature of the materials in hand, and the demands of the problems; (3) to the desirability of more general use of curves of distribution; (4) to the preëminent importance of *relative variability*, or the coefficient of variability, for comparative reaction-time studies, and finally (5) to the use of *equality of variability* as a basis of comparison in case of reactions to different modes of stimulation.

METHODS OF DEALING WITH REACTION-TIME DATA.

In any study of reaction-time it is usually desirable, and often necessary, to make the following determinations: (1) The *curve of distribution*, which indicates the general form of distribution, the variability, and, if such there be, the existence of types; (2) the *median*;² (3) the *mean* or average reaction-time and its probable error. Since for reaction-time there is a lower, but no upper limit, the mean is almost always larger than the median or mode,³ unless the range has been artificially limited.

¹ *American Journal of Physiology*, Vol. 8, 1903, p. 256.

² For definitions of these statistical terms, and discussions of methods employed in connection with vital statistics, see: Brewster, *Proc. Amer. Acad. Arts and Sci.*, Vol. 32, pp. 269-280; Davenport, *Statistical Methods*, New York, 1899; Duncker, *Arch. f. Entwicklungs-Mechanik*, Bd. 8, S. 112-183; Pearson, *Phil. Trans. Roy. Soc. London*, Vol. 185, pp. 71-110; Vol. 186, pp. 343-414; Vol. 187, pp. 253-318; Galton, *Proc. Roy. Soc. London*, Vol. 29, pp. 365-367; Thorndike, *Educational Psychology*, New York, 1903.

³ The *mode*, if defined as 'the most frequented class,' is not reliable in case of a small number of observations. On this point see Yule, *Jour. Roy. Statistical Soc.*, Vol. 59, p. 398, and Pearson, *Biometrika*, Vol. 1, pp. 260-261.

(4) The *range* of the series; (5) the *standard deviation* and its probable error. The latter is more satisfactory on the whole than the average deviation, which thus far has been used almost exclusively in reaction-time statistics, because of its greater sensitivity to departures from the mean, and its applicability to forms of distribution whose variability cannot be accurately measured by the method of average deviation; finally, (6) the *coefficient of variation* should never be omitted.

THE IMPORTANCE OF RELATIVE VARIABILITY.

As I have already pointed out in connection with discussions of the time relations of the reactions of the medusa,¹ reaction-times can not be profitably compared with respect to their variability unless they are reduced to some common measure. The obvious reason for this is thus stated by Davenport²: "The relative size of the average deviation of two organs depends very largely upon the relative size of these organs. When the mean dimension is large, we expect a greater deviation than when it is small. Thus the average deviation of the stature of adult British males from the mean is about 2 inches. An average deviation of 2 inches in the length of the nose, in any race, would clearly indicate a much greater variability in the nose length than in the stature. In comparing the variability of two such diverse measures as stature and nose length, it is better to compare the ratios of the average deviation to the mean dimension. Thus, since the mean stature of adult British males may be taken at 67 inches, variability in stature may be expressed by the ratio $2/67 = .02985$. This number indicates that the average deviation from the mean stature is about three one-hundredths of the mean stature; which is clearly more important than to say that it is two inches." More recently Myers³ has emphasized the importance of this fact in connection with reaction-time statistics. What he calls the *variation-coefficient* expresses, as he says,

¹ *American Journal of Physiology*, Vol. 9, pp. 291, 292, and *Biological Bulletin*, Vol. 6, pp. 92-95.

² This statement by Davenport occurs in a paper of Brewster's in *Proc. Amer. Acad. Arts and Sciences*, Vol. 32, p. 272 (footnote).

³ *Report of the Cambridge Anthropological Expedition*, Vol. II., Pt. II., p. 212.

“the ratio between the mean variation and the average (reaction-time). It is obtained by the formula $v. c. = \frac{m. v. \times 100}{av.}$. Its importance lies in the fact that the mean variation depends not merely on the fluctuations of the individual data from the average, but also on the actual magnitude of that average, varying directly with its value. Thus if a reagent, whose average reaction-time to an auditory stimulus is 120° , shew a mean variation of 10° , and if, reacting to a visual stimulus, his average reaction-

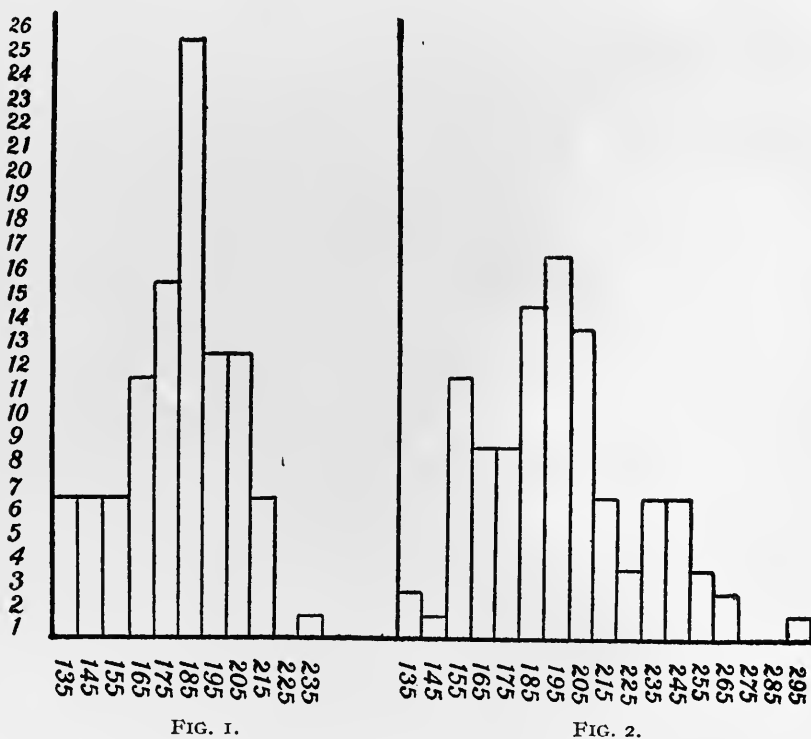


FIG. 1. Reaction-Time of Frog to Electrical Stimulation.

FIG. 2. Reaction-Time of Frog to Electrical Stimulation in the Presence of a Visual Stimulus.

time be 180° and his mean variation be 15° , he is reacting with an equal degree of constancy in each case, although the absolute values of the mean variation are not the same.” Myers’ *variation-coefficient* is determined by the use of the *average de-*

viation (*m. v.*). Pearson¹ has taken 'as a measure of variation the ratio of *standard deviation* to mean, or what is more convenient, this quantity multiplied by 100,' and has designated it the *coefficient of variation*. In order to avoid the confusion which will inevitably arise if Myers' term as well as Pearson's is retained I have called the ratio of average deviation to mean the *relative variability* (*r. v.*).

To illustrate the application of the methods which have been considered the following series of reaction-times of the frog are presented: (1) A group of one hundred reaction-times to electrical stimulation of the skin. The curve of distribution (more accurately speaking, the polygons) of these is marked Fig. 1; (2) A group of one hundred reaction-times to the same electrical stimulus, when it was preceded for two seconds by a visual stimulus (electric light). The distribution of these is represented by Fig. 2. In the plottings of distribution the numbers below the base line indicate the classes. Thus, 135 is the class containing all reaction-times between 130^o and 139^o. The column of numbers on the left margin indicates the number of reactions in each class.

These two figures show at once that the reaction-time is shorter and less variable when the electrical stimulus is not preceded by the visual stimulus. The quantities determined for the data are as follows:

	VALUES FOR FIGURE 1.	VALUES FOR FIGURE 2.
Median.....	182.40 ^o	193.75 ^o
Mean	180.00 ± 1.467 ^o	196.50 ± 2.026 ^o
Mode	185.00 ^o	195.00 ^o
Standard deviation.....	21.75 ± 1.039 ^o	30.03 ± 1.434 ^o
Average deviation	17.40 ^o	24.00 ^o
Coefficient of variation..	12.08	15.28
Relative variability	9.66	12.62

Any or all of these values might be useful in a study of the significance of the series of reaction-times under consideration.

THE RELATION OF REACTION-TIME TO VARIABILITY FOR DIFFERENT MODES AND INTENSITIES OF STIMULATION.

What is the relation of time of reaction to intensity of stimulus? Does absolute variability (either average or standard)

¹ *Phil. Trans. Roy. Soc. London*, Vol. 187 A, p. 277.

regularly decrease with increase in stimulus intensity? Is relative variability a constant, or does it change with change in the stimulus intensity? For the purpose of obtaining data which would enable me to answer these questions I have examined the results of several investigations which were made primarily for the determination of the relation of reaction-time to stimulus intensity. Since in some of the reports only the mean and the average deviation were given, it has been necessary for me to make use of average deviation and relative

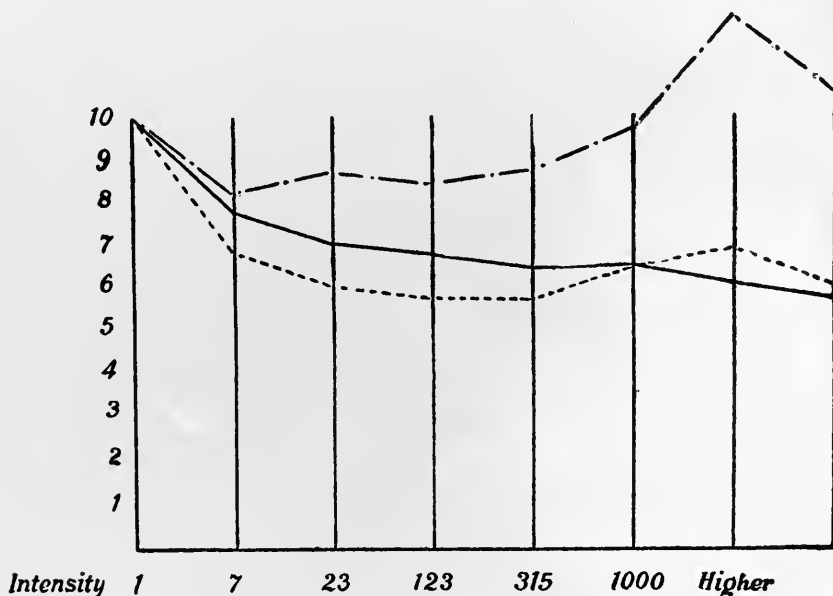


FIG. 3. Reaction-Time of Man to Light.

variability instead of standard deviation and the coefficient of variation, the use of which has been urged earlier in this paper.

In figures 3 to 6, plottings of the values of the average reaction-time (mean), average deviation, and relative variability for different intensities of various stimuli are presented in such a way that the relations of these three quantities to one another, and of each to the stimulus intensity, are exhibited. In each of the figures the solid line represents the mean reaction-time, the dotted line the average deviation, and the broken line the relative variability. For the first or lowest intensity of each mode of

stimulation the value of the three quantities (*m.*, *a. d.* and *r. v.*), taken as 100 per cent., is represented at 10 on the first vertical line, and all other values are expressed in percentage terms of this. Below the base line the intensity values of the stimuli are given.

In Fig. 3 we have the results of Berger's¹ and Cattell's² investigation of the relations of man's reaction-time to light to the intensity of the stimulus. Eight intensities were tried, and the result, as is indicated by the solid line of the figure, was a gradual decrease in the time of reaction as the intensity of the

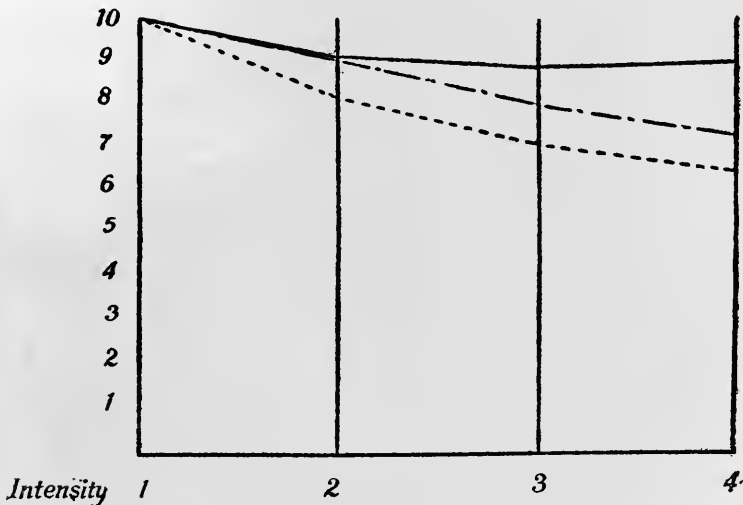


FIG. 4. Reaction-Time of Man to Electrical Stimulation of the Skin.

stimulus increased. At first the average deviation also decreased, but for the last three intensities it shows, instead, an increase. The relative variability, the curve for which is plotted from determinations made by the writer, shows no uniformity in direction of change; it is considerably greater for the strongest stimulus than for the weakest.

Fig. 4 represents the results obtained by Berger³ in his study of the reaction-time of man to different intensities of electrical stimulation of the skin. In general there is decrease in time of

¹ *Philosophische Studien*, Bd. 3, S. 63.

² *Brain*, Vol. 8, p. 513.

³ *Philosophische Studien*, Bd. 3, S. 64.

reaction with increase in stimulus intensity, and there is steady and marked decrease in both absolute and relative variability.

Reaction-time studies on the frog¹ furnish the data for the curves of Fig. 5. Above the figure the numerical values of the mean reaction-time (*m.*), average deviation (*a. d.*) and relative variability (*r. v.*) for each intensity of the stimulus are presented. In this case too there is a uniform decrease in reaction-time and variability as the intensity of the stimulus increases.

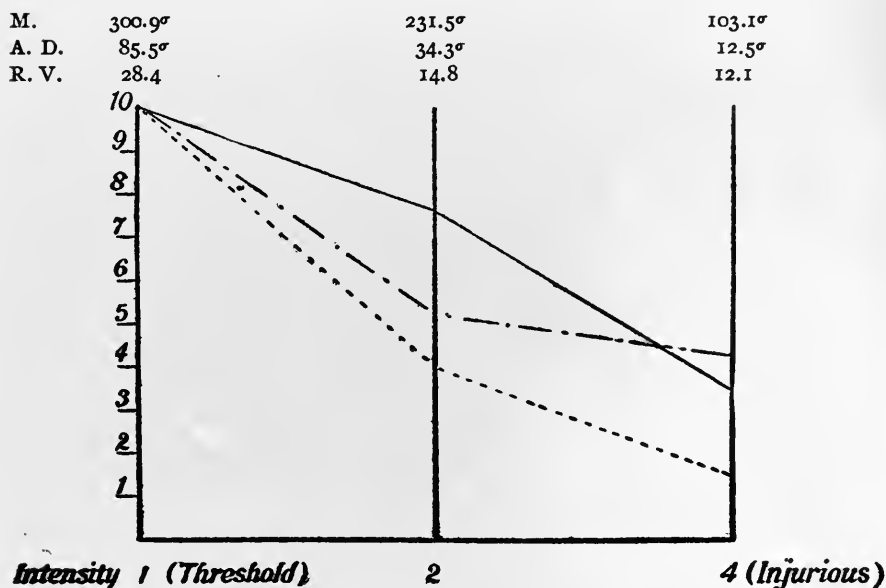


FIG. 5. Reaction-Time of Frog to Electrical Stimulation of the Skin.

Fig. 6 is based upon the results of the writer's² study of the reaction-time of the medusa *Gonionemus murbachii* to different intensities of light.

In view of the general indications of these curves it is safe to conclude that, within limits, reaction-time, absolute variability and relative variability decrease with increase in stimulus intensity. Those organisms which react quickest, react also with the greatest degree of constancy. We are not justified, however, in concluding from the results herein presented that

¹ *Harvard Psychological Studies*, Vol. I., pp. 616-617. (PSYCHOLOGICAL REVIEW, *Monograph Supplements*, Vol. 4.)

² *Amer. Jour. Physiol.*, Vol. 9, p. 291.

for every mode of stimulation it is possible, by gradually increasing the intensity of the stimulus, to pass from the deliberate voluntary type of reaction to the quick and almost invariable reflex. Only within limits, which must be determined experimentally for each mode of stimulation, for each individual, and for each race, do reaction-time, average and relative variability decrease with increase in intensity of the stimulus.

From the facts already established it follows that by properly choosing the intensity of stimulation any reaction-time or degree

M.	11.10 seconds.	5.70 seconds.	4.50 seconds.
A. D.	5.15 "	2.02 "	1.03 "
R. V.	46.40	35.40	22.90

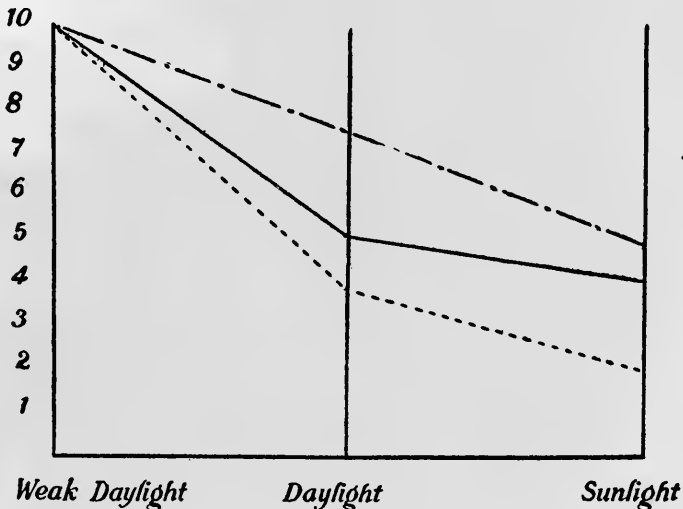


FIG. 6. Reaction-Time of Medusa to Light.

of variability, within a certain range, can be obtained in response to a given mode of stimulation. The conclusion is therefore forced upon us that comparison of reaction-times for different qualities or intensities of stimulation, different individuals and different species can be made profitably only when account is taken of the relation of the time of reaction to its constancy. At present we say, conventionally, that the visual reaction-time is on the whole longer than the auditory, or that tactual is shorter than visual, but there is no scientific basis for the statement, inasmuch as no attention has been given to the

relative intensities of the stimuli. Now, experiments show that intensities of visual and tactual stimuli, for example, may be found whose reaction-times are equally variable; and, since intensity of stimulus is one of the most important determinants of variability, we may assume that those intensities of different modes of stimulation are directly comparable, so far as their reaction-times are concerned, for which the relative variability is the same. It is to be noted, however, that equality in variability as a basis for the comparison of the reaction-times to different modes of stimulation or of different organisms is primarily a postulate. But inasmuch as we have no method of determining the value of one stimulus in terms of another, I propose to call those intensities of two modes of stimulation equivalent whose reaction-times are equally variable, and to test the value of the postulate by treating experimental results in the light of it.

PSYCHOLOGICAL LITERATURE.

CHILD PSYCHOLOGY.

Das Seelenleben des Kindes. Ausgewählte Vorlesungen von KARL GROOS. Berlin, 1904.

Groos develops his subject, in brief, as follows: He first states the current notions as to the methods and aim of child psychology, after which he takes up the classification of mental phenomena. He refers to the traditional tripartite classification popular since Kant, to the bipartite classifications of Brentano and Höfler, and, from Lotze's suggestion of a world of being and of values, he offers as his own scheme the division of consciousness into a '*Vorstellungs* and *Wertungsseite*.' To the former belongs the *Was* of our consciousness, to the latter the *Wie*. The valuation side is characterized by a polarity of which the fundamental form is desire and aversion. This polarity is manifested in all three spheres of valuation, viz., in the emotional, the volitional and the logical. On the ideational side the subject matter is divided into material and syntheses. The material is sensorial or reproductive. Syntheses may be either *combinations* or *assimilations*.

With the discussion of inherited and acquired reactions the author first takes up his subject specifically. The chief point of interest here is his treatment, under inherited reactions, of instincts. His general point of view seems to be that of James, whom he quotes regarding man's numerous instincts. It is shown that reflexes vary widely in their significance for consciousness and volition. The vocal reflex is mentioned as typical of the class that is always more or less conscious and hence amenable to voluntary control. Nothing is said of the impulsive movements mentioned by Preyer, although reflexes of the type mentioned above certainly approach very closely true impulsive movements.

It is unnecessary here to go into the author's discussion of play. He discusses the various theories briefly and comments favorably upon the recent American study by Carr.

In general it may be said of his theory of instinct, that it is marked by much more common sense than belongs to many current discussions. He holds that when there are conscious concomitants it is better to use the term impulse than instinct. "At any rate we need this expression for a certain inherited manner of reaction whose character will not readily coincide with that of the concept of instinct, namely, the imitative impulse. In the case of instincts and reflexes, we pre-

suppose, in other words, definitely determined, inherited pathways in the nervous system, which on the appropriate stimulus produce in all individuals of a species a similar motor discharge. In the case of imitation, however, the motor reaction changes according to the nature of the copy, so that here we cannot rightly speak of inherited pathways which serve imitation" (pp. 42, 43). Imitation furnishes a means by which a no longer adequate instinct is supplemented or reconstructed. Its chief function is to enable the child to take up and assimilate the values of his predecessors. In general it gives one a more exact appreciation of the mental life of others. He quotes approvingly from Hirn's *Origins of Art*, 'As children we imitate all before we understand and through imitation we have learned to understand.'

As for acquired reactions, they depend in their development upon the laws of habit. It is to be regretted that he does not attempt any genetic analysis of the development of such forms of movement. It is true he mentions some six forms of reaction of varying stages of complexity from the mere physiological process, illustrated in reflexes, to the reaction involving logical valuation, illustrated in the selective grasping of the largest and ripest of offered fruits. But there is no indication of any method of development of one from the other. They are given as just so many fixed forms of action.

In the more strictly psychological portion of the work the author follows largely the subjects traditionally treated, in introductory treatises, aiming apparently rather to give a convenient résumé of previously accepted theories than to put forth any essentially new point of view. In this portion of the work entitled 'Reproduction,' are treated association of ideas, memory, imagination, assimilation, recognition, and illusions. Finally, under the head of 'Knowledge,' are discussed conception, judgment, and reasoning. It will thus be noted that even in his main subdivisions the classification proposed at the outset is not adhered to. It is true that the terms of the classification are frequently referred to, but they are certainly not the organizing ideas. It is especially noteworthy also that the most genuinely genetic portion of the work, namely, the portion devoted to inherited and acquired reactions and the section on play, has no organic connection with his scheme of mental classification. Aside from this strictly genetic portion it seems to the reviewer that the book is not primarily what it claims to be, *i. e.*, a discussion of the mental life of the child, but rather an outline of some adult mental processes which can be illustrated from child life. We raise the question as to whether such a procedure can give us a true genetic psychology. Should our primary object be to find

simply examples in the child's experience of various types of association, of memory, of illusions, of reasoning, etc., or should it be to show the *place* of these processes in the child's unfolding mental life? If we are looking for analogues of adult processes in the child we are certainly not concerned with the psychology of his mental life *überhaupt*, but only of those portions that happen to fall readily into the adult mold. We do not mean to say that all of Groos' discussion is subject to this criticism, but certainly a large number of his references to children are of this external sort.

We shall not attempt to review his general psychological theory, but simply to refer to some of the points in which he touches genetic problems.

Under the head of 'Learning and Forgetting' he discusses various memory tests of the Ebbinghaus type and points out their obvious limitations when applied to children, that is, that they test the power of voluntary attention rather than actual strength of memory. The relation of memory to repetition and the comparative value of learning by parts or by taking a thing in its entirety is discussed and illustrated. The problem of the memory of the various senses is touched upon and illustrated by experiments in learning the spelling of words. We have next a section devoted to errors of memory. Their frequency with children is noted, and in this connection the phenomena of the suggestibility of children is discussed and the importance of recognizing it in questioning is pointed out. Next follows a general discussion of the constructive imagination and therewith of children's lies and stories of the explanatory myth type. Under apperception the author points out the importance of the natural interests and impulses as assimilative agencies in children. Bell's *A Study of the Teacher's Influence* is referred to as illustrating the character of the apperception of adolescence. The development of power to recognize familiar objects and persons is illustrated by examples from Miss Shinn, Preyer and others. The child is usually lacking in ability to distinguish between identity and mere sameness of species. His general deficiency in power of recognition accounts for many cases of childish fright. A characteristic instance of how loosely the author has worked out his subject is his reference at the end of this section to the joy exhibited by children at the recognition of familiar objects. It is simply stated as a fact with no attempt to analyze it or relate it to the general process of recognition. Next follows an interesting section on illusions. The interest of children in myths and fairy tales depends upon a sort of illusion analagous to the hallucination, while il-

lusions in the narrower sense are illustrated in the large class of games and plays that involve conscious self-deception. Of the value of this in the processes of growth present pedagogical practice has much to learn.

The book closes with brief sections on conception, judgment, and reasoning. Although much material from the literature of child-study is used, it is taken up not so much genetically as illustrative of more general psychological theory. As an instance of what we have in mind may be cited the stages of the development of the power to acquire knowledge (pp. 208-209). There is no doubt but that there is often such a progress from verbal memorizing through the acceptance of knowledge on authority up to the point where the student makes a truth his own through his own discriminative activity, but this is certainly not a true genetic treatment of the development of judgment. In the section on reasoning it is disappointing to find much space taken up with purely logical questions and so little devoted to a definite treatment of the development of reasoning power in the child.

The author shows considerable acquaintance with the child-study literature of America and illustrations are freely drawn from it, but they are unfortunately used largely in the external way that has been indicated.

Fundamentals of Child Study, a Discussion of Instincts and other Factors in Human Development with Practical Applications.
EDWIN A. KIRKPATRICK, B.S., M.Ph. New York and London, Macmillan. 1903. Pp. xxi + 384.

Professor Kirkpatrick has given us, to say the least, a very readable book. Probably no work presents the general field of child study so fully and at the same time so conveniently as does his. After a discussion of the significance of infancy, he states as his problem 'the study of the outer and inner factors in human development' and the determination of 'how the inner are modified by the outer.' His seeming emphasis of external factors is reversed in the body of the work, where it is held that the development of instincts is of primary importance, and by this he apparently means the unfolding of inner factors according to laws of their own. Instinctive movements are taken as the basis for all differentiations of consciousness. Although his discussion is suggestive, one feels that he has not carried his analysis far enough. Consciousness develops, not from instincts as such, but from instincts that have fallen apart and hence needed re-adjustment. It is the more or less plastic character of the impulsive movements and the disintegrated instincts that renders possible the

acquisition of new movements, and it is the building up of new movements, as he rightly suggests, that 'makes conscious intelligence possible and useful' (p. 38). In other places he seems to adopt this view, as in the following: 'These spontaneous or random movements are very numerous in early life, and hence there is greater opportunity to select and perfect such of these chance movements as prove useful' (p. 56). 'As we have already seen, impulsive movements are the basis of voluntary control, since by no possibility can the mind know how to make a motion . . . until the motion has been made and the result experienced' (p. 86). On the other hand he says (p. 87): 'Our whole mental life, intellectual, emotional, and volitional, is developed from our instincts.'

One characteristic of the work which we cannot but feel is unfortunate is its tendency to analyze into more or less independent forms many varieties of action and many sets of mental phenomena and to leave them thus with no suggestion as to there being any genuine inner connection between them. It is of course desirable to analyze our material, but it is sometimes easier to see variety than underlying unity of process. This is certainly true in the case of the instincts. It may be proper to subdivide them indefinitely, but it is also greatly to be desired that we should have a notion of the psychological as well as the biological unity underneath such a set of phenomena. Our point is illustrated in the analysis here given of methods of learning. The varieties beginning with the simplest are as follows, (*a*) trial and success, (*b*) imitation, (*c*) by the understanding. It would have been suggestive to have shown that the last two methods are simply complicated varieties of the simpler trial-hit-and-miss form.

The development of the instincts and the order of their appearance is made the primary problem of child psychology (p. 44). It is assumed that there is a general parallelism between the appearance of instincts in the individual and in the race. The author points out, however, that the functional utility of instincts may cause wide divergence from the racial order (pp. 45, 46). The classification and general treatment of the instincts is practically identical with that of Marshall in his *Instinct and Reason*, *i. e.*, they are divided into individualistic, parental, social, adaptive, regulative, resultant, and miscellaneous. This classification amounts simply to an attempt to force all a child's activities into an instinctive mold. We can here offer only a general criticism of such a procedure. In the first place it necessitates an unwarranted extension of the term instinct. It is

difficult to conceive of an instinct as other than a relatively definite act dependent upon an equally specific modification of nerve structure. It is true that the supporters of such a theory as Professor Kirkpatrick's point out that even simple instincts do vary widely in expression, and hence that we are mistaken in holding that instincts are definitely fixed sets of movements. The fact of variation we grant, but we insist that as far as the *instinct* goes there *is* fixity. The overt action that we loosely call instinctive is not, however, the instinct but the resultant of the fixed tendency, of impulsive movements, and of the particular form of situation in which it must be expressed. In proportion as these two elements vary the actual expression of the instinct will of course be greatly modified. In the second place it seems to the reviewer that, even if the term can be taken in this extended sense, to apply it thus to the child is to remove his acts to a sphere in which a fruitful psychological analysis is impossible. When we have an act labeled as an instinct we have practically backed down from any attempt to deal with it psychologically, in other words admitted that we have reached an irreducible datum, concerning which the only problem is to state the time of its appearance. There is certainly nothing to hinder one's using any conceptual framework he chooses to interpret a given body of facts, provided of course that it adequately does it, but to apply instinct to play and curiosity, to imitative, religious, constructing, destroying, communicative, and adorning activities is to substitute words for analysis. At any rate we have only begun with them, not disposed of them. It is really immaterial what makes children have such and such impulses at certain times; we may assign them to instincts or what not.

Imitation, play, curiosity, religion, etc., are simply aspects of an unfolding process and should be stated in terms of it. To call them instincts is to tell nothing about them; we really know not whence are the springs of any of our acts, instinctive or not, but we do know that the organization of experience varies and hence conditions certain types of action. To locate a given act in its functional setting is to put ourselves in a direct relation to it that a statement in terms of instinct certainly does not permit. Whether this criticism is legitimate or not, one cannot but feel that the instincts are overdone when he reads the section on imitation. It is a sort of supplementary instinct to fill in where specific instincts are not provided (p. 131). It is conceived broadly enough to provide for all acts that do not fall readily into the before-mentioned instinctive molds. By means of the imitative instinct not only does 'nothing in his environment, physical

or social, escape the child' (p. 131), but as well it is operative whenever a child reproduces an act or word which he has observed, to gain some end (p. 132), or when he works toward an ideal (pp. 141, 142). Just how imitation is significant if it is to be applied to all activity is not apparent. It would be interesting to know whether there is any ultimate psychological difference between the various types of imitation, such as the reflex, spontaneous, dramatic, etc., or whether the classification is only an external or rough-and-ready one.

The remainder of the book is occupied chiefly with brief discussions of various problems regarding the development of intellect. Here also instinct appears to have an important rôle. "The chief difference between the intellect of the child and of the man, therefore, is that the child's actions are controlled largely by unconscious *instinctive* impulses and interests and the man's by unconscious habitual reactions and interests. The conscious intelligence of the man is not essentially different from that of the child, except that the extent of its activity is greater because of more numerous experiences, and its direction different because of other instinctive and developed interests. The problem of intellectual development is therefore simply one of determining the influence of instinctive tendencies upon its direction and vigor, and correlating these truths with all that is known of the effects of experience upon growth and intelligence" (p. 248). The author in this portion of the work discusses briefly the development of discrimination, the rate of mental activity, mental grasp, perception, imagination, conception, reasoning, etc. He here gathers together the results of various studies and supplements them with his own observations. The book closes with convenient summaries regarding heredity, individuality, abnormalities, and child study in schools. To each chapter are appended suggestive problems for farther study along the lines laid out and references to the literature of the topics treated. In criticizing the work as we have, we have not been unmindful of its many merits. A discriminating criticism of a book should cast on it more credit than the careless praise that is often easier written.

Education as Adjustment. M. V. O'SHEA. New York, Longmans, Green and Company. 1903. Pp. xiv + 317.

The theory of education here worked out is based upon the conception of mind as functionally related to the needs of action. Education as adjustment means therefore such a training of the psychophysical organism as will make it most effective in dealing with the

concrete situations of life. Previous educational theory has compromised itself more or less by preconceptions, but there is a growing tendency in recent times to approach the problem in the unbiased way that the natural scientist does his concrete data. The author points out that there may be said to be as genuine a body of material on which to build a science of education as there was [material for biological science fifty years ago.

The various aims of education are discussed, among others the 'doctrine of unfoldment,' that of 'formal discipline,' of 'acquisition,' and of 'utility.' It is shown that these are all more or less vague, or one-sided, and that the good aimed at by each is secured in the conception proposed by the author. He defines adjustment as 'a process of fitting things together; of getting them into harmony with each other; of so relating them that the intentions, as it were, of each may be realized and not thwarted by acting in opposition to one another. So, in order that this process may occur, the things concerned must of course bear an active relation toward each other' (p. 99). From this it will be seen that it is no mere static adjustment of the Spencerian sort that Dr. O'Shea has in mind. In its application to teaching 'adjustment seeks ever to give the individual mastery over those phases of the environment that he must understand in order to realize most fully the possibilities of his being' (p. 140). He argues very forcibly for the necessity of a specific training as over against the older theory that the powers of the mind could be cultivated in general out of all relation to their use in life.

The last portion of the book is devoted to a brief analysis of mental development from the view point of its being a process of adjustment as thus dynamically conceived. The development of the simplest reaction-systems is traced, as also that of certain notions such as cause and effect, location, means, etc. His discussion of curiosity is typical of his method in its happiest form. "To say that curiosity with reference to a certain thing disappears means that there is no longer difficulty in completing all the situations in which this thing enters—situations respecting its origin, its destiny, its whereabouts, its composition, its attributes, etc. Curiosity is just this effort of the organism to get situations completed. . . . There is doubtless born with the child a general tendency to look into everything, to explore the unknown, but it is questionable if this would amount to much if the experiences of the nursery had not shown him that it pays to keep on the *qui vive*. A child of six is not curious with respect to a complex situation if he has had no experience with it, or with something

akin to it" (p. 187). The child asks questions because in many cases "he is striving to have completed a situation one element of which is an agent acting, but the end to be attained is not apparent. He is impelled to seek this end, since all his experience has enforced upon him the idea that there is always an end to be attained — [and he] will not be satisfied until the general indefinite situation has become more definite and assured. When this is reached the questioning attitude ceases, of course" (p. 193).

The book contains much valuable material arranged from an interesting and suggestive point of view. If there is any error it is in the elaboration of the points of the argument with almost tedious detail. The conception of education as adjustment is itself somewhat external. The general result of a proper education may indeed be described as an adjustment in this dynamic sense, but when it is applied to the details of the school-room as a working aim it seems remote, or else it resolves itself into merely equipping children with certain given sets of tools that they will use in actual life. We certainly admit the desirability of this, but maintain further that the equipment must be accomplished in such a way that the pupil can go on doing it for himself. Then again, how is adjustment to be effected on the part of the child? Is it to be by merely learning a certain amount of information that he will need if he is to live adequately? Externally the process is one of adjustment, but internally it is a reorganization of experience with reference to its social values and with reference to the controlling of it. These are simply suggestions, however, since, as the author tells us, the detailed application is to be made in a volume shortly to appear.

The quotation of doggerel verse on page 148 ending in the line 'Ain't that so?' seems out of keeping.

L'éducation fondée sur la science. C. A. LAISANT. Préface d'Alfred Naquet. Paris, Félix Alcan. 1904. Pp. xlv + 153.

This volume contains chiefly four addresses by M. Laisant delivered at educational conferences held at intervals at the *Institut psychophysiologique* in Paris from 1899 to 1903. The first address is an attempt to show how the principles of arithmetic, algebra and geometry may be taught in even primary classes through simple figures that will appeal to the eye. The futility of much of the current teaching is pointed out; graphic schemes are suggested for the teaching of the notion of number, simple geometrical relations and the

simpler propositions of the same. It may seem paradoxical to many, the author tells us, that 'these first principles may be assimilated with much less fatigue than the first notions of reading and writing. On one condition, however, that is, instead of persisting in the present system of elementary instruction, in place of giving a lesson bristling with formulas and rules, appealing only to the memory, creating fatigue and disgust,' we must work through the senses and images. The teaching must be absolutely concrete (p. 6). 'If there were an intelligent application of principles here pointed out, we should soon see a veritable revolution not only in primary teaching but also in secondary' (p. 31). The second conference is an appeal for the introduction of simple science into the primary grades. "The little child is easily affected with curiosity, is eager for facts and is well endowed to see and retain phenomena." The remainder of the book is taken up with a popular discussion of some more general educational problems for which the necessity of a thorough understanding of the psychology of childhood is emphasized. Physical education, coeducation, and aim of education are loosely strung together in the address.

The dominant note of the book is the importance of the scientific as over against the literary and classical in modern education. The study of Greek and Latin should be excluded, we are told, from all but the highest schools. "It would be monstrous according to my notion to pretend to continue giving to these languages the importance they have had in the past and which is accorded them to-day." As to the notion that Latin is essential for the understanding of French, he says, 'This is as reasonable as if, in order to produce solid biceps in a man, it were regarded as indispensable that he should exercise himself throughout his entire youth by carrying about a chair balanced on the end of his nose' (p. 110).

Esquisse d'une éducation de la mémoire. J. J. VAN BIERVLIET.
Paris, 1903. Pp. 126.

This monograph is occupied primarily with the problem of turning the results of the experimental study of the memory to account in the school-room. The simple and well-known methods of determining the predominant type of memory in individuals and in classes are given and explained. The relative strength of the memory of different people may be determined by the number of nonsense syllables each one can recall at a stated interval after having seen them from ten to fifteen seconds. Starting with a number sufficiently small for

even the weakest to be able to retain them, the syllables are gradually increased and the ability of each scholar is measured by the number of syllables correctly recalled. Pertinent suggestions are offered as to the conduct of the test that accuracy and reliability of result may be insured.

It is pointed out that the tests that have been made on school children show only an insignificant progress in memory through the school years, and the author is of the opinion that if there were some systematic attempt to cultivate the memory as such great good would result. The conditions of rapid memorizing should be borne in mind by the teacher. Experiments prove that attention and interest are of more value than mere repetition; the coöperation of two or more senses in fixing the images of the words to be memorized produces much better results than where only one is concerned, motor imagery still further facilitates the process, *e. g.*, in learning lists of words one is greatly assisted if he articulates them.

For the general cultivation of the memory, the pupils should have from ten to fifteen minutes exercise in the early portion of school-day in a rapid drill in nonsense syllables, both by eye and ear. Finally he argues for the use of some simple mnemonic system in the learning of dates and disconnected words or any series of words having little logical connection. The point of the author is that by some such painstaking procedure the power of memory can be greatly strengthened, especially through the use of the principles thus learned in the regular memory work needed in the regular school studies.

We should certainly question whether it is really the memory that is cultivated by these exercises or rather skill in the fixation of attention. Memory is certainly not a general something to be cultivated, but a power as diverse as the lines of human activity, and it can scarcely be cultivated outside of the setting in the action that has rendered its appearance necessary. The fact that students of twenty show little superiority over children of eight in nonsense-syllable tests proves that the power of memory is unchanged only as far as that relatively abstract test goes. The ordinary adult has a specialized memory for his special work. It would be difficult to prove by any test that it is better or worse than a child's. The exercises suggested by M. Biervliet would no doubt lead to good results, but because of the training of the attention that they afford and their furnishing of an economic method which could be applied in specific lines by the individual pupils and students.

Educational Psychology. EDWARD L. THORNDIKE. New York, Lemcke and Buechner. 1903. Pp. viii + 177.

With the aim of this work every educator will certainly be in the most hearty accord. "The work of education," the author tells us, "is to make changes in the human minds and bodies. To control these changes we need knowledge of the causes which bring them to pass. Such knowledge necessitates some means of measuring mental and bodily conditions; adequate knowledge necessitates accurate and complete measurements. We do all make measurements of mental as well as of bodily conditions, but commonly our measurements of mental conditions and so of the changes due to any educational endeavor are crude, individual and incomplete" (p. 3). The book therefore represents an effort to illustrate how mental capacities or traits of all kinds can be measured with a view to finding their quantitative value, their distribution, their relations to one another, whether they are original or acquired; how influenced by environment, selection, age, sex, etc. It is abundantly supplied with figures and tables illustrative of the application of accurate statistical methods to such data as are available. This is not the place to discuss the method as such. The limits of its availability for dealing with the phenomena of consciousness can be determined only by just such studies as these. It is only as we use it as fully as possible in connection with the concrete problems of education that we can discover the extent to which it is useful and hence adequate. We shall here attempt to give only a few of the deductions made by the author in his studies.

In the measurement of a mental trait of groups the necessity of taking account of 'its center of gravity or the general tendency of the trait and its variability' is pointed out, as is also the necessity of accompanying all measurements of mental trait by a statement of their reliability. The results of studies in the distribution of mental traits bear out the hypothesis 'that the distribution of any mental trait in a homogeneous species undisturbed by selection is that given by the probability integral' (p. 19). Two interesting educational corollaries of this law are that 'small differences between individuals in the same species are far more common than larger ones' and 'within any one species there is no clear demarcation of ordinary from exceptional grades of ability' (p. 22). As to relationships between mental traits, the author judges from his abstract tests that they are "most noticeable by their absence or slight degree. The striking thing is the complete independence of different mental functions even

where to the abstract psychological thinker they have seemed nearly identical" (p. 28). His conclusion is 'that the mind is a host of highly particularized and independent abilities' (p. 39).

A knowledge of original nature and its place in the progress of life is educationally of importance because "it is wasteful to attempt to create and folly to pretend to create capacities and interests which are assured to an individual before he is born" (p. 44). The influence of the environment is discussed through Dr. Rice's well-known studies of the influence of various environmental factors upon the efficiency in spelling and arithmetic. The complexity of the general problem is clearly pointed out and presents an admirable example of the logic of evidence. The same is true of the treatment of the relation between original and acquired traits, and of his treatment of many of the popular notions of sex differences in mental traits.

The chapter on exceptional children offers chiefly suggestions as to the nature of the problems involved in the study of very bright or very dull children. Under the heading of 'Broader Studies of Human Nature' is presented a drastic and, to the reviewer's mind, unanswerable criticism of the questionnaire method of gathering data for a scientific psychology. The book closes with a few suggestions upon education as a science. The business of education is to work changes in countless individuals possessing countless variations in their congeries of inherited and acquired traits. There is therefore no such thing as a general educational theory that is true and at the same time definite enough to be of any value. "It is the vice or the misfortune of thinkers about education to have chosen the methods of philosophy or of popular thought instead of those of science. We ruminate over the ideas of Pestalozzi or Herbart or Froebel as if writing a book a hundred years ago proved a man inspired. * * * We discuss the outpourings of successful college presidents. * * * We are like chemists who should quarrel over the views of Paracelsus. * * * There is a plentiful lack of knowledge while opinions more and more abound. They are very often good of their kind but they are not science" (p. 164).

In the appendices are explanations of tests mentioned in the text; of the formulæ for measuring general tendency, variability, relationship, and reliability; and lastly suggestions for further studies of the kind described in the text.

We should all certainly agree with the author in his emphasis of the great need for exact science rather than opinion in education. His painstaking attempt to formulate the precise information that is

at present available will be of the greatest value for educational theory. Perhaps the most immediate good it will accomplish is the making clear of a method of collecting and interpreting data on all sorts of educational problems. It is only when the author departs from scientific statement and draws certain conclusions as to the nature of mind as a whole that many will demur. Like all scientific statements, these regarding mental traits are abstractions and they are perfectly legitimate abstractions. From the point of view of these measurements the mind may be said to be 'but the sum total of an individual's feelings and acts, of the connections between outside events and his responses thereto, and of the possibilities of having such feelings, acts and connections.' But it is certainly leaving scientific statement to conclude that the mind is *only* that. However isolable mental traits may be for purposes of measurement, it does not follow that the mind is simply their sum with the implication that there are really many consciousnesses all more or less insulated. These are situations in which we are impressed with the unitary aspect of our minds. Hence we should say that it is not 'only for convenience that we call one man more learned than another instead of giving concrete lists of the information possessed by each and striking averages from all the particulars.' "If we could make such adequate measurements exhaustively we could therefore describe a man's mind as so many units of that emotional tendency, so many of this sense power, and so on through a well-nigh interminable list of possible mental traits" (p. 3). This may or may not be theoretically possible, but it is not a legitimate deduction from the fact that mind to be measured must assume the form of isolable traits. In fine, it is legitimate to abstract and measure, but it is not legitimate to say that since this can be done therefore the mind is the sum of the abstractions.

IRVING KING.

PRATT INSTITUTE.

The Psychology of Child Development. IRVING KING. Introduction by JOHN DEWEY. Chicago University Press. 1903. Pp. xx + 265.

What Mr. King attempts to do in this volume is to impress upon students of child psychology the necessity (1) of regarding the mind from the functional standpoint, and (2) of studying every act in its complete setting. In the first chapter he argues that adult and child psychology are altogether different, at least when considered from the functional point of view. The difference is primarily one of mental organization; the infant's experience is wholly undifferentiated. Sev-

eral chapters are then devoted to showing that development consists in continual differentiation of experience. After this, 'Inhibition in Development' is discussed; also 'Imitation,' 'Moral Ideas of Childhood,' 'The Theory and Development of Interests' and 'Adolescence.' In a concluding chapter certain 'Educational Implications of Mental Development' are pointed out.

To my mind, the chief value of Mr. King's book lies in the emphasis he puts upon the study of the child-mind from the functional point of view, and as a unity instead of in disjointed and fragmentary bits. Doubtless many of the studies that have been made upon children during the past decade have presented us with isolated facts only, and it has been impossible to see them in their original connections, and so to determine what they mean, why they have occurred, and what they lead toward. From such data we cannot hope to gain much enlightenment respecting the fundamental processes in mental development.

Mr. King's criticism of *externality* in the study of mental development ought to do good. It should lead some very active child study men to try to determine the setting of the facts they gather, and especially to discover what experiences have called them forth. But I cannot myself feel as pessimistic about the present state of affairs as Mr. King does. He is chiefly negative in his book, finding fault with practically all that has been done, except, strangely enough, in the study of 'Interests.' Many of these latter studies have been made according to the method of *externality* which he condemns. Take, for instance, Children's Ambitions, that have been investigated by a number of individuals. Usually children have been required to answer some such question as, 'what would you like to do when you become a man?' Now the data gained from these questions lack altogether the setting to which Mr. King attaches so much importance. When the statistics are handed in they are not accompanied by any account of what events have gone before the answers, what the general attitude of the child toward the world is at the time, and what are the succeeding events. All one gets is an infinitesimal part of the child's mind at the moment.

While appreciating the soundness of Mr. King's general propositions, I find myself asking some questions regarding the way he has applied the method he praises. He argues that what we must do is to determine how the child evaluates his own actions, and not put our own interpretation upon his reasons for his conduct. But when he comes to discuss consciousness in the child all of his interpretations

are made from the adult standpoint. To be consistent he would have to do this, for he maintains that one cannot infer anything about the child's consciousness from particular acts; all one can say is that as activities grow more complex differentiation of consciousness must go on *pari passu* (p. 38). But if we cannot infer states and conditions of consciousness from what the child does, then how can we get a child psychology? The only resort is to infer that characteristic conscious processes in the child are connected with particular activities and expressions because we find such a relationship in our own consciousness; and this is the method Mr. King denounces.

But according to the author, any particular expression in the child may not be connected with the conscious process that a similar expression is in the adult. For in the child any stimulus is likely to produce reaction along the lines of least resistance at the moment. The same stimulus may at one time produce an expression of joy, at another time fear, at another time anger, and so on (p. 59). The mother's face may at this moment produce a joyful response, and at the next moment an angry response. To infer, then, when the child looks angry that he is angry would be certain to lead one astray often.

If it be true that the child's expressions at any period are no certain indications of his conscious processes, then I should think we had best give up talking about these processes. The author gets out of the difficulty by defining consciousness from the adult standpoint, and then applying the conception to the child. Mr. King makes me feel that, following his method, he could have written most of his book without ever having seen children. Take the general conception that development involves continual differentiation in consciousness, emotion, and all mental function, and you have the whole thing.

Now this is a good conception, but I cannot see that we are likely to get a great distance with it alone. I doubt if it will explain all the phenomena of mental development. Is it not possible that there may be mental functions at one period that disappear altogether in the process of development? They are either replaced by other functions, or are so transformed that the term *differentiated* will not apply to them. Then we need particulars; we need to know what the differentiations are at particular epochs. We need to know whether the differentiated thing at any moment is manifested toward all situations whatsoever, or only toward certain ones. But we must take Mr. King at his word. He aims to give simply a *point of view*, and not to give us any detailed account of mental development. One will look in vain in his book for concrete phenomena of development.

I feel that while we have perhaps gone to excess in the externality of our studies upon children we are as likely to make progress along this route as along the route of internality, which Mr. King values so highly. I have little reverence for isolated facts, but yet I can see that if we get enough of them we are likely to discover that certain kinds of activity are characteristic of children at certain periods of development, and we will be more apt to hunt for the significance of any activity and to see it in its setting in the developmental series than if we remain satisfied with the quite general statement that development consists of continual differentiation, which we have faith is true, though we are not given any concrete evidence to show that it is so.

M. V. O'SHEA.

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PSYCHOLOGY AND PHILOSOPHY.

The Relation of Structural and Functional Psychology to Philosophy. JAMES R. ANGELL. *Philosophical Review* XII., 3, pp. 243-271.

There can exist no theoretical distinctions between philosophy and psychology when psychology is interpreted as at once both structural and functional. For the problems of psychology and of the normative sciences are not discrete, isolated questions; "they are irrepressible outgrowths from a central and basic problem which we have chosen to designate as the problem of the structure and function of consciousness." The distinction between philosophy and psychology is largely the outcome of the prevalent attempt to make psychological investigations after the manner of biological procedure, that is, to treat the mind as an organism from structural and functional standpoints, analogous to anatomical and physiological standpoints. 'That the biological idea of function is applicable in a general way to the life of consciousness is hardly open to question,' but it is necessary to emphasize the 'disparity between the psychological form of the structure concept and that current in biology.' First, it is important to recognize that consciousness viewed dynamically from within is unipolar; it is only when it is viewed retrospectively that it appears to be made up of unhomogeneous qualities among which are certain ones which seem to be elementary, that is, incapable of further analysis. These psychological elements differ however from the anatomical in that while the latter are spatial and relatively durable entities, the former are not spatial and, by general consent, are in a measure admitted to be artifacts.

Furthermore, it is significant that there has been not thorough-going attempt to make two independent sciences along these lines (of structure and function), and it is also suggestive, beyond the mere fact of the imperfections of language, that terms widely used in the structural sense, as sensation, image, affection, are also employed with functional significance. For the implication is that structure and function are distinctions only as two phases of one fact. It is, for example, to hypostatize the sensation when, 'dissociating it from its particular surroundings, we regard it as a type of a relatively structural element for which specific function is a secondary and unimportant consideration.' Psychology can not, therefore, confine itself to merely structural problems. The question as to the make-up of consciousness, that is, as to what operations it performs, cannot be answered without showing how and why they are performed.

This gives the starting point for the discussion of the relations between psychology and the normative philosophical sciences. As evidence of their organic connection the author emphasizes the fact of the unchecked invasion of psychology into normative fields and *vice versa* the 'intrusion into psychological writings' of investigations which, dealing ostensibly with mental functions, 'trespass in reality upon the preserves of the normative philosophical sciences.' More concretely, this relation is shown from the modern philosophical standpoint which regards 'experience itself as a universe or system in which truth [or value] is ultimately synonymous with the effective, and in which error is not only identifiable with partiality and incompleteness but particularly with that form of inadequacy which issues in the failure of practice when conceived in its entirety.' Practice does not mean that which is merely externally practical; constructive thought is practice in its most intelligently creative and formative stage. Now if consciousness is really an efficient agent in the furtherance of the life activities of the organism, its value obviously lies in its cognitive and volitional and even in its emotional functions. "So a functional psychology must canvass the general processes at present termed cognitive, affective, conative. In this canvass the questions treated by the normative philosophical sciences under head of value [logic dealing with value of the knowledge process, ethics with value in conduct, and æsthetics with value in feeling] must arise because they are synonymous with the problems of effective functioning." Briefly, this relation may be said to hold of psychology in relation to epistemology and metaphysics. For if one follows persistently the problem of logic which arises in psychology, as to the validity of the knowl-

edge process and the method of attaining truth, he is led over to the epistemological problem as to the ultimate nature and warrant of knowledge. And the organic connection is true of metaphysics, since it is after all only a persistent attempt at the complete rationalization of thought and conduct.

A. LILLIAN KELLOGG.

VASSAR COLLEGE.

Esquisse d'un Système de Psychologie Rationnelle. Leçons de Psychologie. EMILE LUBAC. Préface de M. HENRI BERGSON. Paris, Félix Alcan, 1904.

As the title implies, this book is the sketch of a system of psychology rather than an elaborated system, and the subtitle shows it to be an elementary text-book. The writer, a pupil of Bergson, is dissatisfied with the traditional empirical psychology with its machinery of association. For social convenience empirical psychology has constructed a conventional picture of mental life which is not recognizable by the subject it seeks to portray. For a true account we must turn to our feeling, or 'intuition,' of the living experience, from which standpoint we may obtain a view which is not only true but equally clear.

The author adopts the traditional classification of intellect, feeling (affection) and will. In general his plan is to show that over against the physiological factors, or the effects of experience, there is in every phase of mental life a factor representing pure mental activity, or reason. The perception of objects is not merely the projection outward of sensations but rather a process of differentiation of subject and object in which we arrive at a consciousness of self. Memory includes the physiological factor of habit but also the purely psychical factor of recognition. Association by contiguity is a repetition of experience, but association by similarity is purely spontaneous and original. In attention the psychical factor is shown in that concentration of thought which results in clearness as opposed to mere habits of fixation or the 'obsession' of fixed ideas. And will represents a factor distinct from the conflicting desires.

In criticism it must be said that the author's ideas have been in the main anticipated and more completely elaborated in our own psychological literature. The alternative to the mechanical psychology has been quite extensively elaborated by our English pragmatic school. And in comparison with these developments M. Lubac's results must be regarded as largely negative. His analysis is often acute and suggestive, and his distinctions as far as they go are clear. But his 'system' amounts to little more than showing that in every case there is

something more than the discernible physiological elements. What more is not clearly stated. On the whole this intuitional psychology has reached about the same point as our now somewhat out-of-date intuitional ethics. It is simply anti-mechanical.

WARNER FITE.

UNIVERSITY OF TEXAS.

A History of the Problems of Philosophy. PAUL JANET and GABRIEL SÉAILLES. Translated by ADA MONAHAN. Edited by HENRY JONES. Vol. I., pp. xviii + 380, Vol. II., pp. xii + 375. London, Macmillan and Co. 1902.

Almost all that need be said of this book in a short and somewhat belated notice is indicated in the authors' preface and in Professor Jones's admirable introduction. It is not a history of philosophy in the ordinary sense, but a history of philosophical problems; and it is, as the authors claim, 'conceived on an entirely new plan.' "We have taken, one after another, in their dogmatic order, the great problems of philosophy, and given their history, indicating their origin, their various aspects and forms, and the stage they have reached in our own day." Though Windelband's *History* will immediately occur to the reader, the authors' claim to originality of method is entirely valid, since, as Professor Jones remarks, Windelband's plan is essentially different. One point of difference may be mentioned: Windelband refers only occasionally to the philosophers' own expositions, while one of the characteristics of the work before us is the endeavor to introduce the student to the original sources through the medium of copious quotations in their best English renderings. Less valid than the claim to novelty of conception is the claim to have noted the present aspect of the great problems of philosophy. Thus in the sphere of psychology, the work of genetic and comparative psychologists like Romanes and Lloyd Morgan is not referred to, and the important contributions of social psychologists like Baldwin and Tarde are ignored. The chapter on Habit, for instance — to name no other — which closes with the views of Mill and Spencer, cannot be said to bring the various aspects of the problem down to date. And if it be true that the present *status* of psychological problems is imperfectly indicated, the same thing is true, as one would naturally expect, of ethics and metaphysics; since the present-day aspect of ethical and metaphysical questions has been largely determined by recent psychology. In illustration of this, I venture the assertion that one of the most marked characteristics of the two notable metaphysical works recently produced in this country — Royce's *Gifford Lectures* and

Ormond's *Foundations of Knowledge* — is the way in which their authors have worked the results of recent genetic psychology into the bone and fiber of their metaphysical thinking. This gratuitous comment is of course not meant as a criticism of the work before us. It is made merely for the purpose of pointing out that the 'aujourd'hui' in the sentence quoted, besides possessing more or less elasticity, must in any case refer to the date of the publication of the second French edition from which the present translation is made, viz., 1894. And moreover, it would be quite impossible in a work of modest compass, which traces the history of problems from Thales down, to include also a conspectus of current movements in philosophy.

As M. Séailles reminds us (XIX.) the book must be judged by what it pretends to be. It is designed as a text-book for students, with the object of introducing them to the study of philosophy and its history; but whether it is intended to be used by itself as an introduction to philosophy, or as a book for collateral reading and reference, is not stated, though we gather from the preface to the French edition that it is intended for use in connection with Janet's *Traité élémentaire de philosophie*. My own judgment is that for purposes of reference and collateral reading it may prove exceedingly useful, but that to employ it to advantage as a class-book would be difficult. As an introduction to the study of philosophy it can scarcely take the place of the old-fashioned histories or of theoretical introductions like those of Paulsen and Wundt. It will show the student how certain problems arose, what they are, and how they have been solved; but it will neither state nor attempt to solve some of the problems of contemporary philosophy, nor does its plan permit of that rounded presentation of an author's system which we expect to find in the general histories. It should be valuable to the student as affording a clear, scholarly and fairly objective historical account of certain problems; but in order to accomplish its full purpose, the chapters on the history of particular problems would have to be read in connection with discussions of these topics in standard works of recent date.

The contents of the book are as follows: Volume I. is devoted to psychology and contains chapters on 'What is Philosophy?' 'The Psychological Problem,' 'The Senses and External Perception,' 'Reason,' 'Memory,' 'The Association of Ideas,' 'Language,' 'The Feelings,' 'Freedom,' and 'Habit.' Volume II. is divided into three parts, dealing respectively with 'Ethics,' 'Metaphysics,' and 'Theodicy.' In Part III., 'Metaphysics,' the topics dealt with are 'Skepticism and Certitude,' 'Matter,' 'Mind,' and 'The Relations between

Matter and Mind.' But in Parts II. and IV. the topical arrangement is abandoned for an historical one. Thus Part II., 'Ethics,' treats of (1) 'The Ethical Problem in Ancient Times,' and (2) 'The Ethical Problem in Modern Times.' Part IV., in like manner, treats of 'The Religious Problem in Ancient and in Modern Times.'

One need not quarrel with this distribution of material, which perhaps serves the authors' purpose as well as any other would; though it lacks consistency. There seems to be no clear conception of the mutual relations between the different philosophical disciplines, and the principle of distribution is neither a logical nor the traditional one. Where, *e. g.*, does the problem of knowledge belong? If under metaphysics, it is also true that the religious problem is metaphysical in character. Philosophy would then have two main divisions, psychology and metaphysics. (Cf. I., 25.) But then, where do ethics and logic come in, not to say æsthetics, of which there is no mention? In the French edition there is quite an extensive treatment of logic, which is omitted from the translation for lack of space and also because its place is already filled by other works accessible in English. The history of Ethics is included both on account of its excellence and of the poverty of the literature of the subject in our language. While I cannot agree with Professor Jones in regard to the exceptional poverty of our literature on this subject, I concur in his judgment that these chapters deserve a place in the English edition; and I may use the chapter on 'The Ethical Problem in Modern Times' to illustrate the scope, both by way of inclusion and omission, of the authors' accomplishment, since the chapters on Ethics may be taken as fairly typical of the character of the work as a whole.

The modern moralists, then, whose views are given, are Descartes, Malbranche, Spinoza, Leibnitz, Hobbes and Helvetius (brief treatment), Kant, Bentham, Adam Smith, Mill and Spencer. It is at once apparent that the list is very incomplete, no mention being made of Fichte, Hegel, or Schopenhauer among German moralists, nor, among British writers, of Bain, Sidgwick, Stephen, T. H. Green — to name only these, whose works appeared some twenty years ago. An account of post-Kantian ethics which jumps from Kant to Adam Smith and Bentham and then to Mill and Spencer, aside from its obvious incompleteness, is apt to give a false impression of current tendencies. One other example may be given to illustrate Professor Jones's generalization, to be mentioned presently. In the chapter on Freedom, in addition to the great names in philosophy, place is found for Bossuet, but there is no mention of the classic

treatises of Collins and Edwards; and while these names cannot be included among philosophers of the first rank, a history of the problem of human freedom is scarcely complete without them. In fact, the features most likely to be commented upon are some notable omissions and the relative emphasis laid upon the different systems and tendencies. As Professor Jones points out, the story of German philosophy since Kant is very imperfectly told (there is, *e. g.*, the barest reference to Schopenhauer and no mention at all of Lotze), while in England the whole idealistic movement is ignored. From the frequency with which the chapters close with Herbert Spencer, the French student would certainly conclude that Spencer is still not merely 'our great philosopher,' but our only philosopher since Mill. This imperfect presentation of British philosophy is a less serious defect for the English reader than for the students to whom the original work is addressed, since the former can more readily supply the deficiencies from his own knowledge, while the French student is in danger of receiving the impression that English philosophy is necessarily empirical. This edition, then, should be in some respects more valuable than the original, since it enables the English reader to view the development of philosophical problems through French spectacles, without the danger, to which the French student is exposed, of getting a false perspective. We are indebted to the editor and the translator for making it available in such excellent form to the English reader.

The chief merits of the book, as already implied, seem to me to be its novelty of conception and its clear, accurate and scholarly presentation of Greek philosophy, the Cartesian School and French philosophy generally, the English empiricists, and the Scottish School. Its principal defect is its incompleteness; though the reader will occasionally be disposed to criticise the author's expositions. Thus, *e. g.*, I think that the rationalistic element in Locke is overlooked and that his opposition to DesCartes is exaggerated and their affinities are ignored. Thus we are told (I., 112) that 'Locke begins by attacking DesCartes' doctrine of innate ideas.' But was it DesCartes' doctrine that Locke was attacking?

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ETHICS.

The Nature of Goodness. GEORGE HERBERT PALMER. Boston and New York, Houghton, Mifflin & Co. 1903. Pp. viii + 247.

This volume, which consists of lectures delivered before college audiences at several leading institutions, discusses in an effective and

interesting manner fundamental ethical problems. The argument is chiefly concerned with the highly ambiguous word "goodness." Those features of goodness which are common alike to persons and things are first examined, and then personal goodness.

Are we warranted in attributing goodness to things? In the sense of adaptation to an end—as when we speak of a good knife—doubtless; but can we characterize a physical object as good in the absolute sense, as having value in itself? Professor Palmer's answer to this question is indicated in these definitions: 'Intrinsic goodness is the expression of the fulness of function in the constitution of an organism'; an object is good in itself when its 'powers are so adjusted to one another that they coöperate to render the object a firm totality.' This implies that coherence of inner constitution may, independently of any relation to conscious beings, confer worth. Yet elsewhere we are told that 'in the last analysis the word good will be found everywhere to refer to some satisfaction of human desire.' Surely the latter statement is correct. A good implies a being capable of appreciation; in the absence of a responsive sensibility, no outward thing can have value. On what ground, then, can we speak of anything external as intrinsically good? Not on the ground of its perfection of structure and function, but only as it may minister to results in a rational and feeling consciousness that are intrinsically excellent. The Venus of Milo is good in itself because the sentiment of beauty which it awakens is an absolute end. In the realm of externalities, we deal for the most part with extrinsic goodness: food, clothing, houses, lands, mediate satisfactions that are subordinate and instrumental. But some outward objects are so correlated to our intellectual, æsthetic and ethical nature as to contribute directly to the fulfillment of our personality. These are not utilities, but have value in themselves. The argument of the first two chapters is perhaps open to criticism, as not recognizing with sufficient explicitness the essentially personal character of the category of goodness, and for this reason ascribing to things, apart from their relation to persons, the dignity of inherent worth.

The goodness of persons is considered in connection with the four elements into which personality may be analyzed — self-consciousness, self-direction, self-development, self-sacrifice. The first three of these are obviously coöperating factors, but the fourth suggests a difficulty. How is self-sacrifice to be reconciled with self-assertion? "We must acknowledge that self-sacrifice no less than culture is a powerful form of self-assertion. To say, 'I will sacrifice myself,' is to leave

the important part of the business unexpressed. The weighty matter is in the covert preposition *for*, — 'I will sacrifice myself *for*.' An approved object is aimed at. We are not primarily interested in negating ourselves. * * * Omit, or overlook, that word *for*, and self-sacrifice loses its exalted character. It sinks into asceticism." This solution of the problem does not destroy the reality of the sacrifice by assuming a compensating good different from the action itself, nor does it involve the anomaly of a diminished and impoverished selfhood; it affirms the all-important practical truth that legitimate self-denial is always, in the most real sense, self-affirmation.

The final chapter on 'the three stages of goodness' gives philosophical statement to the thought embodied in Wordsworth's 'Ode to Duty,' in Matthew Arnold's 'Morality,' in Christ's saying about becoming as little children in order to enter the kingdom of heaven. The ethical and pedagogic importance of a due appreciation of these stadia of moral experience — the goodness of nature, the goodness of reflection, the goodness of second nature — is well insisted upon.

Every reader will note with sympathy, and many with a keen sense of personal loss, the graceful and pathetic dedication.

EDWARD H. GRIFFIN.

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BOOKS RECEIVED FROM MARCH 7 TO APRIL 7.

Twentieth Annual Report of the Bureau of American Ethnology (1898-1899). J. W. POWELL. Washington, Govt. Printing Office, 1903. Pp. ccxxiv + 237. [Contains a richly illustrated paper on 'Aboriginal Pottery of the Eastern United States,' by W. H. Holmes.]

Neue Forschungen über den Marquis de Sade und seine Zeit. EUGEN DÜHREN. Berlin, Harrwitz, 1904. Pp. xxxii + 488. [A general going over of the history and literature of the topic of de Sade's work, with view to results for the history of morals.]

La Philosophie en Amérique depuis les origines jusqu'à nos jours (1607-1900). L. VAN BECELAERE. Introduction by JOSIAH ROYCE. New York, Eclectic Pub. Co., 1904. Pp. xvii + 180. [Dedicated to W. T. Harris, introduced by Josiah Royce, and authorized by R. P. Rouleau, S. Th. L., &c.]

Das idealistische Argument in der Kritik des Materialismus. W. WARTENBURG. Leipzig, Barth, 1904. Pp. 71. Mk. 1.60.

- Grundzüge der allgemeinen Aesthetik.* STEPHEN WITASEK. Leipzig, Barth, 1904. Pp. vii + 410. Mk. 4.
- Medical Reports of the Sheppard and Enoch Pratt Hospital.* Vol. I., No. 1. Baltimore, 1903. Pp. 176. [Articles reprinted from the *Amer. Jn. of Insanity.*]
- What is a Species?* E. B. POULTON. President's Address, Entomol. Soc. London. London, Clay, 1904. Pp. 48.
- Essai sur l'origine de l'Intelligence humaine.* A. KASARINOFF. Paris, Michalon, 1903. Pp. 32.
- L'organismo vivente e la sua anima.* A. CURCI. Catania, Chiavaro, 1904. Pp. 245. L. 3.
- Fatigue.* A. MOSSO. Translated by MARGARET DRUMMOND and W. B. DRUMMOND. New York, G. P. Putnam's Sons; London, Sonnenschein, 1904. Pp. xiv + 334.

NOTES AND NEWS.

THE following appointments have been made in the Johns Hopkins University: Professor of Experimental Psychology, George M. Stratton, Ph.D., of the University of California; Lecturer in Experimental Psychology (1904-5), Professor E. W. Scripture of Yale University and the Carnegie Institution; Lecturer in Optics and Logic, C. Ladd Franklin, Baltimore; Lecturer in Physiological Psychology, Clarence B. Farrar, M.D., of the Sheppard Hospital. Details of the courses for 1904-5 will appear in the announcement pages of the BULLETIN.

ANNOUNCEMENTS have reached us of the Sixth International Zoölogical Congress, to meet at Berne, August 14 to 19, 1904, under the presidency of Professor Th. Studer. (Address: Musée d'Histoire Naturelle, Berne, Switzerland.)

A LABORATORY for experimental psychology has been founded in the Istituto di Studi Superiori at Florence, under the direction of Professor De Sarlo.

DR. GUIDO VILLA has been charged with the duties of Professor in the University of Rome pending the appointment of a successor to the late Professor Labriola. Professor Villa's *Contemporary Psychology* has been translated into English, Spanish, French, and German.

THE *Index Philosophique* of MM. Vaschide and von Buschan, noticed in our last issue, is published by the *Revue de Philosophie*, the organ of the Société Philosophique de Louvain. From the same

source we are to expect the *Annuaire des Philosophes*, already announced in the pages of the REVIEW. We note that the other Catholic journal, the *Revue Néo-Scolastique*, continues its quarterly 'Sommaire Idéologique,' which is very carefully compiled.

DR. S. I. FRANZ, instructor in physiology at Dartmouth Medical College, has been appointed pathological physiologist and psychologist to McLean Hospital for the Insane, at Waverly, Mass., the appointment taking place April 1. He will investigate the abnormal physiological and psychological conditions in the insane, in addition to continuing researches on the functions of the cerebrum.

DR. GEORGE R. MONTGOMERY, Lecturer in Philosophy at Yale University, author of *The Place of Values* (1903), and translator of Leibniz' *Metaphysics* (2d ed. 1903), has accepted a call to the professorship of philosophy in Carleton College, at Northfield, Minn. He takes the place there of the Rev. Eugene W. Lyman, who, we learn through the press, has been called to the chair of systematic theology and apologetics in the Congregational Theological Seminary at Montreal.

WE understand that the Glenmore School of Philosophy, founded by the late Thomas Davidson, will be in session in August this year as usual, at Hurricane, N. Y., under the supervision of Dr. Stephen F. Weston. (Address: Antioch College, Yellow Springs, Ohio.)

THE section of Anthropology and Psychology of the New York Academy of Sciences held a meeting in conjunction with the New York Branch of the American Psychological Association on March 28. The afternoon session was held at the Psychological Laboratory of Columbia University; the evening session at the American Museum of Natural History.

PROFESSOR JAMES WARD has accepted an invitation to deliver the Phi Beta Kappa oration at the University of Iowa on June 14. Dr. Ward will not reach this country before June 1.

PROFESSOR G. STANLEY HALL and Professor J. Mark Baldwin are to lecture in the Summer School of the South at the University of Tennessee in July.

The following items are taken from the press:

DR. JOSEPH JASTROW, professor of psychology and logic at the University of Wisconsin, has sailed for Europe to be absent until the autumn.

DR. EDWARD COWLES has resigned the superintendency of the McLean Hospital, at Waverly, Mass.

DR. EMIL KRAEPELIN, of the University of Heidelberg, editor of *Psychologische Arbeiten*, has gone to the Dutch East Indies to study insanity among the natives.

PROFESSOR KUNO FISCHER, of Heidelberg, will not retire, as has been announced, but offers this summer four lectures a week on 'The History of Modern Philosophy.'

DR. TH. ZIEHEN, of Utrecht, has been called to the chair of psychiatry at Berlin vacated by the death of Dr. F. Jolly; he has been succeeded by Professor Karl Wernicke, of Breslau. We record also the death of the well-known psychiatrist, Hermann Emminghaus, formerly professor at Freiburg.

MR. JOHN I. JEGI, B.S. (Chicago, 1896), professor of psychology and physiology in the Milwaukee State Normal School, died at his home in Milwaukee on January 7. Besides his works on physiological topics he published a paper on 'A Comparative Study of Auditory and Visual Memory,' in the *University of Chicago Contributions to Philosophy*.

DR. G. DAWES HICKS has been appointed to the chair of moral philosophy in University College, London, made vacant by the resignation of Dr. James Sully.

AT the recent meeting of the Society for Psychical Research, it was announced that the sum of \$30,000 had been collected for a scholarship, which it was hoped would be increased to \$40,000. The English Society now numbers 832 members and the American society 530 members.

PROFESSOR TITCHENER's *Outline of Psychology* has been translated into Russian and Italian, and his *Primer of Psychology* into Spanish. An Italian translation of the *Experimental Psychology* is now in progress.

CONTENTS OF MAGAZINES, JANUARY TO MARCH.

THE HIBBERT JOURNAL, II., 2. Progressive Catholicism and High Church Absolutism: *H. C. Corrance*. The Alleged Indifference of Laymen to Religion, I.: *Sir Oliver Lodge*; II.: *Sir Edward Russell*; III.: *J. H. Muirhead*; IV.: *The Editor*. The Gods as Embodiments of the Race-Memory: *Edward Carpenter*. The Evidence of Design in the Elements and Structure of the Cosmos: *Wm. Pepperrell Montague*. The New Point of View in Theology:

J. H. Beibitz. Sacrificial Communion in Greek Religion: *Lewis R. Farnell.* The Johannine Problem, II.; Direct Internal Evidence: *B. W. Bacon.* Zoroastrianism and Primitive Christianity, II. (Concluded): *James Moffatt.* Some Theological Aspects of the Iconoclastic Controversy: *Alice Gardner.* Discussions, etc.

JOURNAL OF NERVOUS AND MENTAL DISEASE, 31, 2. A Case of Chronic Internal Hydrocephalus in a Youth: *E. E. Southard and W. F. Roberts.* Senile Dementia: a Clinical Study of Two Hundred Cases with Particular Regard to Types of the Disease: *William Pickett.* A Case of Alexia: *Philip Zenner.* The Reflexes in Long Distance Runners: A Study of the Influence of Fatigue upon Certain Reflexes: *Philip Coombs Knapp and John Jenks Thomas.* Society Proceedings. Journals. Miscellany. Book Reviews. 31, 3. Is Epilepsy a Functional Disease? *M. Allen Starr.* A Cerebellar Tumor; operation; recovery: *Frank R. Fry.* Delirium Grave: A Critical Study, with Report of a Case with Autopsy: *William Broadus Pritchard.* Paralysis Agitans: Some Clinical Observations Based on the Study of 219 Cases Seen at the Clinic of Professor M. Allen Starr: *T. Stuart Hart.* Society Proceedings, etc.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, I., 1. The International Congress of Arts and Science: *Hugo Münsterberg.* The Religious Consciousness as Ontological: *George Trumbull Ladd.* Discussion. Some Points in Minor Logic: *Christine Ladd Franklin.* Societies, etc. Notes. I., 2. Concerning the Concept and Existence-Proofs of the Infinite: *C. J. Keyser.* Organic Images: *E. B. Titchener.* Cases of Double Consciousness: *M. Allen Starr.* Discussion. The Logic of History. *J. A. Leighton.* The Limitations of Minor Logic. *Editor of Science.* Reviews, Notes, etc. I., 3. Notes upon Logical Topics; I. A Classification of Contemporary Tendencies: *John Dewey.* The Necessity from a Standpoint of Scientific Method of a Reconstruction of the Ideas of the Psychical and the Physical: *H. Heath Bawden.* Discussion. Organic Images. *Wilfrid Lay.* Reviews, etc. I., 4. Accuracy of Perception of Verticality, and the Factors that Influence it: *E. B. Delabarre.* Recent Contributions to the Literature of Scholasticism: *William Turner.* Note on the Idea of a 'Moral Sense' in British Thought Prior to Shaftesbury: *James H. Tufts.* Discussion. Professor Pierce on Space Perception: *James H. Hyslop.* Reviews, etc.

UNIVERSITY OF NEBRASKA STUDIES, IV., 1. The Kinetic Theory of Economic Crises: *W. G. Langworthy Taylor.* Valid-

ity of the Ergograph as a Measure of Work Capacity: *Thaddeus L. Bolton and Eleonora T. Miller.*

REVUE DE L'ECOLE D'ANTHROPOLOGIE, XIV, 1. Indication des principales étapes de la phylogénie des hommes: *Pierre-G. Mahoudeau.* Note sur des graines de végétaux trouvées dans la brèche préhistorique de la grotte d'Engis (Belgique). (Avec 2 fig.): *Ernest Doudou.* Quelques observations sur les pièces recueillies par M. Doudou dans la deuxième grotte d'Engis. (Avec 10 fig.): *L. Capitan.* Cours d'antiquités américaines. XIV., 2. Les Stigmates anatomiques de la Dégénérescence Mentale: *Etienne Rabaud.* La Masculinité des Départements Méditerranéens: *A. Dumont.* Un Nouveau Type de Grattoir-Burin: *J. Labrie* (avec 4 figures).

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE, X., 1. Auf wem ruht Kants Geist? (Eine Säkularbetrachtung): *Erich Adickes.* Anschauung und Beschreibung (Ein Beitrag zur Aesthetik): *Max Dessoir.* Der Stoff vom philosophischen Standpunkte: *J. N. Szuman.* Jahresbericht. (Literature of Logic, 1895-99): *Edmund Husserl.* Miscellany.

JOURNAL FÜR PSYCHOLOGIE UND NEUROLOGIE, II., 6. Beiträge zum Studium des Hirnstammes: *Warncke.* Kasuistische Mitteilungen zur Anwendung der Hypnose bei unheilbaren organischen Erkrankungen: *Pewnizki.* Referate.

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THE
PSYCHOLOGICAL BULLETIN

MEMORY AND THE ECONOMY OF LEARNING.¹

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Since Ebbinghaus published his monograph *Ueber das Gedächtniss* in 1885, the study of memory has taken a prominent place in experimental psychology. The method of reproduction which Ebbinghaus used has proven itself most valuable in broadening out and correcting results which hitherto had been obtained by introspection alone. This method is very simple, consisting in the presentation of an object and group of objects and the voluntary reproduction of the same after a fixed intervention of time.

In order to work out a concrete problem one must, of course, following the dictates of all experimental investigation, seek first the simplest *material* to work with and then control all the various *conditions* as carefully as possible. Ebbinghaus found his *material* in nonsense syllables which he arranged from vowels between two consonants into series of different lengths. In order to keep the *conditions* constant he experimented only on himself, being careful to work at stated hours of the day and in a certain mental readiness. The series at hand was then repeated aloud at a fixed tempo until learned by heart. The *number of repetitions* and the *time* required for the learning were both carefully noted. In this way many similar series were learned on different days, and then relearned after varying intervals. The time and number of repetitions saved by the second learn-

¹ Read before the Western Philosophical Association in Columbia, Mo., April 1, 1904.

ing over the first gave a direct measure for the parts retained in memory during the intervals of the two learnings.

By varying the length of series and interval many interesting relations were found. Thus, for example, a series up to 7 syllables in length could be learned after a little practice in 1 repetition. 12 syllables, however, required 17 repetitions on the average, 17 syllables, 30 repetitions, 24 syllables, 44 repetitions, and 36 syllables, 55 repetitions. That is to say, the increase in the number of repetitions required is at first proportionately greater than the increase in number of syllables; later it becomes less. As to the influence of the time interval on retention, it was found that memory fails rapidly during the first hour but less so during the next succeeding hours until, when a day is passed, the parts still retained fade thereafter very gradually as time goes on. Even after a period of 22 years Ebbinghaus was able to detect a saving of 7 per cent. by the relearning of a portion of Byron's 'Don Juan,' which in the meantime he had not seen. Since the appearance of Ebbinghaus' work the number of investigations in this field has been so great, the problems attempted and solved have been so manifold, it begins to seem worth while to pause a moment on the way and 'take stock.' Ebbinghaus himself, in his *Psychologie*, has done this in a quite satisfactory manner for the work up to 1902. And more recently Otto Lipmann has given us a short account of the practical results which have accrued from the experimental study of memory.

In the brief time at my disposal this morning I should like to invite your attention to a few points in regard to the economy of learning.

One of the first considerations in drawing conclusions for economy in learning must be a strict analysis and differentiation of *types of learners* and *ways of learning*. There are three main factors which go to form our fundamental type distinctions: visual, aural and kinæsthetic. The normal individual possesses all three in varying degrees. The predominance of one over the others determines the classification as the visual, auditory or kinæsthetic type of person. But by far the larger number of persons are of a mixed type which often seems to defy very

close analysis. So Netschajeff, in studying the types of 700 students, between the ages of 11 and 19, in a Russian military school, found only 11 per cent. whom he could refer definitely to one of these three classes, though 49 per cent. combined two factors to neglect the third. Of these, 32 per cent. were visual-kinæsthetic, 12 per cent. visual-auditory and only 5 per cent. auditory-kinæsthetic. The last is a rather unexpected result, since we have been inclined to hold auditory and kinæsthetic factors (evidenced in movements of the lips and throat) as fairly inseparable. The remaining 40 per cent. of Netschajeff's subjects were indeterminate.

Aside from this fundamental analysis of the mind's working material, it is also of importance to distinguish an intellectual and a sensory type of person in accordance with the mind's manner of making use of its factors. Under the intellectual or logical type I should class persons who, with very slight play of imagination, grasp the matter presented *as it is*, holding to its objective factors, adding very little of a subjective nature. The associative connections which serve to bring the thing into the mind are such as will give it meaning and are all checked by a sort of *mental inertia*, *i. e.*, by more or less clearly defined tendencies to persevere along certain lines of thought. Accordingly such stray suggestive elements as might call up reproductions not directly bearing on the matter at hand are avoided.

The sensory type of person, on the contrary, is rather subjective than objective in nature. He reproduces readily on the presentation of any motive and is highly associative. Sense perceptions as such rather than abstract concepts mean much to him. His mind works rapidly, intuitively, where the intellectual works slow and carefully.

As to the ways of learning, we are confronted with a *slow method* and a *fast method*. The intellectual type of person favors the slower method. The very careful consideration and painstaking observation of this type usually demands, in learning, a greater number of repetitions and a comparatively slow rate of speed. The sensory type of person learns faster, as a rule. His learning is based much more intimately on the sensory factors themselves. The quickness of his learning is

due to the more or less automatic and intuitive way in which he grasps the whole and neglects the parts.

For the learning of nonsense syllables there are two distinct rates of speed which, with respect both to expediency of learning and retention in memory, show themselves more advantageous than all the rest. The first is a comparatively slow rate at which the syllables follow one another in approximately one and one half second intervals. This represents the slow method of learning. The other, representing the fast method, is three times as quick, *i. e.*, syllables follow in one half second intervals.

Meumann and Stern have been inclined to think that practice would level the differences of fast and slow learners, that probably the fundamental capacity for learning is the same in all persons. On the results of certain experiments with school children Meumann concludes that with sufficient practice all persons would most probably learn equally fast at a uniform rate of speed. The seeming differences of individuals, he thinks, lie in the varying length of time requisite for adaptation to the work.

There can be no doubt but practice does exert a levelling tendency of this sort, yet I can scarcely believe it possible to bring all learners to the same method and results unless type distinctions be at the same time obliterated. In my own experiments, though the influence of practice was constantly noticeable, still the slow learner of intellectual type persisted throughout in requiring a greater number of repetitions and a longer time than did the fast learner of sensory type.

To turn now for a brief consideration of these two rates of speed mentioned; the slower was found to be generally most advantageous from the point of view of a small number of repetitions. The faster one gave the shortest time for learning. How, then, shall we conclude as to the relative advantages of these speeds for different persons? We are not justified in considering either of these factors without the other. Ebbinghaus makes a tentative conclusion in favor of a fast rate of speed for all, because he found himself thus able to learn and relearn his matter with the least expense of time. The increased number of repetitions attending the faster tempo was left out of consid-

eration. But since every increase of this sort must mean an increased expenditure of energy, economy requires that we take the number of repetitions into account. It follows that the ideal tempo should be such that one might learn with expediency and also without too great an effort. The organism as a whole can best afford to make a compromise in favor of that rate of speed where the best combination of learning time and repetitions may be effected. This point of view controlled the selection of the two rates of speed noted, and was applied both to the primary learning and the relearning. The slower of the two is best adapted to the logical method of the intellectual type where a full consciousness of every factor is desirable. The faster rate is one for a sensory type of person whose attention is directed on groups and the total impression rather than on single factors.

It must be added that these two rates of speed do not hold good for sense material, though the methods do. The factors which go to make up sense material are of unequal importance. The difficulties are not so great—particularly those of articulation. Consequently all persons tend to select a faster and more uniform rate of speed which varies from 0.3–0.4 second per syllable. A person of intellectual type ordinarily finds no hindrance to his method at such a speed; and, as to the sensory type, articulatory difficulties make it impossible for him to make use of a faster rate. Individual differences of method do not change. Variations in ease of learning and powers of retention are the same as in the learning of nonsense syllables.

The most practical application of these results is to be found in the school room. All teachers know the difficulty they meet with in directing the study of some pupils. Among these there is the one who leaves his lesson until the last half hour and then with increased energy attempts by faster reading to impress the matter on his mind in the brief time at his disposal. The teacher is usually at war with this sort of pupil even though he may make good recitations. "Quick learning and quick forgetting go hand in hand," he is told, and his methods are accordingly discouraged. Our experiments justify us in doubting the entire wisdom of this dictum. Quick learning is not

necessarily followed by quick forgetting. Provided the student *learns* his lesson his method is not at all so poor. It doubtless represents his mental type and, if so, he will probably retain the matter better when learned in this manner than if he had spent two hours over it with his mind 'wool-gathering' during three fourths of the time.

On the other hand, we have the evils of 'cramming' which are potent enough and must, naturally, be considered in connection with rapid learning of this sort. Müller and Pilzecker have pointed out that our perceptions require a certain time to 'set,' to become organized, before they can be effective in memory. Without allowing this period, dissociation results which leads to a partial or total loss of memory. Burnham has recently made use of this fact (though curiously enough without reference to Müller and Pilzecker) in advancing a theory for retroactive amnesia. It is very harmful to the associative connections just established, when one turns from a concentrated study of one sort directly to something else which requires equally attentive consideration. This is what the student does when he 'crams.' He impresses his mind with a number of more or less diverse and disparate facts without supplying those associative connections which might systematize them. Consequently all are impressed in a quite mechanical fashion. Later he reacts automatically to whatever motive the teacher's question may give. When the proper motive is lacking — if the teacher puts his question in an unexpected form — the answer fails.

It is important that the teacher should study his pupils more carefully. Psychology shows that the doors to the mind are not all of the same size. Different individuals require different presentations in order that they be appealed to in a like degree. Not only is this true of different individuals, but of the same individual at different stages of his development. It is generally known that a child is highly suggestible up to about his fourteenth year. Pearce has demonstrated that up to this age the degree of suggestibility is, in general, directly proportional to the child's intelligence. A stupid child is much less suggestible than a bright child. This is the time when the individual is 'taking in the world,' learning to coördinate his sensations and

reproductions and to respond with adequate movements. Above this age the mind ceases to mirror all that comes. Certain impressions become more favored than others. Habits are formed. The child begins to develop a character. The degree of suggestibility decreases with increased age.

With this in mind we may return for a moment to our type distinctions. All children are sensory in type. It is meaningless to speak of an intellectual type of child. This being so, it would be well to study first the child's mental furniture: his visual, auditory and kinæsthetic factors. All mental improvement should be along the line of developing the child's skill in making use of these factors. It is quite thinkable that the careful development of a purely mechanical quickness in perception and repetition, by causing the child to learn things by heart at gradually increasing rates of speed, might prove of the greatest value to him as he matures.

The teacher should have a pretty exact knowledge of his pupils' types and tendencies. He will find both quick and slow pupils; the quick may be bright or they may be automatic; the slow may be thorough-going or they may be stupid. These analyses once made, it should be possible for the teacher to so direct the study as to gradually overcome the harmful tendencies, to preserve and strengthen the good ones. A pupil who tends to be mechanical might be directed into a more intellectual method by being made to learn at a slow rate of speed where his mechanical helps are unavailable. The dull pupil might be quickened by a fast learning which supplies a certain mechanical stimulus and requires, at the same time, an alert and attentive state of mind. In the plastic, suggestible state of childhood, before the character is firmly welded, it may be possible to mould and so turn to better account the fundamental factors which the child possesses. When adolescence has come certain tendencies are manifest. Further development of the memory, in order to be effective, must be along the line of these natural tendencies, not opposed to it. It must not be thought that the intellectual type of learner is superior to the sensory type. These merely represent two sorts of persons each acting in accordance with his natural disposition. We

should then, as teachers, study the pupil with a view to training and developing what we find already in him, rather than attempt to enforce an unnatural method or to supply something which natural endowment has failed to provide.

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PSYCHOLOGICAL LITERATURE.

VOLUNTARISTIC PSYCHOLOGY.

Die Grundlehren der Psychologie vom Standpunkte des Voluntarismus. NIKOLAJ LOSSKIJ. Uebers. von E. KLEUKER. Leipzig, Barth, 1904. Pp. 221.

This book presents a consistent and a relatively new conception of psychology. So far from regarding psychology, after the traditional fashion, as science of all phenomena of consciousness, it deliberately bars out one group of conscious contents—given states of consciousness—from the realm of psychology. As material for psychology, it admits only such experiences as are recognized as ‘mine,’ and it defines psychology¹ as ‘science of the subjective world, that is, of the totality (Inbegriff) of my conscious condition.’

But this limitation of the field of psychology is far less significant than the positive doctrine of the book concerning the nature of those conscious contents which by virtue of being ‘mine,’ are rightly the concern of psychology. These are conceived by Losskij as acts of will, consisting fundamentally (1) in conations (Strebungen),² supplemented (2) by the feeling of activity, that is to say, the feeling of the dependence of certain phenomena on our conations,³ and ended (3) by some change, inner or outer, a fact of consciousness or a bodily movement.⁴ Psychology is thus, in Losskij’s view, voluntaristic and personal. The phenomena which it investigates are, on the one hand, volitional activities; and, as such, they are of necessity also acts of an ‘I.’

Midway between sensations, which are always involuntary, or given (and thus extra-psychological phenomena), and choices, which are obviously appropriated as ‘mine,’ lie a series of conscious phenomena which may be either ‘given’ experiences or ‘mine.’ “Certain phenomena,” Losskij says, “which in content are perfectly homogeneous, for example, the passionate impulse to drink wine and the actual drinking, may belong now to ‘my’ subjective world, now to the ‘given’ objective world.”⁵ Percepts and images, as mainly sensa-

¹ 5. Kap. V., III., S. 139.

² 1. Kap., S. 4.

³ 1. Kap., S. 17.

⁴ 1. Kap., I., S. 25-26.

⁵ 4. Kap., II., S. 122.

tional, belong rather to the class of 'given' states of consciousness; yet, as discriminated and attended to, they too become 'mine.' For, as Losskij insists,¹ it is possible that "one and the same phenomenon, in so far as it is experienced as 'mine,' contains elements of the will-act, yet, in so far as it is experienced as 'given,' does not fall under the concept of the will-act." Pleasantness and unpleasantness are examples of experiences which may be 'mine'—as, for instance, pleasure in the solution of a problem or in the fulfillment of a hope²—but which may also constitute a 'given' experience—as, for example, the unpleasantness of the touch of an icy object. Even one's most productive consciousness may be 'given,' forced upon one from without; for example, "the unexpected explosions of creative thought in the moment of producing a work of art or a scientific discovery usually perfect themselves as if a higher genius suddenly were given a whole new world of thought."³ Emotions, on the other hand, are counted by Losskij among the active and personal experiences, characterized by conations and by the feeling of activity.⁴

The central concepts of the system are evidently then the concept of the 'I' and that of the will. The second paragraph of this review reproduces Losskij's analysis of will as given in his first chapter. He devotes his fourth chapter to the discussion of personality. After pointing out that both sensations and the involuntary thoughts which 'flash upon the periphery of consciousness' are admitted to be unrelated to the 'I,' Losskij adds that even conations "may stand very near the 'I,' yet are not the 'I' itself * * *. Obviously," he says, "the 'I' is something higher than the single conations; yet it is not more nearly definable, * * * and appears to us only in the form of the unity of our conations. * * * The most notable character of this unity is its self-dependence * * * in the sense that its elements * * * have their source in the 'I' instead of building it up."⁵

From even so slight a summary, it is evident that this book concerns itself with fundamental theory, not with detailed problems, and that the criticisms of its teaching will vary with the standpoint of the reader. The present writer finds the greatest value of the book in its reiterated teaching that the recognition of an 'I' is a fundamental demand of science;⁶ and its greatest defect in the doctrine that the

¹ I. Kap., I., S. 32.

² 6. Kap., I., S. 143.

³ 4. Kap., II., S. 121.

⁴ 7. Kap., S. 177 u. S. 184.

⁵ 4. Kap., I., S. 112.

⁶ 4. Kap., I., S. 116.

elements of personality are exclusively active and volitional. On the other hand, in the opinion of this reviewer, there is no experience, even perception or imagination, in which one is not at least obscurely conscious of oneself; and this self-consciousness is not always an activity, but may be a mere receptiveness. Thus, every conscious experience is 'mine';¹ yet, conversely, every conscious phenomenon, volition as well as image, may be looked upon, by an artificial abstraction from its relation to a self, as a given content.

It is to be regretted, in the second place, that Losskij does not sufficiently work out a doctrine of the social nature of that self on which he lays such stress. To be sure, there are not lacking indications that he grasps this truth; in particular, he explains the fact that I am conscious of contents which, as 'given,' are yet not 'mine,' by the hypothesis that these given facts of consciousness belong, directly, to some other 'I,' either to a subliminal self, whose physical condition is a lower nerve-center in my own body,² or to a physiologically, as well as psychologically, different individual self. The immediately realized unity of different selves is well illustrated in the following passage: "Almost every lecturer, teacher or preacher has experienced moments in which a whole audience listens with bated breath and becomes transformed into a single being which is immediately connected with his own being."³ But Losskij is content to suggest the possibility of this essentially social nature of the 'I' and its interrelation with other selves, instead of making it, as he well might have done, an integral part of his teaching about personality and a basis for the classification of conscious experiences.

These criticisms concern themselves with Losskij's conception of the 'I.' On the side of will, the most vulnerable portions of his teaching are, in the opinion of the writer, his doctrine of conation as a distinctive experience, 'ein eigentümliches, unzerlegbares Gefühl des Hindrängens,'⁴ and his treatment of emotions as volitional phenomena.

So brief a notice does not do justice to the merits of the book. It is admirably written, is full of close analysis, and fresh illustration, and anticipates most of the criticisms made upon it. Besides these general advantages, it has many excellencies of detail. For example, it lays stress on the useful antithesis between 'ungewusst' and 'unbewusst';⁵ it includes an admirable critique of associationism;⁶ and it

¹ Cf. 1. Kap., II., S. 29 seq., for a consideration of this objection.

² 4. Kap., II., S. 125.

³ 5. Kap., II., S. 135.

⁴ 1. Kap., I., S. 5.

⁵ 2. Kap.

⁶ 3. Kap., II.

presents an excellent summary and criticism of the James-Lange theory of emotion.¹

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RHYTHM.

Researches on Rhythmic Action. ISHIRO MIYAKE, Ph.D. Stud. Yale Psych. Lab., 1902, X., 1-48.

This thesis shows evidence of the expert hand of the technician. It wrestles with old problems, but has applied more accurate and suitable apparatus to their solution. These problems are: the possibility of voluntary arrhythmical action; the influence of auditory and visual stimuli on regulated and free rhythmical action; the effect of emphasis on the length of rhythmical intervals in noiseless tapping, arm movements with sound and in vowel scansion, and on the pitch of the vowel; and the determination of the point where the finger beat occurs in the course of different vowels scanned in unison with the beats. About three years were spent on the investigation, which is commendable for its fulness of experimental details. One might venture to express the wish that more subjects had been used in some experiments. Valuable results are contributed in each division. Space limitation makes it necessary to confine our critical analysis to certain points of most interest, which may still require modification and supplementing, and to point out certain omissions which make it difficult to reconcile the writer with himself on the basis of his own results, and which, when supplied, contribute additional facts of value. We proceed to the latter point first.

Dr. Miyake's omission consists only in a failure to give average results, and to compare these. I have taken the time to calculate them, with the following results:

1. As affects his statements. The following corrections are typical. In the pattern 1'-2-3, 2-3 is practically of the same length as 1'-2 (difference = .002 second), while the inter-group interval is actually *shorter* than the interval after the weak beat for the finger taps and drum beats, and the same length for the scansion, instead of the 'lengthening' being less 'remarkable' (p. 16). In 1-2'-3, 3,-1 (.638") is shorter than 1-2' (.647"), instead of being 'very constantly longer' (p. 17). Instead of the difference in the 'lengthening of the interval between the groups' being 'remarkable' for the 1'-2-3 and 1-2'-3 patterns they give precisely the same average (.638"). The conclusion which is drawn, however, that the length of the pause depends 'on the amount

¹7. Kap., I.

of difficulty of the formation of the rhythmic group,' does apply to the patterns with the arm movement and the scansion. On the other hand, it is more in accordance with the results to say that the inter-group pause is lengthened in some patterns (*e. g.*, 1-2'-3), but shortened in others (*e. g.*, 1'-2-3), instead of the statement at the bottom of page 21. Why this should be so might be due to two reasons: (1) The difficulty of forming the pattern in the one case (Miyake); (2) the tendency of the interval from group to group to approximate to a representative, normal length of rhythmical period. There is evidence in favor of such a supposition; the pauses are longer in the two-beat groups than in the three-beat, with one exception: 2,-1' noiseless taps.

A study of the *rhythmical consciousness of the 'gallery'* shows that there is a certain time of interval in musical tempo which evokes a general response, which instinctively excites or releases the typically rhythmical expressions.

2. As affects additional contributions. (1) The group-interval and the interval from group to group (a group-interval + the following inter-group interval) are practically constant for patterns with the same number of constituents: *e. g.*, 1.232 and 1.283^s for 1'-2 and 1-2', and 1.994 and 1.972^s for 1'-2-3 and 1-2'-3, respectively. This holds fairly well for the hand-movement and scansion also. The length seems to be a function of the number of components; and this has also been found to hold for the centroid intervals in speech. So that while there may be an approximation to a rhythmical norm, the intervals will vary according to the "filling-in." This disproves a position reached by Brücke more than thirty years ago; and similar positions held by later writers (*e. g.*, Lanier; Bolton, *Rhythm*, p. 28). Still this may not apply to subjective rhythmization, where the length seems to vary inversely as the number of components (*cf.* Bolton, *Rhythm*, 70). (2) In general, the time for the two-beat group is between $\frac{1}{2}$ and $\frac{3}{4}$ ^s, or $1\frac{1}{4}$ and $1\frac{1}{2}$ ^s for the entire interval (group to group); and for the three-beat group about $1\frac{1}{4}$ ^s (singularly the variations are exceedingly small), or from about $1\frac{3}{4}$ to 2^s for the entire interval. Even the two-group here is considerably longer than the most prevalent intervals in the arrhythmical hand movements. Have we here an analogue of respiration? It is slower and deeper as it is more automatic and rhythmical, and faster in moments of excitement. But a point of chief interest here to the reviewer is the illustration afforded anew of the danger of applying the results of artificial, laboratory scansion to the rhythm of free, spontaneous speech. (I must distinctly affirm, to prevent misunderstanding, that

no conclusion drawn by the author directly prompts this remark). The intervals in scansion appear to coincide pretty closely with the lengths of the periods used in motor activities in general in laboratory tests. But they appear to be considerably longer, with the single exception of the two-group, than the corresponding centroid intervals in natural speech, whether prose or poetry. It is a truism to remark that we cannot get along in the affairs of life with the slow, jog-trot speed of 'scansion.'

3. The lengths of the hand-movement patterns are shorter than either of the others. The time is thus not directly dependent upon the amount of movement or space travelled. The probability is that the execution of innervations of the fundamental muscles is quicker than that of the finer, accessory muscles. From this point of view the larynx movements, which we may regard as evolutionally accessory, become especially interesting. The speech intervals are noticeably longer. The only exception, trochee, has been considered by some to be the normal Anglo-Saxon metrical pattern, while others have argued for the iambic. Squire regards the former as genetically prior; Bolton makes it the type of subjective rhythmization (emphasis first); while Wundt considers both equally psychologically simple.

4. Miyake's trochee pattern is longer than the iambic, for the tap, drum beat and scansion. This is the direct opposite of Hurst and McKay's result, unless the inter-group interval is included, when the results agree for the finger-tap and scansion. But even thus the difference remains in the hundredth-of-a-second column, so that this moot question appears still to be an open one. In Triplett and Sanford's experiments there appeared to be no characteristic time difference between them.

5. To Bolton's conclusion that longer pauses precede the accented sounds, these results show twelve exceptions and no instance of confirmation. The centroid in speech also shows that the longer silence follows the emphatic syllable (see later); this indeed agrees with Bolton's result for duration emphasis. His results were founded on mere introspection, the others referred to on exact measurements. If we accept measurement in favor of introspection we have, it seems, an interesting case of illusion affecting auditory consciousness in Bolton's subjects—unless we prefer the alternative of saying the discrepancy is accounted for by differences in the experiments: the longer interval (pause or silence) occurs after the emphasis, but subjectively before it, especially with loudness emphasis.

Miyake founded his conclusions on individual ratios. The fore-

going results should be considered in the nature of a plea. Ratios furnish a fruitful means of estimating values, perhaps the most fruitful; but used to the exclusion of the average, errors are often, perhaps generally, inevitable. Several lines of evidence are preferable to one. Collating different mathematical expressions is laborious and makes the discussion appear technical, uninteresting, perhaps trivial and too spread-out, but to ignore this is to sacrifice precision, accuracy and fact.

Dr. Miyake's explanation of the greater prolongation of the inter-group pauses as serving the purpose of marking off the groups more clearly, commends itself to thought and is probably valid in many cases. Such pauses usually mark off verses in spoken poetry and phrases in prose, but they make speech rhythm essentially a discontinuously recurrent phenomenon; and, what is more, they are not the typical factor unifying centroid intervals. (I employ centroid here in the technical sense, previously defined, not of emphasis, but the highest point of intensity in the course of emphasis). In fact, measurements of speech intervals show that the old supposition of metricalians of the compensatory character of the pause in the centroid interval is wholly groundless. The centroid is the supreme unifying agency. But, this apart, Miyake's results show that the inter-group pause may even be shorter; even in tapping its rôle as a segregating and unifying element must be subsidiary; it is not, apparently, of universal applicability. Thus the theory must be supplemented. In the pattern where the emphasis came last (1-2') the interval was longer. How shall we explain this? It will be helpful to refer to a general fact in speech. We must clearly distinguish between what may be arbitrarily called silences and pauses, the latter representing physiological and psychological resting stops, serving a purpose in the expression of thought, more or less conscious; the former corresponding to transitional processes of the larynx in passing from sound to sound, strictly unconscious. Now, what measurements we have made show that the three kinds of silences range in length, from longest to shortest, as follows: inter-, post- and pre-centroid silences. That the silence is longer after an emphatic syllable than before it is probably due to the greater effort needed to recover from a strong blow, or the higher degree of inertia following the latter. On our theory, then, the interval 2', 1 is longer because the subject *underestimates* it. He makes no allowance for the emphasis 2', *i. e.*, for the longer silence following it. This unconscious element is unconsciously added to the conscious (Miyake's 'pause'). On this theory Hurst and McKay's

result, that the iambic pattern is longer than the trochaic, would seem the more probable provided (1) the measurements extend from 1-2', - 1, thus embracing the post-centroid silence, or (2) if only to the end of 2', that the emphasis 1-2' is stronger than the emphasis 1'-2, which seems to be the case with me. If a pattern *scanned* as iambus were *measured* as trochee from centroid to centroid, it should accordingly become inordinately long, because it consists of the longer iambic centroid syllable and silence.

Finally, we notice that the theory advanced harmonizes with the fact that the inter-group pause may be actually shorter in the 1'-2-3 pattern. The silence is here added to an intra-group pause.

To the conclusion of the final lines I find it difficult to give unequivocal assent: 'the point of emphasis in rhythmic articulation lies at the *beginning* (emphasis Miyake's) of the movement of the vocal organs.' Taking the author's own results, that both sight and sound signals are anticipated, we must conclude that the beats anticipated the centroid in the syllables. Hence a correction must be introduced. All that we would be warranted to assert is, so far forth, that the centroid must be located *after* the beat, in the course of the syllable.

But suppose we accept the conclusion. Then we must clearly define what we mean by the highest point of emphasis. There are two kinds of centroids, the spoken and the heard. The beat may correspond with the centroid at the moment it is felt by the speaker, but not with the centroidal effect as experienced by the listener, which obviously comes at the point where the atmospheric vibrations attain their maximum effect on the cochlea — unless, indeed, the hearer is also subject to a complementary law of anticipation. This view, it seems, however, is inescapable if the experimenter's theory would be reconciled with his results, for he holds — as is now generally conceded — that pitch is a structural element of the centroid. But all his figures (Figs. 9-26) show that the pitch rises from the start and attains its maximum toward the close of the emphasized vowel (*a*). Of course the maximum centroidal effect of pitch may also be a departure downward, but this is less frequent; there is no instance in Miyake's emphatic vowels. It is even probable that in an utterance which is emphatic because occupying a low instead of high place in the pitch scale, the pitch will almost always follow the same direction in the course of the sound. But what I now would particularly emphasize is, unless this view of the centroid is accepted we must assume that the different elements are not synchronous, that the loudness element comes earlier than the pitch — a conjecture lacking both in natu-

ralness and experimental evidence. On the other hand, Brücke's results run squarely counter to Miyake's and Meyer's; the centroid occurred at the *end* of a short vowel or just before the following consonant; somewhere in the *course* of a long vowel not immediately followed by a consonant; and near the *boundary* between the long vowel and the consonant when the vowel does not terminate the syllable.

In fine: this problem cannot be attacked intelligently unless we distinguish between the centroid as produced and as received, as a motor phenomenon of the larynx and as a sensory phenomenon of the cochlea. The heard centroid must at least come so much later than the spoken as the rates of motor (speaker) and sensory (hearer) nerve transmission and air concussion require. The hearer will, so it would seem, lag slightly behind the speaker; the latter anticipates his emphasis; he must feel them before he utters them. The thought-emphasis, let us say, is the precursor of the act-emphasis. The singer without the score knows how vital this anticipatory process is; unless he feels what is coming ahead of the given moment, unless he can *mentally* sing the phrases slightly in advance of the vocal utterances, he is liable to come to a standstill. In fact, this running of the mental singing ahead of the vocal may account for the usual difficulty in ensemble music—the tendency to quicken instead of slacken the tempo, unless, of course, the selection is specially heavy. Triplett and Sanford found this tendency in scanning nursery rhymes, while Bolton discovered an opposite tendency in subjective rhythmization of uniform auditory impressions.

It is especially gratifying to note that the 'action' investigated by the author is what it purports to be, 'rhythmic,' in the precise and only meaning of the term. It is necessary to remark this, inasmuch as there is a recent tendency to unwarrantably extend the field of the rhythmical consciousness. Perhaps this can be traced back to Lanier. I cannot feel that there is the slightest justification for accepting and perpetuating his 'primary rhythm.' Mere regular recurrences are nothing but periodicities. The periodicity-consciousness is fundamentally different from the rhythm-consciousness, though it underlies the latter—I will not say, is its *absolute basis*, for rhythmical beats allow a certain percentage of variation, while a periodicity that is not absolutely periodic is a misnomer. Even a manner of grouping is possible, *e. g.*, by means of pauses, without occasioning rhythmical intuition. The latter arises only when the constituents of the groups are subordinated intensity-wise to a major beat (the centroid): on our innervation theory this process is closely related to, if not entirely dependent

upon, intensity changes in the functioning of the general musculature, though I believe the special connection is with the auditory apparatus. The onlooker of the dance does not feel the rhythm; it is a cold, pale 'ghost' to the dancers themselves until sounds (music) give it 'body' and 'warmth.' At any rate, the minimum motor in rhythm is the mental thud, which I usually localize where James localizes the feeling of the self—a view I have already expounded (*Rhythm of Speech*—centroid theory). Wundt, it seems to me, fathered this motor conception of rhythm; Bolton unwittingly commits himself to it; and it has been reformulated by Stetson and MacDougall and especially developed by Miner—but the latter, strangely as I regard it, apparently holds that to define rhythm as a coördination of coördinate elements is not inconsistent with the theory. Apart from the fact that such coördination is not the rule in listening to objectively homogeneous clicks, that the 'spondees' in natural speech are impossible to maintain, except for short stretches, that the distinction between the accented and non-accented notes is of the very 'structure' of the musical measure, and that arrhythmical movements tend to alternate regularly in intensity (Miyake), the theory, if true, would warrant the conclusion that rhythmical experience—I am almost tempted to say feeling, for I believe, with MacDougall, that there must be at least a rudiment of affective tone present—consists in a coördination of subordinated units. The first order of units, *i. e.*, the units within the unities or groups, always manifest the phenomenon of subordination; the second order, *i. e.*, the unities, frequently, especially in verse and song. On this distinction we obtain two rhythms, perhaps equally 'primary,' especially viewed genetically: (1) Coördinated simple subordinations (first order); (2) coördinated complex subordinations (first plus second order). The coördination appertains to time, the subordination to intensity.

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HABIT.

Habit. B. R. ANDREWS. *Am. Journ. of Psy.*, XIV., pp. 121-150.

Habit, defined from the standpoint of general psychology, is the 'mode of mental functioning in which repeated processes are in consciousness.' Hitherto the most adequate discussions, the writer points out, have been made by the functional psychologists, James, Sully and Stout. Külpe treats habit from the structural point of view but his analysis is incomplete. The writer, making his inquiry from the structural standpoint, finds certain differences of pattern between habitual and non-habitual states of consciousness. In the former, the

processes are meager, uniformly indistinct, and so closely connected that one term unconsciously brings on the next. In the latter, the processes are of two degrees of clearness, distinct and indistinct (those toward which attention is directed are distinct) and are joined together by conscious selection. A mood of familiarity or one of indifference is the distinguishing mark in habitual functioning, while non-habitual functioning is characterized by the consciousness of effort directed to the series of movements necessary to attain the end in view.

According as habits manifest themselves in the reappearance of specific experiences or in the shaping of new processes, we have specific or general habits. A further classification can be made into Titchener's levels to indicate the varying degree of persistence and influence on consciousness of habits according as they are due to the recency, intensity, or repetition of an occurrence.

The development of habit is explained by the author from the physiological standpoint. Habit is even spoken of as 'at bottom a physiological phenomenon.' Objection might be made to this and to other loose statements of a similar character. Nothing else, however, seems to be meant but the ordinary parallelism.

The article, as a whole, is a clear and concise discussion of the subject but it brings out nothing new.

WINIFRED HYDE.

BRYN MAWR COLLEGE.

MUSCLE AND WORK.

Ueber Muskelzustände. KONRAD RIEGER. *Zeitschr. f. Psych. und Phys. d. Sinnesorgane*, Band 31, S. 1-46, und Band 32, S. 377-415.

In this series of papers the author presents the results in part of his studies upon muscle conditions. He has pointed out a great variety of phenomena that are almost entirely new and must prove of immense importance in future work upon muscular activity and fatigue. The author has taken exceptional pains, sometimes perhaps too much, to make himself clear and to show the bearings of the phenomena he studies. His first proposition is that muscles are elastic bands whose contractile force is a function alone of their length and temperature. The work divides itself into three chapters. In the first he studies the elastic force as affected by length alone, in the second the time element in relation to the way length affects contractile force, and in the third the influence of temperature. With respect to length the first conclusion is that the muscular arrangements in the body are such that in

turning members about joints the muscles do not act most strongly when they are short and thus do not lose too much of their natural elasticity, which is great when they are long, and small when they are short. Muscles keep with equal stretching moments their equilibrium better and a longer time when they are long than when they are short. The further inquiry relates to the way in which the elastic force of a muscle acts as a brake, forming what is called the muscle brake. The movements of the lower leg about the knee joint are studied in relation to that of a wooden lever acting in the same way and to the linear stretching of a rubber band. The lever is fastened at one end and weighted. This weight plus the heft of the lever is counterbalanced by a second weight attached to a string that runs over a pulley near the ceiling of the room. Small additions and subtractions are made to or from the counterbalance and the positions assumed by the lever are indicated upon a smoked drum. A similar arrangement for the lower leg is given and the corresponding positions assumed by the member under the influence of equal additions or subtractions. The two figures upon the drum are strikingly different, and this our author attributes to the influence of the muscle elasticity acting as a brake. The figure made by a rubber band stretched by a weight to or from which additions and subtractions of equally graduated weights are made is with minor details very similar to that made by the leg. The organic elasticity shows itself more clearly in the muscle group than in the linear expansion of a rubber band. In dealing with the lever and lower limb seven weights of 200 grams each are taken away in order and then returned at equal intervals. The excursions of the lever grow less with each subtraction and then increase with about the same amount as the additions are made. With the muscles the excursions become greater with each subtraction, and when the additions are made the excursions are first very small, become greater and are greatest with the addition of the fourth weight. The first phenomenon is attributed to the force which the muscle group possesses alone as a result of its longer length in comparison to its short condition and the second to what is called elastic after-effect and fatigue. In this respect the rubber band and the muscle differ most from one another; the two do not act alike after stretching, and this is to be found chiefly in the effect of the antagonistic muscles. The point of interest is that the elastic contractility of both muscle and rubber band is different according as the previous condition of both muscle and rubber band has been long or short. The increase or decrease of elastic power will be great or small according as these previous conditions have persisted longer or shorter periods of time.

He next deals with movements that take place with or without elastic recoil. Movements are of two kinds, those that return to a former condition of the distribution of forces by means of elastic recoil and those that assume a new condition and a new position by a lasting distribution of their forces without elastic recoil. This concerns only rapid movements, for in slow movements an interference altering the distribution of forces is at any time possible in the course of the movement. A rapid movement is one that exceeds three strokes in a single direction or two backward and forward movements in the second. By the employment of elastic recoil eight or at most nine backward and forward movements are possible in the second. If then one wishes to attain considerable rapidity of movement, one must move with the continuous employment of elastic recoil. It may be said that before the beginning of a movement it must be decided whether elastic recoil is to be used or not. This need not, however, be a conscious intention. The chief interest centers about the method of bringing about a standstill after a rapid movement. This may be accomplished in three different ways, first by striking against a buffer, second when the turning moment of the member is equaled by gravity, and third by the muscle brake. The important question relates to the stopping of a movement where there is no external resistance that can be likened to a buffer. A rapid motion cannot be brought to a standstill without continuation or recoil. "If one sets before himself simply to pass from one position into a new one without external resistance, then he does it naturally not at the maximal rapidity but simply in a tempo so measured that the elastic recoil needs no especial suppression." If the movement is to be arrested by the muscle brake, "this exact balancing of the elastic forces which is necessary in a free excursion demands great nervous effort. And it is now certainly very clear that the motory machinery seeks always as far as possible to avoid this nervous effort."

The practical value of all this is seen in the writing of the different letters of the alphabet. If one makes a backward and forward motion without elastic recoil (a wavy line), two full movements a second only are possible, but if made with elastic recoil, then six to nine complete movements become possible. The loss of time comes about through the interruptions in which the elastic recoil is suppressed. The making of a point or dot, therefore, requires more time than a line. The letter *a* which covers a greater linear extent than the letter *r* can be made in less time and with greater accuracy because it can be made with the employment of elastic recoil. *M*, which is one of the longest letters in the alphabet, may be made more quickly than

most others for the same reason as named above. The temporal relations of movements that are made, now with, and now without, elastic recoil is next taken up. A motion that can be interrupted at any time is under constant nervous control and therefore is without elastic recoil. Such a motion cannot much exceed a rate of two a second, but it can be interrupted for any length of time that is desired. A faster backward and forward motion than this is made with elastic recoil and cannot be interrupted without sufficient time to allow a redistribution of the forces through the nerves. The least amount of time in which this can be done amounts to about one third of a second. The rapid motion with interruptions is on this account no faster than the slow one. If the interruption be made not through the muscle brake but by striking against a firm resistance, a shorter pause will suffice in which to take up the motion again. This long pause, we are told, 'is necessary for the disappearance of the increase in elastic force through which the elastic recoil has been suppressed.'

This notice covers only the first two parts. The work has been most thoroughly done and before publication most carefully and deliberately thought out as the subject demands. The author has found little or no assistance at all from a painstaking search of the literature upon the subject of muscle and nerve activity. It is, therefore, a piece of real pioneering throughout. Its importance for the subject of writing and all forms of manual exercise where the economy of effort is a consideration must finally prove very great.

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Validity of the Ergograph as a Measurer of Work Capacity.

THADDEUS L. BOLTON and ELEONORA T. MILLER. University of Nebraska Studies, January, 1904.

"The particular purpose of this experiment can be definitely stated in the form of a question the solution of which has been attempted. Can the ergograph be used as a measurer of work capacity; and, if so, under what conditions and within what limitations will its validity be greatest?"

The experiment was performed by two observers and continued over a period of more than three months. The ergograph used was one which employed the flexion of the middle finger, a modified form of that designed by Dr. Hoch in Professor Kraepelin's laboratory. The conclusions drawn by the writers are as follows: "Ergograph records change relatively in the course of a long series and thus the first records in a series are invalidated, for maximum performances

furnish a more reliable measure of work capacity. Since exercise induces a condition within the muscles themselves which reduces their capacity for work, ergograph records have slight validity until inurement has become thorough and coördination complete. The ergograph is quite unadapted to the obtaining of exact statistics upon a large number of individuals. A few records taken upon unpracticed subjects, both before and after operations whose influences are thought to affect muscular power, are without the slightest claims to trustworthiness. Influences which are supposed to effect the ergograph records must be studied by the way they affect practice gain. Practice gain with the ergograph is due to changes in the direction of inurement, coördination, rhythm, and endurance in muscular power. Practice gain as shown by the ergograph is practically unlimited. (This means, probably, that no observer would have sufficient perseverance to reach the limit.) Fatigue is a necessary condition for practice gain. It is essential to growth. (It is doubtful whether the experiment proves this.) Practice gain means increased power to recuperate. Vicarious practice effect (*i. e.*, the effect of practice by one hand on the corresponding finger of the other) is chiefly in the direction of coördination and rhythm."

The writers deserve credit for the care and patience with which they have performed an experiment of great difficulty. It is not clear from the tables what is meant by the expression 'average performance increase.' A bibliography is appended.

GRACE HELEN KENT.

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PSYCHOLOGICAL METHODS.

Die Gesichtspunkte und die Thatsachen der psychophysischen Methodik. G. E. MÜLLER, Göttingen. (Sep.-Abd. aus Ergebnisse der Physiologie, II. Jahrgang, II. Abteilung.) Wiesbaden, J. F. Bergmann, 1904. Pp. 252.

This is a compendium, or manual, of psychophysics from the hands of a pioneer and master. The treatment is historical, critical and constructive, with the aim of presenting a comprehensive view of the whole field, reducing the data to their lowest terms, and filling in gaps with reference to points of view and technique of method. Müller accepts the four usually recognized cases to which psychophysics methods apply; namely, the absolute threshold, the threshold of difference, equivalent stimuli, and equivalent difference. But he launches a new classification of the methods employed in the measur-

ing of these. The methods are reduced to three general classes: (1) the production method, (2) the limit-method (*Grenzmethode*), and (3) the method of constant stimuli—the constant-method. This is a good stroke in the direction of simplification, but the work of subdividing and correlating naturally leads to difficulties which no single writer can overcome. The adoption of this classification is not incompatible with the retaining of some of the old names for methods; and if the avowed aim to enable the future investigator to report his method by simply naming it, shall be realized, a more systematic arrangement of subdivisions must be made. Some varieties of methods may well bear the name of the originator, following the analogy of botany. The critical part of the work is the most valuable and will do much to clear up errors. A detailed review of the formulæ, conditions of experiment, program, etc., would not interest the general reader; and for the laboratory psychologist it is not necessary, because he will peruse this work as a welcome and indispensable guide. Each master of some detail may amplify and correct the position taken in this text, for the appearance of this work marks a vantage-ground in psychology; and, as we have been in the habit of going back to Fechner—for many purposes hereafter we may go back to Müller.

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Sur la valeur des questionnaires en psychologie. TH. RIBOT.
Journal de Psychologie, January–February, 1904.

The questionnaire is here discussed as a psychological method intermediate between observation and experiment. It appears to have originated about 1880 with Galton in his *Inquiry into Human Faculty*. There are two forms: the indirect inquiry or the questionnaire properly so-called; the direct or oral. The first comes under the head of *variatio et translatio experimenti* as demanded by the rules of method. Unfortunately the results are disappointing. The scheme fails from the nature of the subject proposed or from the fault of the public to which it is addressed. It is too complex or too delicate to be divided up and expressed in terms so clear as to bring only precise answers. By the questionnaire we can get at a person's income but not his temperament, his religion but not his intellectual type. Thus Charcot's enquiry in heredity, though based on from 1,200 to 1,500 examples from a well-disposed public, brought returns which left an exceedingly vague impression; so the questionnaire of the Society for Psychical Research as to telepathy and veridical hallucinations, failing to treat of

the honesty of those questioned, simply showed that illusions were possible. Although larger subjects, in which passionate feelings may be evoked, are interdicted, the questionnaire has been of service in smaller matters. Yet here there is often a descent into puerilities in which Americans have been especial offenders.

The difficulties of the indirect inquiry include: (1) The veracity of the respondents. Here there is a too theoretical trust in human nature. The desire to be sincere is not enough to make one sincere. The problem of disposition brings up the great question of testimony and the determination of its value. (2) The competence of the respondents. As to the questionnaires spread by the journals and reviews, those who answer are often of an abnormal type, persons possessed with a desire to confess, but incapable by nature of giving information of a standard value.

To Ribot direct oral interrogation alone appears credible and profitable to psychology. Yet it has its drawbacks. It is necessarily limited and cannot reach large masses. Besides the difficulty of constant journeys it demands a close knowledge of the subject, of his general education, social status, habits, stamp of mind, and intellectual culture both general and special. Ignorance of all these factors puts us anew in the region of the unknown. Next to be considered is the interpretation of the answers by the psychologist. Here enters the inevitable personal equation, whereas the attitude of the interrogator should be receptive and passive; his chief virtue would be a resemblance to a registering instrument.

The writer now makes a plea for the drawing up of an inventory of all the questions which have been treated by means of the questionnaire. The delicate part of this task would be, he says, to strike a balance of the results obtained or at least probable. This work of criticism is of capital importance and yet generally neglected. Questionnaires published in one psychological journal are apt to be copied in others in a merely mechanical way. Their worth seems to depend upon their number. But this is too much like the method of the referendum, an application of universal suffrage to the problems of psychology.

The oral and not the statistical inquiry has regard to quality. The methodical study of ten persons by ten psychologists has incomparably more value than the gathering of hundreds of signed or unsigned papers. So Stern proposes a working organization of professional and amateur psychologists. Centers may be found in laboratories, universities, schools, periodical congresses, and special meetings which are in touch with the public. To this scheme Ribot in conclusion

makes one suggestion: that it is not desirable to confine ourselves to a single category of individuals (for example students who serve almost always as subjects) else our conclusions will be narrow. In fine, Ribot's attitude appears to be that the ordinary questionnaire is questionable. He remarks in a footnote that he cannot here examine the alternative scheme — the more recent method of 'tests.'

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Auditory Tests. BENJAMIN RICHARD ANDREWS, A.B., A.M., Am. Journal of Psychol., XV., No. 1, pp. 14-56.

The present paper falls into three parts: (1) The concept of mental tests and their significance for psychology; (2) a review of American literature, and (3) tests of acuity of hearing.

The thesis of part I. is "Mental tests, as tests, are not to be regarded as part of psychology, neither should direct contributions to psychology be expected from them."

The arguments supporting this thesis are: (1) Mental tests are not related to structural psychology, since the purpose of the tests is to reveal the significance of a mental characteristic for the possessor. Pure psychology does not recognize the individuals as such. (2) Mental tests are not related to functional psychology, since the latter does not recognize the practical purpose of these tests. "Mental tests, therefore, may be considered as an application of psychology."

The discussion of the literature does no more than indicate the trend of American work in mental anthropometry. Allusion is made to the frequent confusion between psychology and mental anthropometry, and to the unjustifiableness of anticipating contributions to psychology from the results of mental tests.

The third part of the paper is a contribution to mental anthropometry in the field of audition.

After emphasizing the important function of hearing conversational speech the author outlines a method of testing acuity of hearing speech sounds. Two conditions should control the selection of test words: (*a*) the words should be of 'equal apperceptive value'; (*b*) they should include the various elementary sounds, both vowels and consonants. Number words from one to ninety-nine were chosen. To determine the extreme range of hearing, the words were spoken at varying distances from the observer until the threshold of audition was found (by the method of minimal change). The author attributes more value to the *method of degree of accuracy*. One or more constant ranges are chosen at which a list of one hundred words is

spoken, the percentage of accurate audition furnishing the results, *i. e.*, the number of right cases at a given distance and under a given set of conditions is the basis of computation.

In an appendix is found an 'experimental examination of speech methods.'

Tests for the determination of extreme range showed (1) "there are differences in the ease of audition for the different number of syllables; although (2) these differences are not constant throughout the various ranges."

The method of degree of accuracy was tested in further experiments. The value of the method lies in the ability to compare the acuity of various observers under any one set of conditions. A method of standardizing the results was not found.

The main points of Mr. Andrews' work are: (1) The distinction between psychology and mental anthropometry is rendered explicit; (2) the method of degree of accuracy is applied to distinguish degrees of acuity of hearing in any group of individuals.

The article will be concluded with tests of musical capacity, and tests used in diagnosis of aural disease.

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VISION.

Ueber das Helligkeitsverhältnis monokular und binokular ausgelöster Lichtempfindungen. (Fortsetzung der Untersuchungen über Dunkeladaptation des Sehorganes.) H. PIPER. *Zeitschr. f. Psychol. u. Physiol. d. Sinnesorg.*, 1903, XXXII., 161-176.

The author's problem is to determine whether in binocular vision the intensities of the two visual processes are fused, or combined, into a single resultant greater than its two components. Do we see an object with two eyes as brighter than we do with one? Does the binocular brightness-effect represent any kind of a summation process?

The views and statements of Fechner, Aubert, Helmholtz, Hering and Schenck are cited. These show no agreement on the point in question, though the consensus of results seems to favor the summation hypothesis. The author's previous investigation on the comparative threshold values of the retina when adapted to light and darkness, had indicated that such a summation of intensities was not present when the eyes were adapted to the light, while on the contrary, when the eyes were completely adapted to the dark for a period of ten to fifteen minutes, the binocular intensity was nearly double that of monocular vision, although the objective stimulus was the same.

In essentials, the device used was a light placed before two opalescent glass windows of the same size and transparent power. Between the light and each window was a smaller glass provided with an iris-shutter device, whose diameter could be read off in millimeters. Where the two diameters were equal, the brightnesses of the two windows were identical, and when unequal, the ratio of the two brightnesses was given by the square of the ratio between the two diameters. The observer was stationed before the two windows in an otherwise dark room. The position of the head was so arranged that either window could be viewed binocularly and the other monocularly. In comparisons the eyes were allowed to change their fixation from one window to the other as desired. In this way binocular vision was compared with monocular vision of the right and left eye respectively, while the objective stimuli were identical in intensity. In case the monocular brightness was judged less, its objective stimulus was intensified by the shutter device until the two brightnesses were judged to be equal. In this way brightness-differences between binocular and monocular vision could be stated in quantitative terms. Where there was no brightness-difference with the same objective intensity, the judgment was checked by starting with different brightnesses, and varying the objective intensities until a judgment of 'no difference' was reached.

The main conclusions are: (1) With the eyes adapted to the light, there is no brightness summation in binocular vision. Objects seen with two eyes are not brighter than when seen by either eye alone. (2) With eyes adapted to the dark, summation is always present. With the objective stimuli equal in intensity, the binocular brightness is much greater than that of either eye alone. The ratio as quantitatively determined was very constant for variable objective intensities, and for different observers. The average result was from 1.6 to 1.7. When the objective light intensity was extremely small, the ratio approximated 2.

The results thus confirmed the inferences of the author's previous investigation. The work seems to have been carefully done, and all objections to the method are candidly considered.

The results of (1) directly contradict those of Aubert and Fechner. Experiments now being conducted in the Chicago Laboratory indicate pretty conclusively that this discrepancy is due to the different methods used, and that Piper's method and results are to be regarded as the more reliable.

HARVEY CARR.

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Wie verhalten sich die Helmholtzschen Grundfarben zur Weite der Pupille? GISELA SCHÄFER, Zeitsch. f. Psychol. u. Physiol. der Sinnesorgane, XXXII, 416.

Dr. Schäfer refers first to the previous work of Sachs and Abelsdorff who, experimenting with pigmented papers and monochromatic lights, reached the conclusion that the width of the pupil is proportional to the brightness of the stimulation.

The author's attention was caught by the fact that very saturated colors, even when apparently of unlike brightness, produce a dazzling sensation. Are the colors behaving in this way the ground colors of Helmholtz?

Dr. Schäfer proposed to test this fact by measuring the pupillary reaction. On a field of given size white was produced by the mixture of two complementary colors and observed with a definite portion of the retina. If one of the colors is then removed, the pupil is enlarged. Is this reaction essentially weaker when the remaining color is a ground color, than when it is not? (The width of the pupil was measured by means of a diffusion circle which a point of light projected into the same eye that was used in the observation of the mixed field.)

The author's results are as follows: Green has always the greatest diffusion circle, red next and the mixture of the two the least. This holds true even when the red light is so reduced in intensity that it no longer neutralizes the green. Violet always gives a greater diffusion circle than yellow, and again the mixture of the two the least. This is likewise true when the yellow is so reduced in intensity that it no longer neutralizes the blue. White produced from the mixture of red and green gives a less diffusion circle than the white made from a mixture of violet and yellow.

Since the ground color red produces a stronger pupillo-motor effect than its complement, but with violet this condition is reversed, the author concludes that ground colors as such exert no especially prominent pupillo-motor effects.

JOHN B. WATSON.

UNIVERSITY OF CHICAGO.

SPACE PERCEPTION.

Beiträge zur Physiologie des Raumsinns. Dritter Teil. Täuschungen in der Wahrnehmung der Richtungen durch das Ohrlabyrinth. E. v. CYON. Pflüger's Archiv, 1903, XCIV., 139-250.

The problem for investigation is threefold: (1) To discover the illusions of direction as perceived through the labyrinth of the ear, (2) to measure these illusions when found, and (3) to point out the bear-

ing the illusions of one direction have upon the determination of the other two fundamental directions. The observer was supplied with a pencil and ruler with which he was to draw the lines of the three fundamental directions upon sheets of paper fastened in a vertical or horizontal position according to instructions. This was done both in ordinary daylight and in a dark room where the observer was also blindfolded.

The first series, in which the observers have head and body erect, gives two types of results: (1) The directions drawn deviate from the normal and make an angle of intersection of about 90° . (2) One of the directions drawn is practically correct, but the other direction varies whereby the angle of intersection deviates from 90° . Untrained observers produce the first type, while trained observers produce the second type. These illusions are constant with each individual.

Then the effect of turning the head about the sagittal axis, *i. e.*, inclining the head to the right or left shoulder, was examined. The apparent vertical axis was found to incline in the direction opposite to that of the inclination of the head, and likewise the apparent transverse axis. Thus, if the head was leaned toward the right shoulder the vertical axis was drawn leaning toward the left.

The experiments upon the illusions in turning the head about the vertical and horizontal axes show that the turning upon the vertical axis scarcely at all disturbs the ordinary perception of the vertical direction and the turning upon the transverse axis disturbs only very slightly. In a similar manner it was found that the turning of the head about the sagittal axis involves the same illusions in the sagittal direction as in the vertical direction.

The next series of experiments was undertaken to determine the effect that the position of the eyeballs has upon the determination of any given direction. Here it was found that the position of the eyeballs does not change the quality of the illusions as they ordinarily occurred under the preceding conditions, but the strength of the illusions in the horizontal direction was somewhat increased. It was noticed that the illusions were considerably larger in one observer who was accustomed to take his regular practice on his violin just before giving his observations in these experiments. This led to a further investigation of the effect of sound stimulation upon these illusions. It was found that they are increased after sound stimulation. From this von Cyon makes two inferences: First, this furnishes a simple proof that the illusions here considered are based upon the perception of the fundamental directions by the labyrinth; and second, it demonstrates that the vestibular nerves to which the perception of direction

is due, can be stimulated by sound waves, *i. e.*, by the same stimuli as the auditory nerves. These inferences were further corroborated by a brief study of the illusions in the localization of sound. These were found to be analogous to the other illusions even in the peculiarities of individuals. The last series is a study of the perception of parallel directions. The observer was blindfolded in a dark room in which there was a table whose position the observer knew. He was to walk toward the table so that his right-left axis would be parallel to the edge of the table. Right-handed persons tend to turn to the right and left-handed persons tend to turn to the left. These two tendencies are due to the difference in the position of the head and body in the two types of people. In evaluating the results the author seems to have overlooked the element of muscle sense in drawing the directions. This article completes an investigation of the problem of space perception which von Cyon has carried on for over thirty years.

DANIEL STARCH.

UNIVERSITY OF IOWA.

Sur l'Apperception des Différences Tactiles. L. MARILLIER et J. PHILIPPE. *Revue Philosophique*, 1903, LVI., 619-627.

Professor James, in the *Principles of Psychology*, II., ch. XX., p. 170, describes certain tests that lead to the following conclusions regarding tactile discrimination.

With nine or ten subjects he ascertained what difference it made in the discrimination of two points to have them alike or unlike. The contact-points used were: (a) two large needle heads; (b) two screw heads; and (c) a needle head and a screw head. When the points gave different qualities of feeling (as in c), the discrimination was facilitated some but often was not perceptible 'twenty times running.' However, if a rotary movement was given to one of the points, discrimination was easier. On the whole, Professor James concludes that the likeness or the difference of the forms of the contact-points has little effect.

In the article under consideration, L. Marillier and Dr. J. Philippe give a popular account of more extensive experiments of a similar character, reported in detail in the *Journal de Physiologie et de Pathologie générale*, janv., 1903, which lead them to adopt a somewhat different view.

The contact-points used by them were two spheres 1 mm. in diameter; two cylinders 1 mm. in diameter, and two triangular prisms 1 mm. on a side; all of ivory, and sufficiently alike in area and temperature to make the difference in form the only difference.

To secure records from typically different parts of the body, they made their tests along the entire length of six longitudinal and approximately parallel lines drawn down the body from the shoulders, three in front and three behind; and along two lines drawn over the front surface and back surface of each arm respectively.

They find that the threshold for discrimination is almost always lower when the skin is touched with two points differing in form as compared with that for similar points.

Moreover, they conclude that the discrimination becomes easier the more different the contacts and that the effect of difference of form grows greater with age. With young subjects the threshold for different contacts is about two-thirds and with adult subjects about one-half of that for similar points.

The interpretation of these facts is to be found in the development of an apperception of form by means of tactile sensations. Whether the development is independent of vision, or takes place in coöperation with or under its direction, cannot be determined. At any rate, the authors conclude we are not so insensible to form as Professor James was disposed to believe.

JESSE H. WHITE.

INDIANA UNIVERSITY.

DISCUSSION AND CORRESPONDENCE.

ACCOMMODATION AND CONVERGENCE. — A REPLY.

A recent criticism (*The Journal of Philosophy, Psychology and Scientific Methods*, I., No. 7, 180-181) of my review of Baird requires a word.

The writer points out that "the review imagines that I accept 'nativism as respects relative binocular localizations, while rejecting it for monocular vision.'" In the criticism he rejects it '*in toto*.' My conclusion was based on the following explicit statements in the original article (pp. 197-198): "It is in dealing with the phenomena of *relative* localization in binocular vision that Nativism has been most successful." "However creditably Hering's theory may have acquitted itself as regards the binocular estimation of relative distance, its defects become apparent as soon as it passes beyond this narrow field. Its account of the binocular estimation of *absolute* [why not also relative?] distance, and its explanation of the phenomena both of *absolute* and *relative* localization in *monocular* vision, must be rejected" (italics all mine). Plainly, my statement is justified.

Again, for years I have been not unfamiliar with the theories of 'Hillebrand, Arrer and Dixon' and with the problems of 'psychological space' in general; what is more, I do not touch upon them in the review. It is through misconception of one of my statements that I am said to misconceive them, viz., 'What the paper gives is a confirmation of substantially all the *experimental* results *as such*' (italics mine). I explicitly referred, not to opinions, deductions, theoretical conclusions, but to 'experimental results as such.' I distinguish between the experimental data and results and the guesses and theories deduced from them. That my statement is correct as it stands (there are certain differences) the writer's own statements seem to indicate (cf. the article, *e. g.*, 148).

Third, that the apparatus was 'substantially the same,' I find reason to reiterate: I find no difference in principle, and interpret the writer in accordance with this position. But witness how at variance his statements are. (1) *In the criticism*: "It is no less clear from the literature that the various forms of apparatus which have been employed in the investigation of the problem are *essentially* different in *principle*." "It is manifestly impossible that my apparatus could have been 'substantially the same' as another which differed *radically* from it in principle"; (2) *in the article*: "The form of apparatus devised by Hillebrand seems to meet the requirements of the present investigation." "To Hillebrand, then, we are in indebted for the apparatus. We have *modified* it only in *non-essential details*" (italics all mine). The review was not unmindful of certain differences; it regarded them as less important.

Fourth, owing to a misconception the reviewer is said to 'utterly' fail to 'understand the construction of the apparatus.' It appears from the criticism that he believed the eye fixated a 'black patch' — 'at a greater distance than a white'; as a matter of fact no such statement was made. What I said was: 'The eye localizes a black patch (or what not) at a greater distance than a white.' The statement is justified by results from the Chicago Laboratory (PSYCH. REV., V., 595 f.), and by my own (a chapter in a forthcoming work, *Optical Illusions of Reversible Perspective*). I indicated definitely what the character of the fixation object was: 'to fixate a line' — the word *abutting* might be preferred to 'overlapping.' The author refers to it as 'screen-edge,' and calls special attention to the fact that half the field of vision was *black*, half *white* (p. 173). The situation I hinted at is one not 'under control' in the experiment.

Fifth, my use of the phrase 'range of accommodation' was in the sense in which Sanford employs line of accommodation (*Experimental*

Psychology, p. 93). It is obvious that the discrimination limen must be larger for the merely accommodating eye, for a given degree of accommodation is sufficient for a certain extent of the line of sight. I submitted that the line of accommodation may be one factor accounting for the larger monocular limen actually found in the experiment.

Finally, respecting the value of my suggestions for future research, I need only add that it is judicious to suspend judgment until they have been subjected to rigorous test. I submit that the problem has not been closed for all time and that it has not yet reached its final stage of development.

J. E. WALLACE WALLIN.

PRINCETON UNIVERSITY.

TO THE EDITOR OF THE PSYCHOLOGICAL REVIEW.

Sir: Our attention has recently been called to an article entitled 'Personal Sources of Christian Science,' by Prof. I. Woodbridge Riley, of the University of New Brunswick, Fredericton, Canada, published in the November issue of the PSYCHOLOGICAL REVIEW. In reading this able article we cannot help feeling that the Professor's talents are worthy of a higher use than that of attempting to disprove the authority of Christian science and the genuineness of the work of its discoverer and founder.

Without entering into the arena of public controversy, or attempting to take up the sword of hostile argument, we will relate some of the things that Christian science has done and is doing in our very midst, and then leave the decision of its merits to the judgment of the impartial reader.

The world has had many religions, philosophies and systems of therapeutics, both physical and metaphysical, all of which when weighed in the balance have been found wanting in some respects, and we ask — is there any fairer standard by which to judge their relative values than that injunction of the Holy Scriptures 'by their fruits ye shall know them'?

The writer's first impressions of Christian science were gathered from reading Mrs. Eddy's book *Science and Health with Key to the Scriptures*, in the early part of 1892, at the time he was suffering from a disordered liver and chronic dyspepsia, which had defied skillful medical aid. About three weeks after the commencement of this study a distinct physical improvement was remarked, and although there was no help received outside of the reading of Mrs. Eddy's book, this healing influence continued until every symptom of the old diseases had completely vanished. This wholly unexpected recovery created a

desire for a better understanding of the law governing this physical phenomenon, and a close study of this great metaphysical principle during the past twelve years has conclusively proved its efficacy under all conditions where circumstances make its demonstration possible.

Any intellectual effort to contradict Christian science by theoretical argument, no matter how able and scholarly the attempt may be, will tend to emphasize the vast difference between the wisdom of man and the divine Intelligence, and the gulf existing between them can only be bridged over by yielding the former in favor of the latter.

The repeated attempts to endow the illiterate and materialistic P. P. Quimby with the credit of having originated Christian science are too far fetched for serious consideration. No claim has ever been established in his behalf which can be considered in the slightest degree tangible. In criticising Mrs. Eddy's writings it would have been, in our judgment, fairer to have quoted from her later editions, instead of from the first, which embodied her early effort to state a subject at once novel and abstruse. If the professor would look for the good in Mrs. Eddy's life and philosophy, we feel assured that he would find so much that his pen would not again be used in the attempt to overthrow a system which is benefiting thousands of the human race. Professor Riley however makes an honest admission when he says, 'That Mrs. Eddy has been successful in treating many nervous, non-organic troubles cannot be denied.'

If a thing is good, would it not be wise to encourage its progress? If on the other hand it is not good, the best possible way to get rid of it is to offer something better, and public opinion will invariably decide in favor of that which is best. Instead of expending our useful and God-given ability in profitless discussion, which will do nobody any good, let us remember the Scriptural quotation — "The kingdom of God cometh not with observation; neither shall they say, Lo here! or lo there! for, behold, the kingdom of God is within you." (Luke 17: 20, 21.)

MARCH 15, 1904.

RICHARD P. VERRALL,
Christian Science Publication Committee,
State of New York.

BOOKS RECEIVED FROM APRIL 7 TO MAY 7.

Ergographie de la Main droite et de la Main gauche. H. SCHOUTEDEN. Brussels, Hayes, 1904. Pp. 28.

Bibliography of the Published Writings of G. Stanley Hall.
Publ. Clark Univ. Library. Vol. I., No. 1, 1903. [196 titles,

beginning with 'Philanthropy,' poem delivered on Class Day at Williams College, June 17, 1867.]

Bibliography of Child Study for the Year 1902. LOUIS N. WILSON. Publ. of the Clark Univ. Library. Vol. I., No. 2, 1904. Worcester, Mass. [A continuation of Mr. Wilson's useful series. This issue contains 344 titles.]

Sulla Filosofia monistica in Italia. E. MORSELLI. Turin, Un. Tip. Ed., 1904. Pp. xliii. [Separate publication of the Introduction written by Prof. Morselli for the Italian translation of Haeckel's *Problemi dell' Universo*, now in press.]

Le moderne Teorie del Genio. R. NAZZARI. Rome, Tipog. Coop. Rom., 1904. Pp. ix + 172. L. 4.

The New International Encyclopedia. Vols. XV., XVI., XVII. (Rice to Zyrians). New York, Dodd, Mead & Co., 1904. [These volumes complete this great work.]

Fatigue. A. MOSSO. Tr. by M. and W. B. DRUMMOND. New York, Putnams; London, Sonnenschein, 1904. Pp. xiv + 334. [This seems to be a rendering of Mosso's text as originally published, without substantial alteration, although the author is said to have seen the proofs. It will no doubt find its use, though it is a pity the matter was not gone over by the author, in view of the large amount of work recently done on this subject. Such researches as those given in Binet's *Fatigue intellectuelle*, the new apparatus of various sorts which have been used in preference to Mosso's ergograph, and the later physiological researches into the conditions of toxic modification of the blood, — all of these things should be taken note of.

It may be noticed that a book on fatigue is announced in Toulouse's *Bibl. de Psych. expér.*, and that there is a chapter giving literary citations on this subject in the recent work of Woodworth, *Mouvement*, in the same French series. It is very doubtful, therefore, whether — apart from its historical value and the high authority of its author — there is any real demand for an English version when the French edition is so accessible.

J. M. B.

Descartes, Spinoza, and the New Philosophy. J. IVERACH. World's Epoch-Makers. New York, Scribners (Importers), 1904. Pp. xii + 245. \$1.25.

An Autobiography of Herbert Spencer. 2 vols., illustrated. New York, Appletons, 1904. Pp. xv + 655 and ix + 613.

The Psychological Index. No. 10. (Bibliog. for 1903.) Issued by THE PSYCHOLOGICAL REVIEW, compiled by H. C. WARREN. Issued also as Bibliog. Supplement, No. 3, to the *Dict. of Philos. and Psychol.*, ed. by J. Mark Baldwin. New York, The Macmillan Co., 1904. 75 cts. [Contains 2,122 titles.]

A Study in Reaction Time and Movement. THOMAS V. MOORE. Monograph Suppl. No. 24 of THE PSYCHOLOGICAL REVIEW. New York, The Macmillan Co., 1904. Pp. iv + 86. 75 cents.

NOTES AND NEWS.

PROFESSOR LLOYD MORGAN and Professor James Ward have been invited to attend the Jubilee celebration of the University of Wisconsin, June 5 to 9, and receive the honorary degree of LL.D. We understand that neither of them has been able to accept.

PROFESSOR GEORGE SANTAYANA, of Harvard, is to take his sabbatical year's leave of absence next year.

PROFESSOR C. S. SHERRINGTON, of Liverpool, delivered a course of ten lectures on the Silliman foundation at Yale, April 22 to May 2. The topic was 'Integrative Action by the Nervous System.'

THE EDITORS take pleasure in announcing that Professor Charles H. Judd, of Yale University, is to be hereafter associated with the REVIEW, being Editor of the new series of Monograph Supplements, which it is designed to make inter-university in character. As issued under Professor Judd's editorial management the monographs are to be considered 'supplementary' also to other journals which may care to adopt the plan. University departments are to have their productions issued, after the manner already begun in the *Harvard Psychological Studies*, in sub-series, the separate numbers of which may be bound together. This arrangement, it is hoped, will obviate in future the scattering of theses and other monographs in various university publications less accessible to the average reader. Fuller announcement may be expected in the next issue of the BULLETIN.

The following items are taken from the press:

A MEETING of experimental psychologists met for the reading of papers and discussion on the invitation of Professor Titchener, at Cornell University, on April 4 to 5.

PROFESSOR JOHN DEWEY is to spend the summer abroad. It is reported that he has been invited to a new chair in Philosophy founded at Columbia University by an anonymous donor.

MESSRS. GINN & Co. announce the posthumous publication of two volumes by the late Thomas Davidson: 'The Philosophy of Faust' and 'The Education of the Wage-Earners.'

THE *Revue de Métaphysique* announces a public subscription for a monument to the memory of Charles Renouvier. Subscriptions may be sent to Librairie Armand Colin, rue de Mézières, 5, Paris 6^e, France. The sales of the volume *Charles Renouvier — Les derniers entretiens*, recueillis par Louis Prat (same publishers, price 2 fr. 50, and 8 fr.), are to be donated to this fund.

THE Oxford University Convocation has accepted the fund given by Pundit Krishnavarmá, a Balliol College man, for a Spencer Lectureship. It is interesting that both the Romanes and Spencer lectureships should be at Oxford. It is also reported that a memorial lectureship to the late Professor Robert Adamson is to be established at Owens College, Manchester. Subscriptions to this latter fund are received by Prof. S. Alexander (Owens College, Manchester, England).

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PHILOSOPHICAL REVIEW, XIII., 2. The Eternal and the Practical: *Josiah Royce*. Aristotle's Posterior Analytics (II.): *John Watson*. The Philosophical Work of Spencer: *John Dewey*. Proceedings of the Third Annual Meeting of the American Philosophical Association. Miscellany.

REVUE PHILOSOPHIQUE, 1904, 2. La Science Positive de la Morale (1^{er} Article): *Cantecor*. Ascétisme et Mysticisme: Étude Psychologique: *Brenier de Montmorand*. Saint-Simon, Père du Positivisme (fin): *G. Dumas*. Les Principes des Mathématiques: *G. Milhaud*. Miscellany. 1904, 3. La Science Positive de la Morale: *Cantecor*. Ascétisme et Mysticisme: Étude Psychologique: *Brenier de Montmorand*. Saint-Simon, Père du Positivisme (fin): *G. Dumas*. Les Principes des Mathématiques: *G. Milhaud*. Miscellany. 1904, I., 4. Le testament philosophique de Renouvier: *L. Dauriac*. Science et conscience: *F. Rauh*. La science positive de la morale: *G. Cantecor*. Les principes philosophiques de la chimie physique: *A. Rey*. Miscellany.

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REVUE NÉO-SCOLASTIQUE, II., 1. La liberté d'indifférence et le déterminisme psychologique: *D. Mercier*. La philosophie d'Herbert Spencer: *J. Halleux*. L'hylémorphisme dans le monde inorganique: *D. Nys*. La philosophie de Saint Thomas: *James Lindsay*. L'Institut Carnegie: *H. Lebrun*. Chronique Philosophique: *A. Pelzer*, Miscellany.

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BULLETIN DE L'INSTITUT GÉNÉRAL PSYCHOLOGIQUE, IV., 1. Conférence. Auguste Comte amoureux et mystique : *Georges Dumas*. Vision de lueurs dans l'obscurité par les sensitifs. Observations de *Courtier, Yourievitch, Bergson, Brissaud, d'Arsonval*. Dispositif pour l'électrométrie de quelques phénomènes physico-biologiques : *J. Courtier*. Observations de *d'Arsonval, Brissaud, Yourievitch*. Le Premier Congrès National contre l'Alcoolisme : *Cheysson*. Sur la botise du chien et la haute intelligence du mouton : *M. Baron*. Du rôle des muscles crotaphytes dans le développement du crâne et du cerveau : *Anthony*. Critique de l'interprétation psychologique des phénomènes de la nature : *M. N. Kostyleff*. Sur les images hypnagogiques : *Gellé*. Observations de *Delage*, D'un cas de réactions motrices du fœtus sous l'influence d'une émotion musicale éprouvée par la mère : *Lahy*. Sur les images hypnagogiques et les rêves : *Y. Delage*.

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THE
PSYCHOLOGICAL BULLETIN

A FEW TRENDS IN MODERN PSYCHIATRY.¹

I.

Psychiatry has had a peculiar fate owing to the great difficulty in finding a proper place in the sphere of experience for what had been so one-sidedly elaborated as soul and mind for religious-philosophical schemes before man became an object of biological investigation. Psychologists always took a certain interest in the peculiar phenomena and frequently exerted a strong direct or indirect influence on the presentations of the facts of observation. But the lack of actual experience on the side of the mental philosopher, and the lack of training in psychology on the part of most physicians, were two factors which added considerable difficulty to the anyhow complex problem. To this day further reasons conspired so as to give psychiatry a poorly defined position especially in Anglo-Saxon countries; and in order to bring about a fair understanding between physicians and psychologists a review of orientation of the principal issues of modern psychology naturally suggested itself.

Before psychology was one of the biological sciences, psychiatry shared its manifold vicissitudes.

Kant declared that the diseases of the mind were a topic for the philosopher, not one for the physician. Since then, a remarkable transformation has taken place, both in philosophy and in medicine. The extreme faith in verbal wisdom and in 'the absolute' had to be pushed to the extreme by the German philosophers, before a really powerful reaction could take place. An essentially speculative philosophy of a Hegel had to show the futility of a method which did not shape thought according to actual experience, but, on the contrary, created a set of methods of thought which it forced on the facts, without any consideration for the pluralism or multiplicity of experience.

¹ This number has been prepared under the editorial care of Dr. Adolf Meyer.

The pendulum of interest was bound to swing back in the direction of higher appreciation of simple experience, perhaps again to an extreme, but merely to pass into a much better balanced phase of peaceful and fruitful collaboration of empiricism and critical methods of thought and research. After a period of the crude materialism in medical circles of the middle of the last century, the creation of a sounder psychology led safely and strongly to a sounder relation between philosophy and medicine and science. Their interdependence became clearer again. The conflict of science and religion, in which philosophy had to play a part, gradually lost its importance, although, curiously enough, again in Germany, a certain faction of the clergy not more than ten years ago seriously endeavored to force the physicians out of psychiatry, and to claim the diseases of the mind for the moral and religious adviser. These extremes must seem preposterous to the Anglo-Saxon; but they deserve the attention of the student of psychiatric development.

In the Anglo-Saxon countries psychiatry was an essentially practical proposition. The question was how to care for those whom the law had stamped as incompetent to care for themselves, and who were considered unsafe in the hands of even their own family or immediate community. The business instinct of the race, economic issues, and the love for large enterprises, led to the foundation of huge hospitals, usually sparingly provided with physicians, and out of touch with the interests of learning and research of medical centers. Psychiatry was taught but little, and chiefly *ex cathedra*. It was too difficult a topic to be dealt with in the same way as many other diseases. As there was no time in the medical curriculum to teach the methods of 'theory and practice' of psychiatry in practical work, as surgery and the theory and practice of medicine are taught in actual work, simplicity of presentation and plausibility of statement became more important in lectures and treatises than an unbiased and painstaking consideration of actual experience. There was more concern about classification than about investigation. Psychiatry worked out more statistics than methods of recording the actual facts, and to this day the illusion is apt to crop out that a systematic scheme of nomenclature and a classification of all the cases should first be demanded as an ideal achievement, while hardly any adequate effort is made to ensure sufficient value and accuracy of the facts to be classified.

The psychiatric literature in the English language has nevertheless matured very creditable works, partly direct elaborations of personal experience, partly elaborations along the lines of French and German

pioneers. For some reason there is, however, a rather striking uniformity and an absence of definite schools of research which not only would bring out stimulating contrasts, but also would prompt individuals to concentration on specially fruitful topics, in preference to endless generalities. We find especially prominent therapeutic ambitions, but unfortunately too often in fields in which the object of treatment is bound to be vague and hypothetical. This explains why a high development in many of the practical measures goes side by side with a striking traditionalism and nominalism, and why the psychiatry of most writers cannot escape the comment that it is much more concerned with the adaptation of the mass of facts to a limited traditional set of terms than with a free and unprejudiced analysis and progressive grouping of the facts as they are. This is not as severe a criticism as it may seem at first sight. Under the formal shell, a sound practical sense exists, just as there is much sound instinct and appreciation of the actual world under the shell of much abstruse religious dogmatism. Yet, for a scientific development, these disharmonies between theory and practice must vanish, and the knowledge of facts must precede the shaping of the nomenclature.

The historical way of looking at the nature of things which has matured the theory of evolution, and which has modified traditional dogmatism generally, has also done remarkable service in psychiatry. After a period of purely ontological and narrowly descriptive work — Pinel, Esquirol and their pupils — Morel initiated the momentous study of the problem of degeneration, so creditably continued especially by French and Italian followers, and brought to perhaps an extreme climax by the school of Lombroso. Among the Anglo-Saxons the principle of evolution became the illuminating factor, in a more theoretical way it is true, to quite an extent, so that the facts were used as illustrations of the *a priori* plausible principle and so that difficulties in the explanation of the facts were made less painful by the free use of mere analogies in evolution and dissolution. The great merit of a Maudsley lies in this direction of the introduction of sounder and more plausible views; but works of this type have done remarkably little to stimulate to productive work. In the hands of Hughlings-Jackson, the greatest philosopher *and* investigator among Anglo-Saxon neurologists, the principle has been most highly and most fruitfully developed. His way of using the principles of evolution and dissolution as a setting for keen discrimination stands among the best products of Anglo-Saxon medical thought and work, and has been truly stimulating on the rare occasions when he touched on the

field of psychiatry, as in 'The Factors of Insanities' (*Med. Press and Circ.*, 1894, p. 615-619), where among other points he makes clear that so many symptoms are the function of normal parts without the guidance of highest level mechanisms. His work has lately been reviewed by Sir William Broadbent, in *Brain*, autumn, 1903.

A few facts from the official statistics of the State of New York are here presented as an instance of how the Anglo-Saxon psychiatric literature was echoed in practical life. They aimed at such a presentation of the facts as appeared compatible with the state of psychiatry since 1888.

Form of Disease.	Number.	Per Cent. of Total.	Number Recovered.	Per Cent. Recovered in Each Form.
Mania, acute delirious.	181	.25	32	18
Mania, acute.	11,239	15.5	4,849	43
Mania, recurrent.	1,559	2.2	499	32
Mania, chronic.	4,733	6.55	236	5
Melancholia, acute.	17,525	24	6,132	35
Melancholia, simple.	1,164	1.6	329	28
Melancholia, chronic.	5,935	8.2	333	5.6
Alternating (circular) insanity.	266	.35	18	6.8
Paranoia.	974	1.35	31	3.2
General paralysis.	4,799	6.64	1	...
Dementia, primary.	1,568	2.17	450	29
Dementia, terminal.	15,951	22.1	116	.72
Epilepsy with insanity.	2,861	4	53	1.85
Imbecility with maniacal attacks.	1,776	2.46	30	1.7
Idiocy.	189	.26
Not insane. ¹	571	.8
Unascertained.	937	1.3
Totals,	72,228		13,109	18.1 %

They are, unfortunately, not statistics of individuals, but of admissions from 1888-1902, including also mere transfers from one institution to another. The main types recognized are mania, melancholia, paranoia and dementia, general paralysis, epilepsy and imbecility. Mania means excitement, melancholia-depression, but only a certain number of cases are plainly the one or the other. The specifications are also little explicit. The groups mean little from the point of view of final outcome, as is seen from the percentages of recovery, which are, of course, not to be taken as final either, since many cases are transferred or discharged before they have reached recovery or the final stage. A comparison of the numbers from year to year and in the various hospitals shows obvious differences in the use of the terms, and the same holds for the various attacks in individual cases.

¹ Includes cases of alcoholism, drug habit, etc.

II.

Among the German writers, we see an interesting adaptation of the various stages of more or less dogmatic current systems of psychology, and a great development of experimental physiology and pathology. We find greater extremes, owing to the indomitable longing for logical consistency and the feeling of moral obligation to take a stand with one of the divergent schools of psychological thought of the period. There has, however, been a *growing confidence* in the paramount importance of more accurate observation of the actual facts of insanity, *the clinical evidence*, and its analysis along the lines of the psychological experiment and of the knowledge of aphasia and other topics of brain-pathology, and the result has been a wave of interest from which all the other countries are drawing fresh inspiration. The French had probably been the most patient guardians of a clinical method with which they laid the foundation for so many advances in general medicine and pathological anatomy; but apart from the necessarily somewhat dogmatic interest in hereditary conditions (Magnan) and in the somewhat limited field of neuroses (as in the noteworthy and classical studies of Ribot and Janet) and in the hazy auto-intoxication theory, there was an undeniable lull in the productivity of fruitful problems.

In the center of the modern movement of psychiatry we find before all others two German alienists, Kraepelin and Wernicke, who have given the most fruitful impetus to a revival in active interest in psychiatry. As an important factor we must further mention Ziehen, and also Sommer. These men have emancipated psychiatry from the peculiar position of an adjunct to neurology which was so prominent when technical advances attracted the attention to the virgin fields of spinal cord lesions and other nervous disorders. In those days it was possible that the chair of psychiatry was given to an anatomist, because he had published a very valuable study of the maturation of the tracts of the spinal cord and brain-stem; and that the main interest of the alienists in charge of the university clinics was directed largely to nervous diseases. Kraepelin has been faithful to psychiatry as such and to its immediate correlate, experimental psychology, without feeling a desire to adorn his position with the easily obtained laurels in neurohistology, and his faith has been rewarded amply. Wernicke, on the other hand, has grown into psychiatry from the neurological side, but also with high credit on account of his most scrupulous discriminations in symptomatology. Both these men had received a strong inspiration from Kahlbaum, and Wernicke also from his predecessor

Neumann, two writers who had been too painstaking for their times and unable to stem the tide of tradition and of microscopical and 'spinal' psychiatry, but who deserve to be mentioned among the classics of psychopathology even more prominently than Griesinger.

Kraepelin, under the influence of v. Gudden and Wundt, developed along two closely allied directions of work: *the clinical observation and the experiment*. At a time when others thought they could get at the nature of disease by arduous section-cutting and microscopy, Kraepelin realized that the great need was a careful sifting of the symptoms of the diseases according to their importance as determining the nature of the disorder; and that the real school of training for the clinical observation (continued observation such as can only be carried out in a well organized hospital or 'clinic') was the artificially produced abnormality, the experiment, in which we can determine accurately the make-up of the individual and his usual trend of reactivity and activity, and in which we can vary at will the etiological modifications, such as the quantity of poisons, or influences like fatigue, sleep, hunger, etc. From 1880 to 1895 this experimental work had, however, hardly brought out a very profound departure from current lines in psychiatry. A contrast liberated the strength of this position very emphatically. Ziehen, a former assistant, but not a follower of Kahlbaum, an extremely systematic worker, known by numerous contributions in the most heterogeneous fields, from anatomy, through experiments on epilepsy, to clinical studies on the pulse and on the gastric functions in the insane, and to a text-book of psychology—a writer who has, to-day, covered the whole field of anatomy, physiology and pathology of the brain, psychiatry, psychology, and even epistemology, and who has just been appointed to the most prominent chair of psychiatry in Germany—Ziehen was more or less responsible for bringing out the contrast which has given the school of Kraepelin a peculiar importance in psychiatry.

In Ziehen's *Textbook on Psychiatry*, 1894, he has made his psychology the foundation of psychopathology. His general psychopathology follows quite closely the chapters of his normal psychology, and matters which the physician is in a habit to see combined into symptom-complexes are here torn apart, for theoretical and systematic reasons. This would hardly have brought out the crisis, since the same can be said of Kraepelin's general psychopathology, which is also arranged in the form of a normal psychology—disorders of perceptions, of intellectual processes, of the emotional life and of will and action being dealt with successively, just as Ziehen deals with disorders of sensa-

tion, of concepts or memories, of the intellectual tones of feeling and affects, of association of ideas, and of activity. The chief distinction is the schematic associationism of Ziehen, and the freer adherence to Wundt on the part of Kraepelin. The actual clash occurred on the practical field, in the 'special psychopathology,' in which Ziehen's thorough-going consistency gave psychological distinctions an undue prominence at the expense of practical experience and a truly medical conception of disease.

Ziehen recognized affective psychoses (mania, melancholia, neurasthenia), intellectual psychoses (stupor, paranoia, obsessions), and compound psychoses (secondary hallucinatory paranoia, post-manic and post-melancholic stupor, post-neurasthenic hypochondriacal melancholy and paranoia, post-melancholy hypochondriacal paranoia, melancholic-manic insanity and catatonia). These affections 'without intellectual defect' he opposed to the defect psychoses — congenital (idiocy, imbecility, debility), and acquired (dementia paralytica, senilis, secundaria following focal disease of the brain, secundaria following functional psychoses, epileptica and alcoholica). Anyone familiar with actual groups of patients realizes that this scheme tears apart many well-established units, and puts side by side essentially heterogeneous entities, mainly to satisfy a psychological system—a fact which comes out even more strongly in the new edition of 1903.

Kraepelin in a review of Ziehen's book made front against this defect. He sees in the use of the association psychology an intentional neglect of important inner experiences which are forced regardlessly into a uniform pattern. The cortex is populated with concepts and nets of memories, beside which affects, character ('the sum of all the ethical tones of feeling'), and voluntary impulses have little space. He sees the greatest confusion in the chapter on paranoia. We find there side by side the chronic incurable states of delusions of persecution and grandeur, lasting the entire life, and the acute curable exhaustive puerperal psychoses, delirium tremens, periodic and circular disorders, and even the transitory deliria of epileptics. "We evidently stand here on the ground of hot and cold fevers, as they were spoken of before the days of stethoscope, thermometer and pure culture." Such a symptomatic grouping puts together similar temporary conditions, but not disease-forms. Everywhere, even in psychiatry, one should consider that the same causes have the same effects, and that wherever exceptions appear we must conclude that there is a difference in the factors at work. Kraepelin turns against the looseness of nosology resulting from Ziehen's emphasis on the

components of the symptom-complexes and the dogmatic tendency to explain entire diseases as combinations of elementary symptoms. Symptomatology of the type of associationist analysis cannot possibly be more than a part of psychiatry. More emphasis must be put on the other facts of nosology. To show this it would take a book, and he promises to write it.

Far be it from me to imply that Ziehen had neglected to make actual experience with the insane the foundation of his descriptions. The method, however, is one borrowed from psychology of a more didactic than practical character. Ziehen operated throughout with a constructive association-psychology, not with an essentially experimental attitude. A predetermined set of elements offers the material for permutations, while Kraepelin is somewhat more ready to give the facts of observation their rank according to their importance, more or less independent of traditional psychology, indeed with a very strong bias to more purely biological traits of reactions, the *form of the stream of events*, and a certain neglect of what is apt to pre-occupy the philosophical (and logic) mind, *i. e.*, of the 'contents' of the psychic events.

III.

I have to ask the psychologist to be patient with the material which must be discussed here for a real understanding of the situation. It might seem that matters were involved here which have little to do with the field of interest of the pure psychologist. He is interested in the psychic manifestations, not in what a physician may want to stamp as a disease. But just those issues are the ones on which modern psychiatry turns and which must be understood if there shall be any common ground between psychologists and alienists. A great part of traditional *psychology* is unintelligible to the physician and biologist without some knowledge of the *philosophical* ground on which it grew. If he wishes to grasp it, he must make the sacrifice of certain collateral studies, which may appear abstruse and little gratifying, but are the only avenue by which to find out how it came that many an important 'law' of psychology has been created, for which he would hardly see a demand in his experience. The same demand meets him who wants to get acquainted with *psychiatry*; and we may say in favor of many recent efforts that psychiatry invites an increasing attention to actual events rather than to opinions. On the basis of empiricism, the student must get acquainted with the events in the life of the patients just as they happen, in order not to fall at once into mere imaginative constructions, or into the deplorable way of picking

out of its proper connections that which lends itself to startling illustrations of pet theories. Psychiatric facts, like all facts of natural science and especially of biology, should first be studied in their proper and natural setting.

Kraepelin, from his first edition, aimed to adopt as much as possible Wundt's standpoint in psychology, in his introductory part. In discussing the types of actual cases, he spoke of states of depression (simple melancholia and melancholia with delusions), dreamy states (hypnotism, somnambulism, lethargy, epileptic and hysterical dreamy states, stupor and ecstasis, and acute dementia), states of excitement (melancholia activa (!), mania, deliria, febrile and alcoholic), periodic psychoses (mania, melancholia and circular forms), primary paranoia, paralytic dementia, and states of mental defect, developmental idiocy, cretinism, anergetic and erethic imbecility, sexual psychopathia, moral insanity, and querulant paranoia, neurasthenic states (*folie du doute*, mysophobia, agoraphobia, imperative impulses), senile dementia and states of secondary dementia (secondary paranoia and secondary dementia such as recovery with defect, agitated dementia and apathetic dementia). This plan shows a striking independence in the position of 'active (or agitated) melancholia' as an excitement and the position of senile dementia, but in the main a symptomatic attitude.

From a small volume of 384 pages the book grew to a large volume of 814 pages by 1895, and the seventh edition consists of two volumes of altogether 1,370 pages, and a totally different arrangement, at least in the 'special pathology,' which rubs most directly against the world as it is, whereas the plan of the general introductory psychopathology, the theoretical development, kept at least the general form with which it started.

In the special pathology, the third edition recognized deliria, states of acute exhaustion, mania, melancholia (*simplex*, *activa* and *attonita*), *Wahnsinn* (hallucinatory, depressive, expansive and catatonic), periodic and circular psychoses, paranoia (depressive and expansive), neurasthenic hysterical and epileptic psychoses, the chronic intoxications (seven forms of alcoholic psychoses, morphinism and cocainism); paralytic dementia, acquired dementias (senile dementia, dementia with organic brain disease and secondary dementias), and anomalies of psychic development (idiocy, cretinism, imbecility and sexual perversion). We find here distinctly a tendency towards a systematic recognition of etiological groups, but also many symptomatic groups.

The fourth edition brings the beginnings of a fundamental change not in the general part (etiology and general psychopathology), but

in the recasting of types of disease. The effects of the teachings of Kahlbaum and Hecker come to the front, peculiarly enough in a form which is given them to this day by many opponents of the subsequent teaching of Kraepelin. The melancholia attonita remains as in the third edition: Wahnsinn forms a large group, but without a catatonic variety; Verrücktheit (paranoia) keeps its catatonic variety. But a new chapter is inserted as 'Processes of psychic degeneration': dementia præcox, katatonia and dementia paranoides. On the other hand, the paragraphs on secondary dementia are omitted.

The fifth edition is the book which Kraepelin promised to write as evidence in favor of his criticism of Ziehen. The 'special pathology' changed radically. We find the following disease groups:

I. The group of exhaustive and infective origin (post-febrile and collapse deliria; amentia).

II. The group of intoxication (alcohol, morphin, cocain).

III. The processes of disorder of metabolism (myxædema, dementia præcox, general paralysis).

IV. Insanity due to cerebral disease.

V. The disorders characteristic of the period of involution (melancholia, senile dementia).

VI. Constitutional disorders (manic-depressive insanity, paranoia, disorders accompanying the neuroses, idiocy).

Wahnsinn disappears completely, and a great process of symplification takes place.

The terms of a tradition of over 2,000 years are overthrown. The psychologist finds few of the old standbys left. The departures appear all to be away from psychological concepts. *Mental symptoms are de-throned unless they are characteristic of etiology, course and outcome.*

General paralysis, a hundred years ago a mere 'complication' of mental disease, now receives the position of a paradigma of mental disease as its most definite form. In the New York statistics, it is the one disease of definite outcome: it stands out as practically *uniformly* hopeless as to recovery. It not only implies invariably a progressive dementia, but also such organic disorders as will usually lead to death within a few years. Very probably it occurs only on ground of previous syphilitic infection. The mental symptoms are classed as fundamental as far as they demonstrate the characteristic deterioration; besides this, there are numerous temporary 'Zustandsbilder,' temporary pictures of a more accidental character, and relatively unessential for diagnosis and prognosis, although they are apt to impress the layman much more than the fundamental symptoms, and even to obscure the diagnosis by distracting the attention of the physician.

This disease is sized up as an *auto-intoxication* together with the rare thyreogenous insanity, and with *dementia præcox*, which is boldly extended so as to include all those cases of mental disease which lead to a peculiar deterioration usually termed secondary dementia, and *taken away from the concept of degeneracy* to that of a special 'disease process.' A more complete revolution of tradition has hardly ever been attempted.

Melancholia is again divided completely (see the first edition), but in a different manner. The agitated melancholia, which there was classed with mania, is recognized as a disease of the involution period, while simple melancholia, and recurrent melancholia and the non-deteriorating forms of excitement form one great unit, manic-depressive insanity. Degeneracy as such does not imply deterioration (because deficient endowment would only explain *arrest* of development, and any retrogression would have to be explained as a special disease-process; Vol. II., p. 270). In some etiological units, such as alcoholic insanity, there are, of course, many types of disorder and many types of outcome. Among the acute febrile and exhaustive disorders Kraepelin includes the cases with favorable outcome, and those leading to dementia join the group of cases with disorder of metabolism, dementia præcox. This latter disease may occur at any age, up to the fifties, and wherever a 'melancholia' or 'mania' passes into dementia, we should recognize that the disease was a disease process different from the start from those forms which never end in dementia.

These radical changes were mitigated somewhat in the later editions, but the main lines have remained fixed. On reading the successive editions one cannot help but deplore the fact that Kraepelin never published the clinical material on which his book is based, so that one might get at first hand an explanation of what led to the changes, and how the observations of the past appeared in the new light. Kraepelin uses a presentation in composite pictures which makes all control impossible. The contrast to Ziehen seems to me to explain part of the abruptness between the fourth and fifth edition, which tempts one to raise many a question.

IV.

My review limits me to the consideration of the psychological gain of Kraepelin's psychiatry. The alienist has to overcome two standpoints to become emancipated and an unbiased observer; that of the layman who follows the rules of mere plausibility and explains all

the actions of the patient in terms of possible motives of every-day life, with free admixtures of sympathy, or of annoyance, according to what the patient does, and that of the hardened dogmatic champion of tradition who forces the facts into a small list of antiquated names and fills in the gaps with vague patter of heredity, degeneracy, or anatomical theories.

Certain distinctions, which have become the first things one thinks of, lose their importance in view of a broader vista of events. *Depression* and *elation* are such contrasts; they determine the distinction between mania and melancholia, the chief units of our statistics. But depression is not necessarily characteristic of any special disorder. It may occur as part of a delirium, or of a delusional state, or of general paralysis, or of alcoholic insanity, etc. Unless we distinguish special types of depression we are not any wiser for speaking of it. To be sure several types are described under the heading 'Melancholia' of every text-book. But are they types which mean something definite in the entire working of the disorder? Kraepelin has the merit of having exploded the fascination of the general term and of having replaced it by more specific characterizations, which, in turn, are subordinated to *special types of course and outcome*. Depressions of the same etiology (or lack of definite etiology) and of the same type of course or setting are indeed found to present very characteristic traits of fundamental importance. The same holds for excitements (see Baldwin's *Dictionary*, articles 'Mania' and 'Melancholia'). Under manic-depressive insanity he describes the fundamental characteristics of those cases which present a number of attacks in a lifetime, but no essential deterioration, however severe the attack may be. Here, then, we see an instance of how Kraepelin's clinical attitude shapes a ground on which mental symptom-groups are subjected to *the consideration of events in the light of the outcome*, the very principle which makes experimentation what it is to us in scientific and ordinary life. Recurrent conditions which do not lead to deterioration are most probably events of a special type, and most likely a biological entity standing for a special kind of 'disease-process' or disease-principle. This one fact on which Kraepelin first insisted emphatically brings more definition into our knowledge than many a long analysis on principles of plausibility which are burdened with innumerable hazy considerations for heredity, severity of the attack and exaggerated claims of therapeutics. Many cases that are diagnosed as mania or melancholia are on careful investigation mere phases of this broad entity of manic-depressive insanity. The next

problem is to review the cases of recurrent insanity generally, to see to what extent the above picture needs extension to include all the non-deteriorating cases, running in attacks; further to study the cases with but one or two attacks and complete recovery; and the result has been the establishment of an extremely characteristic entity where before there was great confusion, as is shown in a case which appears perfectly plain and simple, as having attacks of this entity of manic-depressive insanity without deterioration, but which, in the eight successive attacks has given rise to the following diagnoses: Melancholia, mania, mania recurrent, melancholia chronic, mania chronic, dementia secondary to acute mania, mania acute, paranoia, chronic melancholia. This is an excellent illustration of the haziness of the older nomenclature and the lack of a larger view which would have given a correct grasp on the case even in the first attack: that the patient suffered of an essentially recurrent psychosis apt to appear in certain definite equivalents, with free intervals or more or less permanent recovery and without any tendency to deterioration.

Other depressions, of a fundamentally different character, are the depressions of the involution period, the alcoholic and epileptic depressions, and depressions of the deterioration processes. The latter, as we have seen, have been classed together by Kraepelin under the heading of dementia præcox, a much less definitely settled entity than manic-depressive insanity, also responding largely to the test of course and outcome, viz., the very frequent development of definite and unmistakable deterioration: emotional shallowness and apathy and intellectual dilapidation with often strikingly little memory defect, being at the bottom of the whole disorder. For a fuller statement of the characterizations of both manic-depressive insanity and dementia præcox, I must refer the reader to an abstract in Church and Peterson's *Nervous and Mental Diseases*, pp. 666-673. The perusal of the notes on dementia præcox shows that Kraepelin has boldly wiped out the old concept of secondary dementia; that he has made use of the undeniable experience that most cases of secondary dementia are not so invariably characterized by heredity, early constitutional defects in their start, or the 'severity' of an attack of 'melancholia' or 'mania,' as they are stamped by a peculiar cast of symptoms of a special form of deterioration. Many cases are perfectly characteristic from the onset of the disorder; and Kraepelin makes it plausible that this holds for practically all the cases which take the final course to 'secondary' dementia of the type defined above. This again shapes a definite problem for psychological investigation of a special type of developments.

In this group, which includes 14-15 per cent. of the admissions to Kraepelin's clinic, the dilapidation of thought and judgment, the emotional indifference, the development of old mannerisms, stereotypes, negativism and catalepsy, and a number of physical symptoms are referred to. As in manic-depressive insanity, we are relieved of the absurdity of changing the name of the disease successively from melancholia, to mania, confusion, paranoia, and finally dementia in various steps of the disease, where it is possible to form an estimate of the entire type of events at the outset, and where we can prove that it is a melancholia, mania, etc., different from types belonging to another entity.

We have not left the symptomatic ground, but instead of putting the weight on formal divisions of types, we see here efforts to get at the broad equation of the working behind the depressions, etc. That which looks alike but furnishes different results, is a topic of renewed investigation and expected to show factors formerly overlooked.

Kraepelin's great merit is to have reduced a number of dogmatic general considerations to their actual *value in the stream of events in the life of definite patients*. With an extremely sound instinct, he started from the field of experimental investigations and furnished excellent material for the type of psychology which medicine needs, a psychology which may be a hybrid of physiology, general biology and a certain utilization of introspection, but aims at the determination of the value or bearing of definite reactions and events in the stream of biological regulations. In this respect psychiatry, like comparative psychology, must learn to submerge the introspective method to the position of a mere help for the greater end; that of doing justice to mentation in terms of biological regulations, and of studying the possibilities of modifying these regulations. The 'elements of the contents' as they often are called, the usual elements of psychology, and hallucinations and delusions, count merely for what they are worth in the stream of events, be they of medical, or educational, or other practical bearing.

The chief directions in which Kraepelin has stimulated his associates to work psychologically, are a number of more biological than purely psychological reaction-types, such as retardation and inhibition, flight of ideas, etc. In this frame, he has utilized his methods of psychological analysis of functional efficiency (see the review of his work and that of his followers, by Dr. Hoch). In his own psychological work he has very wisely limited himself to the fundamental workable topics, and in his book his experimental work is given a

very modest position in the midst of the more roughly empirical issues. A few of his followers have been more strongly bent on more hazy issues, such as the explanation of catatonic symptoms or the fundamental disorders of deterioration (Stransky, Vogt, etc., in the *Centralbl. f. Nervenheilkunde*) with some success. But they have not dispelled the feeling that the fundamental traits of Kraepelin's 'disease-processes' are much more descriptive evidence of the *fait accompli* than illustrations of the working of the disorder in that form which above all satisfies our mind, in terms of cause and effect, and that it discourages such attempts as rather hopeless—which no doubt most of them are at present. A systematic trying and trying over again of what causal chains one has ground to suspect, would, however, be better than a dogmatic rebuff. There is something in the whole plan which raises the satisfaction with a dogmatic 'diagnosis' above the desire of a causal understanding. To allow practical advantages, a promise of a definite prognosis of course and outcome, to play such a fundamental rôle in nosological and pathological hypotheses implies a danger for sober consideration.

Yet he has brought home the importance of large frames for the details of analysis. He has shown the undesirability, if not futility, of experimentation with psychological methods which do not serve in the elucidation of some broader process. This is not the place to enter upon a criticism of the indirectness of much of Kraepelin's argumentation (see, for instance, his vindication of 'melancholia' in his last edition, Vol. II., p. 460), of the scanty differentiation of many points which are called fundamentally different, and of the question why general paralysis, and not some less uniformly working disease-process, should be the paradigm of psychiatry.

V.

A totally different impetus for psychiatric analysis comes from Wernicke. Kraepelin formulates his pictures in something like the terms of an experiment—certainly the most stimulating frame of human knowledge. He keeps the determining factors and the result in evidence, and for want of accurate and workable facts, he leaves the *detail* of the working as a matter to be taken for granted. Kraepelin evidently does not aim to settle the question how and why delusions and hallucinations and the various symptom-complexes arise. They are matters given by experience, and what concerns us is: under what conditions do disorders arise, and what do the manifestations tell us concerning the probable outcome and the means of modifying

the stream of events favorably. Our ignorance of the working of the details is a matter of regret, an inconvenience. It will be taken up when its time comes, as chemistry was taken up when physics was well advanced. Wernicke remains much more closely in a field of construction of a more geometrical world, not so much a world in a steady motion and development of experiments, but a study of the machinery itself. He aims to learn how to explain the symptoms of insanity out of the disorders of function of definite organs, in an essentially materialistic sense. Kraepelin certainly uses what facts there are, but his instinct of work makes him avoid a purely hypothetical field, such as the explanation of nervous and mental functions out of the fragments of anatomical knowledge will continue to be for a long time to come.

In Meynert's foot-steps, Wernicke starts from his own investigations on aphasia and he is strongly inclined to present all mental disorders in terms taken from the theory of aphasia. This anatomical bent is, however, excellently balanced by a strong sense for clinical observation, a keen eye for events in the patient's life and a remarkable freedom from the psychiatric common-places. Perfectly unbiased, he looks for his entities of description, absolutely unconcerned about tradition with its uncontrollable use of heredity and vague etiological factors, and of schemes of psychology and of nomenclature. Wernicke comes, indeed, nearest creating a psychology for his own needs.

For a sketch of his work, I must refer the reader to Church and Peterson, pp. 652-660 and 676-686. I shall attempt to review the most vital points here.

All mental disorders are to him disorders of identification (in some such sense as deviations from doing or thinking or feeling the right or adequate thing in presence of a special fact to be 'identified,' or, as I should prefer to say, reacted to properly). He speaks of disorders chiefly in the sensory sphere (sensory identification) or in the intrapsychic sphere (intrapsychic identification) or essentially motor disorders (of psychomotor identification.)

Primary identification, the simple perception of a sound as sound, is distinguished from secondary identification, which demands the co-operation of the mechanisms of the concept. The stimulation of the latter leads to intrapsychic adjustments (from the simple concept to a purposive concept), and these find their equilibration in the reaction of the psychomotor elements. In the psychosensory path or sphere we may experience anæsthesia, hyperæsthesia, or paræsthesia, in the

intrapsychic sphere afunction, hyperfunction and parafunction, and in the psychomotor sphere, akinesis, hyperkinesis and parakinesis. Under the spell of Meynert's teachings of cells and association paths, Wernicke does not resist the temptation of identifying special concepts or 'memories' with definite cells, without much scruple about the fact that the term cell has no sufficient scientific definition in functional neurology to-day. Wernicke's main point in the acquisition of memories is that the cells which are directly connected with the apparatus of projection (*i. e.*, the path from sense-organ to cortex, or from cortex to muscle or gland), are connected with one another by association fibers. The constant or frequent simultaneous excitation of definite sets leads to the formation of concepts, and (*Grundriss der Psychiatrie*, p. 35) these psychological units might be represented by some anatomical units, cells of definite strata of the cortex. He favors the view that the cell-layer nearest to the white matter, the first layer to be reached by impressions, is the representative of somatic consciousness, the impressions from the body (p. 47). The next step is the coördination of sensations of motion and position, innervation and memory, touch-sensation and touch-concept out of these organic responses, and a final step the elaboration of the consciousness of the personality, presented as a function of the consciousness of the external world and of the body. The organ of consciousness is thus populated with a sum of potential energies, memory-pictures and complex memories. These *contents* of consciousness belong to three natural fields: the external world, the body and the personality. This machine of numerous potentialities is next studied from the point of view of *activity*, the preformed order of associations, the concentration of consciousness, attention and will, the capacity of registration (*Merkfähigkeit*), the affects and the normal and abnormal values of concepts; but, here again, it is not the broad sweep of events, but the detail that absorbs Wernicke's attention.

This attempt at a medical psychology gets most of its material from the needs of clinical analysis of symptoms. It is full of hypothetical constructions, but on the whole, on the ground of well-founded analogies. It is a consistent elaboration on neurological hypotheses.

His views have been discussed before in the *PSYCHOLOGICAL REVIEW* (Vol III., p. 512) and especially by Professor James (Vol. IV., p. 225). I shall attempt here to outline Wernicke's position in the actual working of psychiatry and the recognition of types of psychic reactions.

Wernicke begins his descriptions of patients with types which show very little disturbance of the form of mental activity, but essentially disorders of the contents. He gives his theory of sejunction as the common link of many psychopathological states and of what we know of brain pathology: the severing of association, either in analogy with the focal lesions which usually underlie aphasia, or in analogy with degenerative neuritis in which the degeneration takes place with a selection of functionally differentiated associative elements.

Under this group of disorders, 'essentially of the 'contents,' he describes the paranoic conditions, and he opposes to them the acute psychoses in which the disorder of the *activity* of consciousness is uppermost. Throughout he chooses the very excellent plan of starting from one or more actual cases, which are well described and then analyzed. This gives the whole work a much more direct character than Kraepelin's composite pictures. He feels free to pick out the essential traits of disorder according to essentially medical needs. His descriptions have no equal in the entire literature of psychiatry. Everywhere we see a presentation of a palpable observation, and only that which is expressed by a patient and actually established is used for analysis. There is no resorting, either, to assumed anæmias or hereditary predisposition or to degeneracy. And perhaps even too much care is taken to avoid the grounds of etiology, course and outcome, fully as safe as that of hypothetical psychological constructions, however carefully held down to facts.

The actual needs in the analysis of special cases lead Wernicke to emphasize a number of points which are valuable additions to psychopathological terminology and concepts. He speaks of dominant ideas, imperative ideas, 'autochthonous ideas,' and phonemata, as a series of disorders of correlations of memories and 'Merksysteme,' under the principle of sejunction. He ascribes them to the sphere of the patient's personality, his body and the outside world, as autopsychic, somatopsychic, or allopsychic. He does full justice not only to the sensory components of difficulties, but also to the motor side (in pseudo-spontaneous motion, motility psychoses, etc.). He is apt to group together cases that have in common a special prominent symptom (the group of *anxiety* and *somatopsychic disorders*), then the disorders essentially of the *autopsychic sphere*, including the types beautifully described as simple mania, and as affective melancholia, identical with what Kraepelin would include in manic-depressive insanity. Further, he points to the *allopsychoses*, such as alcoholic deliria, acute hallucinosis, etc., and to the *motility psychoses*, in which the

fundamental disorder would seem to be one of the higher muscular coördinations.

The difference of standpoint comes out most strongly in connection with general paralysis, which he admits as an etiological complex, but in which he takes pains to point carefully to the great *variety* of mental disorders on the ground of the fundamental deterioration. He carefully analyzes types which Kraepelin is inclined to submerge, and looks forward hopefully to a utilization of such analyses in efforts to determine more carefully the localization of disorders which express themselves in special symptom-complexes.

He distinguishes the following mental disorders in general paralysis:

1. The expansive autopsychosis (the megalomania of older writers).
2. Paralytic mania (not always distinguishable from pure mania, and frequently passing into the expansive autopsychosis, or at times into a remission).
3. Affective melancholia (depression with feeling of insufficiency), rarely pure, usually with an admixture of delusions of reference or with symptoms of an anxious psychosis.
4. Depressive melancholia (akinetic or hypokinetic depression), also often with admixtures of delusions of reference.
5. Among paralytic allopsychoses we meet frequently a paralytic delirium, which may occur at any phase of the disease, and at times resembles closely a delirium tremens, but more frequently a stupor with disturbed sensorium; or
6. The presbyophrenic complex occurs, or a chronic hallucinosis, or dream-states, resembling epilepsy, although but rarely, whereas the anxiety psychosis is not infrequently of paralytic origin; also hyperkinetic and akinetic motility psychoses (akin to catatonia) are represented.

The results of Wernicke's work coincide in many points with results of Kraepelin's totally different method. We may well say that the two writers supplement each other, as I have tried to show in my review in Church and Peterson.

To be sure, Wernicke's subdivisions are to a large extent pure empiricism with a rather artificial and not sufficiently founded brain-pathology and psychopathology as a leading thread in the labyrinth of facts. He unnecessarily slights the issues of outcome of which Kraepelin makes so much. But no one can read his book or even the abstract of his work without coming across a wealth of well-chosen

points which would have remained in the unclassified residuum but for the bold breaking away from tradition, a strict adherence to what is at hand in the patient and as good a utilization of brain pathology and natural subdivisions as is available to-day. Wernicke's honesty in admitting that he cannot do justice to more than one half of the cases he meets, is another grand step away from the hit or miss classifications which governed psychiatry so far.

Concerning strictly psychological gains, Wernicke will probably exert a rather strong influence through his pupils Liepmann and Storch.

Storch is developing a deepened psychological utilization of the neurological data which shall form the subject of a later review.

VI.

A final contrast may bring out the present situation of psychiatric investigation. Professor Ziehen¹ points to the futility of expecting an absolute classification of the facts of psychiatry. Whatever division is used ranks according to the extent to which it does justice to the two issues of an intelligible terminology and its adaptation to the progress of investigation. He, to my mind very justly, questions the feasibility of a uniform classification from only one point of view. Groups may be formed according to the course of the entire symptom-complex, according to etiology, pathological-anatomical data, etc. Each may have its advantages without excluding the other. For educational purposes it is decidedly advantageous to view the facts from more than one point of view. For instance, to review on one day all the psychoses which originate on the ground of chronic alcoholism; and another day all the etiological factors of a certain psychosis of usually alcoholic origin, such as acute hallucinatory paranoia (hallucinosi or amentia). We thus may come across monopsychic and polypsychic etiological factors (*i. e.*, etiologies producing but one disease-type, and etiologies entering as a component into many different pictures), and monoetiological or monogenous and polyetiological or polygenous psychoses.

Far more important than the *uniformity* of divisions is the *completeness* of our method of grouping, with due consideration of the *types* and of the *transition forms*. Not to recognize the latter has led to many errors. Such 'convergences' of two psychoses are illustrated by the so-called delirium acutum (to my mind not the best instance, inasmuch as acute delirium is merely a peracute form of

¹ 'Ueber einige Lücken und Schwierigkeiten der Gruppierung der Geisteskrankheiten,' *Monat. f. Psychiatrie und Neurologie*, Vol. XV., No. 2, 1904, p. 147.

almost any mental disorder, without actually being a transition form leaving the original ground). He strongly favors more careful consideration of individual characteristics referable to individual peculiarities. Ziehen promises to analyze his great collection of 700 puberty psychoses from these points of view.

Nissl,¹ a follower of Kraepelin, takes this programme for a starting-point of a scathing criticism, which shows what an extreme and exclusive elaboration of a monoideistic scheme, however good it may be, would lead to. Ziehen's reasonable conclusion that more than one point of view is needed to do justice to psychiatry, forces Nissl to the conclusion that psychiatry could not be a medical science, because the possibility of grouping the facts from *one* point of view is a 'self-evident' requirement of medical science. He claims that we are practically ignorant of the real cause of mental disease; that our methods for the study of the symptom-complexes are altogether too rough to properly differentiate the criteria of similar symptom-complexes in various disease-forms. In pathological anatomy we are about ready to begin with the beginning; hence, there is only one chance, that is to group the psychoses according to—the clinical picture. To us that would mean the sum of our evidence, including etiology, course and outcome, and, in case of death, what a careful anatomical study reveals. But Nissl² anchors on pathological anatomical hypotheses, with the following dogmatic climax: "In almost all the functional psychoses it is possible to demonstrate anatomical findings in the cortex. As soon as we agree to see in all mental derangements the clinical expression of definite disease-processes of the cortex, we remove the obstacle which to-day makes impossible all agreement among alienists." Yet, when we look for facts, it becomes plain enough that anatomy has so far furnished too few decisive facts, and that those hypotheses are the best which are based on evident and controllable facts in a field easily brought to a test of experience or experiment; and such experiments are more likely to be fruitful along functional lines than along simple anatomy, in most of the diseases with which we deal. What does an anatomical dogma help?

Ganser's description of random replies in a peculiar mental state of prisoners had given rise to a controversy as to their 'hysterical' or 'catatonic' nature. Owing to the difficulty of defining absolutely

¹ Kritische Bemerkungen zu Ziehen's Aufsatz: 'Ueber einige Lücken und Schwierigkeiten der Gruppierung der Geisteskrankheiten.' *Cent. f. Nervenheilkunde u. Psychiatrie*, No. 170, March, 1904, p. 171.

² 'Hysterische Symptome bei einfachen Seelenstörungen,' *Centralblatt f. Nervenheilkunde u. Psychiatrie*, Neue Folge, 13, 1902, p. 2.

what distinctions are at issue, Nissl takes a dogmatic anatomical standpoint. Kraepelin, for excellent practical reasons, urges that one should only speak of hysteria where there is 'a chronic constitutional condition with paroxysms presenting throughout a condition of increased influence to emotional reactions on the body.' Such a statement is quite justifiable as long as one keeps in mind that it leaves the 'formes frustes' and episodic forms unaccounted for. In some of these 'formes frustes' it is obviously best to submerge the *hysteriform* character of the symptom-complex in favor of a broader concept of disease-forms of a definite course and outcome, which may be different from true hysteria, and are therefore to be kept apart for practical and possibly even strictly pathological reasons. In order to make that which is perfectly true and most helpful in his propositions bear the air of dogmatic assurances, Nissl brings in his anatomical prestige, and claims, 'we understand by hysteria a congenital disease which brings with it a peculiar condition of *the nervous system*, which shows clinically by the development of the so-called hysterical character and is lastingly active inasmuch as at any time transitory physical disorders and various forms of a specific insanity may be produced by strongly emotive ideas.'

Ganser saw in random replies a hysterical symptom; Raecke a hysterical stigma; but since some of the cases showed evidences of some deterioration, Nissl claims the symptom as one of 'catatonic negativism,' because no case of true hysteria deteriorates. According to the law of the outcome, deterioration processes are most frequently dementia præcox (including catatonia). The analgesia, abasia and aphonia in these cases is nothing but catatonic negativism (p. 20), and the fiasco of the symptomatological method is obvious (p. 24). Its advocates or habitués are naturally not conscious of their folly; their very method, the symptomatological method, has a serious defect of character (p. 26); there is, according to Nissl, no objective measure for the test of its hypotheses; hence it lacks the possibility of a correction of the error. This feature does not seem to him sufficiently appreciated. The 'clinical' method dispenses with all psychological explanation and hypotheses. It uses altogether the general principles of natural science investigation. He enters on a peculiar crusade against the supposed folly of building any conclusions on the psychic activity of a diseased brain, an attitude which would naturally appeal to those who do not see yet how psychology *can* be a field for pathology.

In a very recent article Ganser assures us that he is familiar with Kraepelin's katatonia concept, and that he nevertheless stands by the

hysterical nature of the majority of his cases of random reply. As things stand, we obviously are forced to admit that the symptom of random answer is not necessarily negativism as Nissl claims, nor necessarily a hysterical stigma as Raecke says, but a symptom of relative value only, like most psychiatric symptoms.

This whole discussion may be of little interest to the psychologist, but it illustrates vividly the great difficulty of the alienist. He is confronted with so many relatively uncorrelated and heterogeneous trends of experience; yet, most of the training given us in our education is built on the theory that one or two series of facts must suffice, and all the heterogeneous experiences must be forced into a statement of a single or double series of data. This is, for the present at least, an utterly untenable working hypothesis. Unless one has a chance to use with ease, and with a feeling of justification, a free pluralistic method of dealing with things, dogmatic restrictions kill off many a possibility of seeing things for what they are worth. The greatest need we alienists have is a general recognition of sound pluralistic principles of experimentation, and in this direction the Anglo-Saxon mind with its empiricism seems to have a strong interest. The logic of a sound empiricism has no set form of classification, and is free to recognize the unfinished character of many of our stipulations. The value of things is determined by their working value rather than by the logical harmony of the picture, within certain limits at least. The emphasis of one point or another appears as the personal contribution of the temperament of individual observers. And while every one is given full chance to carry into the field the best array of facts, nobody is expected to make a finally exhaustive and still less an exclusive system.

Gaupp, a former pupil of Wernicke, now a pupil of Kraepelin, although strongly under Kraepelin's influence, has published two noteworthy papers¹ which show a much more conciliatory attitude. Everything tends towards a less exclusive appreciation of anatomical facts; etiology, development of symptoms and outcome are recognized as points to be considered in every case, but only for what they are worth, and yield in the way of furnishing facts for a presentation of any disorder in terms of cause and effect, in a measure as they point to means with which the course of events may be turned into favorable currents (therapeutics), and to principles of a more correct understanding of the actual events (pathology).

¹ 'Ueber die Grenzen psychiatrischer Erkenntnis,' *Centralblatt f. Nervenerkrankungen u. Psychiatrie*, Neue Folge, XIV., January, 1903, p. 1. 'Zur Frage der combinirten Psychosen,' *ibid.*, p. 766.

In this large frame psychology is bound to play an important part, but it must be a psychology in line with the broad psychiatric postulates. The demand for an absolute explanation of all abnormal mental activity is modified and given more workable shape in the study of the nature of determining conditions and the nature of the value or meaning of a definite mental state for the further development of the life of the patient. The charm of hypothetical correlations of definite brain states with definite abnormalities of mental reaction becomes reduced to its heuristic value in the study of nature's experiment; and the study of nature's experiment is best carried out with helps of the character of an experiment.

Breaking away from the soporific influence of tradition, Kraepelin has pointed to the relations of broad clinical pictures to fundamental symptoms, and he has given us very valuable perspectives for the formation of a broad frame of events for detail studies. Wernicke has kept alive certain interests in localizatory correlation (sejunction theory, etc.), and pushed his symptomatic differentiations in the direction of picking out the central events of several symptom-complexes (anxiety psychoses, motility psychoses, etc.). Janet, who has worked on a field much more accessible to the psychology of hypnosis, has given definition to an important group of neuroses, and to certain possibilities of synthetic reconstruction. There is, of course, everywhere a tendency to exaggerate a principle of work into undue proportions, and thus to stifle in a way the cropping out of new interests. But with proper organization of places for careful observation and study of patients, and with the necessary helps from the contributing biological and general pathological sciences, a more planful and at the same time more specializing spirit of experimentation can arise without too great danger of fragmentation.

Psychology contributes essentially in the problem of symptomatic differentiation; and to some extent as the cardinal force of therapeutics. The study of mental disorders in gross brain lesions on the one hand, the study of the bearing of definite physiological, toxic or pathological states of the mechanisms of the physical household, and the study of the weight of special mental attitudes and habits in the life of persons of various make-up assist in shaping a special medical psychology.

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A REVIEW OF SOME PSYCHOLOGICAL AND PHYSIOLOGICAL EXPERIMENTS DONE IN CONNECTION WITH THE STUDY OF MENTAL DISEASES.

The new impulse which is everywhere felt in the study of psychiatry depends largely upon the fact that the necessity of careful clinical observation has become more thoroughly appreciated. We have passed through a period in which the chief salvation was sought in the study of anatomy and pathological anatomy of the nervous system, and in which clinical studies were more or less neglected. This tendency has now been overcome, while the anatomical studies are by no means lost sight of.

In the clinical studies which were undertaken the necessity of a more accurate analysis soon made itself felt and this led to the development of careful tests and of the adaptation of the psychological and physiological experimental methods to the special problems of psychiatry. Especially Kraepelin has been the pioneer in this field.

Experiment will not replace clinical observation, and it would be short-sighted to suppose that all that may be found out by a mere study of the cases without the aid of tests has already been discovered. But experiment will help to a finer analysis of symptoms, and clinical observation and experiments will mutually aid each other, each furnishing problems for the other, and each assisting the other in the further elaboration of the results, for after all the methods do not differ essentially. Aside from the study of mental disorders as we meet them in our patients, experimentation has been wisely used for the study of slight 'mental disorders' artificially produced by drugs, exhaustion, fasting and the like. These latter studies have not only aided materially in the development of methods but have also given us causal chains, and have demonstrated how *different causes affect our mental mechanism in different directions*. They have in the hands of the investigators, especially of Kraepelin, furnished us with excellent analyses, which have already become fruitful for the study of mental diseases, and which will certainly prove of still greater value in the future. We must clearly appreciate that all these studies are as yet in their infancy, and that no startling results can be expected so soon, yet no one familiar with the work can doubt that the road thus far covered is the right one.

We shall take up the different studies under different headings, so far as this is feasible, at the expense of having to mention the same work in different places, and we shall, for want of space, treat the studies on mental diseases alone somewhat more fully, while those on artificially produced conditions have to be dealt with more briefly, though the analyses put down in these papers deserve much consideration and study. The process of *apprehension* (Auffassung) was studied by Kraepelin and his pupils. Cron and Kraepelin have developed a method suggested by that of Cattell. On revolving drums were pasted, spiral fashion, monosyllabic or bisyllabic words or senseless syllables, so that, when the kymographion was set to work, these words appeared successively behind a slot. The time of exposure could be varied. That time was chosen which did not allow a clear apprehension of all words. It was possible in this way to study apprehension by means of a continuous method. The number of units recognized could be used for a measure of the excellency of apprehension, while the quality could also be studied. Another method was that described by Finzi. Before a card containing either figures or letters in various groupings a diaphragm is allowed to pass quickly by means of a spring arrangement. The test most extensively used was that of nine figures arranged in three rows of three figures each. The experiments made with these methods refer chiefly to drugs and artificially produced states, and only to a small extent to the study of patients. Among the former there were studied especially alcohol, paraldehyde, trional, bromide of sodium, caffeine, bodily and mental work, and fasting. It was found that the hypnotics par excellence, namely trional, paraldehyde and alcohol, markedly influenced the process of apprehension, and it was suggested that it is upon this essentially that the hypnotic action of these drugs depends. This is aided in the case of trional by a quieting effect which was demonstrated for this drug upon the motor processes. It is interesting that fatigue has the same depressing effect upon apprehension as was shown by the study of the condition produced by bodily and mental work. In the latter the quieting effect upon the motor processes is also present. Fasting, however, did not influence apprehension, though it showed marked effects in other directions. Bromide of sodium produced no effect in the experiments of mono- and bisyllabic words, but some improvement was seen in the experiments with senseless syllables under the influence of this drug. This curiously isolated action was of course not attributed to a beneficial influence of the drug upon apprehension but was explained in a different manner. Loewald

has shown that bromide relieved certain feelings of discomfort, and as the tests with senseless syllables, unlike those with words, were associated with a distinct discomfort, Ach, who made these tests, attributes his results to this action of the drug. Bromide therefore has no action upon apprehension as such. Caffeine had a beneficial effect upon apprehension, both omissions and mistakes diminishing under its influence, and a measurement of apprehension time which was undertaken in a few experiments, also showed improvement. Reis made studies with these methods in cases of general paralysis and dementia præcox. The result was especially striking in general paralysis, in which the threshold of apprehension was very low. In cases of dementia præcox the changes were slight and were moreover influenced by the lack of interest which these patients showed.

The reduction in mental productivity found in various forms of dementia and the changes in coherence of thought noted in different states made it probable that by systematic studies with so-called *association experiments* some valuable help might be obtained for an analysis of certain mental disorders.

The most extensive investigation we owe to Aschaffenburg. He has elaborated tables for the different categories of associations, based essentially upon Wundt's teachings. A. then studied the effects of exhaustion and of the manic states upon the nature of associations. The reason why these two states were studied is because we find in mania as well as in the so-called exhaustion psychosis what is called flight of ideas. This may briefly be characterized by saying that patients who present this symptom do not stick to their subject but run from topic to topic, their train of thought being continually deflected by external or internal happenings. In more pronounced degrees the tendency to rhyming becomes marked and the more the condition progresses the greater is the lack of internal relation. In his investigation A. used two methods, (1) associations were demanded to individual nouns; sometimes the association time was measured, (2) a continuous method in which only the first word was given, while the associated word served as stimulus for the next, and so on. A. found that exhaustion and mania lead to a diminution of associations according to content and to a marked prevalence of sound associations. He also found in contradistinction to what has been claimed by others that the association time is never shortened; on the contrary it may be lengthened. The prevalence of sound associations was also found as a result of alcohol intoxication, and in experiments with fasting. In all these conditions there were also signs of greater

motor responsiveness. For this reason, and since A. regards with Kraepelin the word, irrespective of its content, as essentially a motor image, and defines sound associations as associations united by a motor tie, he seems to assume that these motor images share in the general increase in responsiveness of all voluntary motor processes, and that consequently associations within their sphere (similarity of speech movements) are favored. At any rate A. regards the appearance of sound associations as a direct result of the motor excitement. Again, if he asked a normal subject to write down without choice all ideas which arose one after the other, he found a sequence of ideas not unlike that seen in mild manic patients. This was regarded as a strong evidence that the transformation of thought into speech without choice, a condition which seemed to A. to exist in loquaciousness (as a part of the general motor excitement), was of great importance for the development of flight of ideas. From all this A. concludes that the flight of ideas is secondary to the motor excitement. This view certainly does not agree with clinical experience, and it has been attacked from various sides, most successfully by Liepmann, who justly lays the chief stress in flight of ideas upon a disorder of attention. But even the deeper relation between sound associations and motor excitement, such as A. suggests, seems to me questionable. In the first place we have no right, as Liepmann points out, to identify the word with the motor image only. Still more important is the fact that if we look through all the experiments made in Kraepelin's laboratory in which both the nature of associations and the motor processes were studied, we are struck with certain inconsistencies which must make us cautious. Indeed it seems less forced to assume that in all the artificially produced conditions in which sound associations were found, these are essentially due to an attention disorder. This is all the more plausible since we find the simple mental processes such as continuous calculation regularly affected in the same conditions. Aschaffenburg himself felt the necessity of excluding other factors in the production of sound associations and showed that at any rate a disorder of apprehension cannot be made responsible, since such a disorder is especially marked after trional though there is no change in the nature of associations. This is true, but it is very probable that a disorder of apprehension may exist without alteration of attention.¹

Sommer and his pupils insist in their association experiments upon the value of having a fixed set of stimuli, and Sommer therefore

¹ It would lead us too far to discuss this whole question here in detail. I intend, however, to do this more fully elsewhere in a review of some recent papers on flight of ideas.

has given us a definite list of words which may be used in such a study. This has the value of furnishing us with comparable material. The objection that with the repetition of the same tests certain associations become fixed is undoubtedly valid, but this very factor may be worth studying, as Wreschner pointed out, while on the other hand the error may be avoided by a sufficient separation of experiments. In their studies Sommer and his pupils place less value upon the special categories of associations, which after all are problematical, but they lay their chief stress upon certain deviations which clinical and experimental experience had taught them to be important, such as a productivity and range of ideas, or their stereotypy, the intellectual value of reactions, sound associations, and certain strange unaccountable reactions (*dementia præcox*). Such a tendency arose from Sommer's practical aim, *i. e.*, the elaboration of differential diagnosis. In his book he gives us instructive examples of cases studied by this method. Both he and Fuhrmann investigated epileptic dementia. They found a more or less marked diminution in the extent of production, a certain monotony in the mode of reaction, and a marked egocentric element in the reactions, sometimes with a religious coloring. The egocentric element was in one of F.'s cases so marked that reactions occurred which bore no relation to the word given. These experiments agree with clinical experience, and certainly show how, by means of such tests, a better insight may be obtained into the characteristics of dementia. Bleuler has, with methods of his own, studied the deterioration states of *dementia præcox*, and has shown that unaccountable reactions are especially frequent here even in more or less mild cases. This result may be of considerable importance both diagnostically and for a clearer understanding of the disease as such, of which very probably the element of dissociation, if we may use this term, is characteristic in the active as well as the demented stage. We see, therefore, that with these association experiments we have a means to a more accurate study of dementia, while they have also given us certain analogies between the manic and some artificially produced conditions which are qualified to lead to a better understanding of mania.

Reaction time and *simple mental processes* were studied in conditions produced by different drugs, as well as in various mental and nervous states. For want of space we shall here consider only the latter. But we should first mention in this connection that Kraepelin has instigated a large number of experiments in which the influences were studied which various factors, such as rest or fatigue, practice, warm-

ing up, etc., have upon the *course* of the work. He has united all these results in his masterly paper upon the 'work curve.' Such studies were of course necessary before any alteration in the work curve could be interpreted.

Gross examined a patient who met with a railroad accident without receiving any marked bodily injury. His mental symptoms were essentially characterized by forgetfulness, drowsiness and weariness. The patient was first examined on three successive days, five months later on four successive days. G. used the following methods: (1) adding single figures (printed in vertical rows for such studies). At a clock signal a mark was made every five minutes. Hence the course of the work could be followed up. It was found that, compared with 21 normals, the patient stood lower than anyone else. The normal persons who were nearest his level showed an uncommonly marked rise in the second, compared with the first 15 minutes, while the patient presented a progressive, marked fall, hence an abnormal tendency to fatigue. But on the other hand an analysis of the different experiments showed that the practice curve was not abnormal. (2) Counting from 1 to 20 five times in succession also showed evidences of increased proneness to fatigue, and was done more slowly than normally. As the writing balance showed, however, no abnormality, this slowness could not be due to a motor retardation, but was attributed to articulatory disturbances which are not infrequent in these cases. The process of apprehension was also weakened. For practical purposes these results are important because their regularity excludes the possibility of simulation and it is this which is so important to establish, since many of these traumatic neuroses and psychoses are litigation cases, and since we have very few objective tests for these conditions.

It has been found that epileptics may have not only attacks of marked mental disorder but also periods of slight deviations which still await a clear analysis. Gross examined the reaction times in three such cases. In two of them he found a decided increase in the reaction time for simple reactions, while vowel reactions, and especially choice reactions, were less affected. He attributes this to the fact that the empty impressions, such as a mere sound, which have no associative support, need a special strain of attention to be clearly apperceived. In the third case he found at first a lengthening, later a shortening, especially of the choice reactions. G. explains this on the ground that at first there was a greater difficulty in the liberation of motor impulses, later a facilitation. This agreed with the clinical analysis.

Ranschburg studied the quantitative and qualitative differences in reactions between the young and old (subjects without senile dementia). He found simple reactions, choice reactions, word-reading reactions and association reactions markedly lengthened in advanced age, while there was evidence to show that the time it took to calculate simple problems, in other words the association time for well-rooted associations, did not suffer. The study of the nature of associations showed a greater poverty of ideas in the old.

For the study of *memory* in its widest sense various methods have been devised. Every psychiatrist has certain rough tests for this purpose and for ordinary clinical observations we find in Sommer's book excellent tables and analyzed examples. The memory for old events is of course scarcely amenable to systematic investigation, owing to the wide differences in training and experience. But studies of the ability to register impressions are not only possible but, as results show, very promising. Thus the method of memorizing figures or senseless syllables has been used to study the effects of certain drugs, and with this method it was found for example that bromide of sodium and fasting affected the memory especially. We may also mention the method of Finzi which we described under the heading of apprehension. For the purpose in hand it was modified, inasmuch as variable spaces of time were allowed to elapse between the seeing of the exposed card and the giving of the result. With this method Rüdín, for example, found memory changes in alcoholic intoxication.

Schneider studied the ability to register impressions in senile dementia, a condition in which, as clinical experience shows, the memory for recent events is especially affected. A simple method was used. Patients were shown objects or pictures which they were asked to name. After intervals of 5, 10, 15, 30, 45 and 60 seconds they were asked to tell what they had seen. Sufficient experiments were made with each patient so that for each interval 100 tests were collected. The total correct answers varied from 37 to 72 per cent. The patients remembered chiefly by word images. Interesting is the fact that the diminution of correct answers did not go hand in hand with the length of intervals, but for each patient there was found a certain point, after which the answers became suddenly much worse (for example, between 15 and 30, or between 30 and 45 seconds). S. regards this as probably due to the fact that at that point the after-effect of the sense impression fades and that consequently the effect of distracting influences can have full sway. On the other hand, certain facts spoke in favor of the view that the development of greatest clear-

ness of the images, which according to Finzi takes place in the normal at 15 seconds after the impression, is much retarded. The method is not essentially different from the ordinary tests which we use in our clinical analyses. Nevertheless it yielded some results which the latter did not give, and it is moreover of great value to have more extensive investigations made in a systematic manner.

Ranschburg devised the following method for the study of memory. (1) He gives to the subject 15 pairs of words, the two words of each pair being associatively related according to (a) habitual word combination, where, however, both individual words by themselves have a meaning, such as door-knob, steam-engine, (b) according to co- or subordination, time or space coincidence, etc., such as hand-finger, fish-water; and (c) associations according to sound. In the test only the first word is given, while the second had to be added by the subject. (2) Among 50 photographs four men, four women and two children are selected and shown to the subject. In the test these have to be picked out. (3) Strips of five different colors are shown. In the test these have to be picked out among 15 different strips which represent five colors but for each there are three shades. (4) Among 693 squares of a card 150 are filled out. Among these, five are pointed out to the person and are in the test to be picked out again. (5) Five pairs of words are given, but in contradistinction to (1) they are not related. The test is made as in (1). (6) Five photographs are shown and names given with them. In the test, photographs are shown and the subject is asked to give the names. (7) Numbers are given, but in order to make it more like what occurs in daily life (a principle which we see is followed in all the tests), the numbers are combined with either a month, or a street, or the like, as September 17, 25 pounds, etc.

The entire series is so arranged that the first four groups are given in succession. Then follows the test for (1) and (2), then the groups (5), (6) and (7), and finally the tests for (3) to (7). Every correct answer counts one point, a wrong answer zero. Every mistake, however, is questioned at once and if corrected it counts a half.

With this method R. examined 12-year old boys, hospital attendants, educated adults, neurasthenics, and general paralytics. From the figures obtained, an idea of the extent of memory for all as well as for individual groups could be obtained. By calculating the percentage of the corrected in relation to the correct recollections, R. obtained another figure which he calls an index of the certainty of memory; the greater this percentage the weaker the 'certainty.' We must

admit that for simple tests the method is a very excellent one. As a result of his studies R. comes to the conclusion that education increases the 'extent' of memory; it increases the 'certainty' in some, but not in other fields. Age increases both. Interesting are his results in neurasthenia: there was a decided diminution of correct answers in the field of word memory; this is even more marked for senseless word combinations; the name memory is diminished somewhat, the person memory less; the 'certainty' is also diminished; besides, there was noted a greater proneness to fatigue and a certain slowness in reproduction.

In general paralysis there was marked diminution of 'extent' and 'certainty' of the total memory. So far as the special fields are concerned there was total or almost total destruction of the word memory, name memory, of the memory for localization of squares, while that for colors and persons was relatively well preserved. In certain cases, however, namely in early ones in which there was present a maniacal stage, the memory may be normal or 'even above normal.' Occupation has a marked influence in preserving memory in certain fields.

An important field for investigation promised to be the study of *motor processes*, and as a matter of fact this has been taken up from various sides and various methods have been developed.

Sommer and his pupils studied especially the involuntary processes, Kraepelin and his pupils the voluntary ones.

Sommer attempts, as he tells us, to study the innervations which accompany and in part characterize mental diseases. In this general plan he studied, *e. g.*, the reflexes and the inhibition of reflexes through cerebral influences. He devised an ingenious apparatus by means of which the reaction produced by a tap with a percussion hammer on the patella tendon (knee-jerk) could be multiplied and registered. For this purpose he supported the thigh above the knee, so that the lower leg could swing freely. By means of a string, which was attached at one end above the ankle, ran over a pulley, and at the other end bore a weight (which could be increased or decreased so as to place the lower leg at different angles), the swinging leg was 'equilibrated.' On the string above the weight was a recorder which wrote on a revolving drum. The force of the hammer could be varied and measured. It was found that the normal knee-jerk consists not of one rise only, but of a number of oscillations. With this apparatus he found marked changes in hysterical and epileptic patients, and also in katatonia, a mental disorder associated

with abnormal tensions in the muscular system. Thus he found, for example, unusual variations in epilepsy, irrespective of seizures, which were sometimes periodic and sometimes associated with many oscillations. In grave hystero-epileptic and hysterical states he found after three or four oscillations a renewed rise of the curve, in some hysterical and neurasthenic states an insufficient return to the base line, in katatonic forms signs of abnormal inhibitions. These are undoubtedly very valuable results.

With this method Alber studied the effect of alcohol and found that with increasing doses there appeared suddenly a point where the cerebral inhibitions were diminished as shown by an increase in the number of oscillations. Hornung modified the method by merely letting the leg fall from an extended position, instead of tapping the patella tendon. He found in epileptic dementia and dementia with hysterical symptoms ('*erethic dementia*') a diminution of inhibitions, *i. e.*, prolonged oscillations; the same was noted as an effect of alcohol.

Various methods were devised by Sommer for the study of movements of expression, for example one for recording on a revolving drum the horizontal and vertical movements of the muscles of the forehead. Results have not yet been published so far as I am aware. Another apparatus was designed for registering the involuntary movements of the fingers. The arm was supported by a freely swinging strap and the finger placed upon a small plate which was so arranged and connected that the movements in three directions could be separately recorded on a revolving drum. With this method he discovered periodic tremors, for example, in a case of epilepsy. Alber used this apparatus also for his study of the effects of alcohol. He found that alcohol produced at first a greater steadiness and then, at the same time that the loss of inhibition showed itself in the knee-jerks, a marked diminution of steadiness. There were also seen fine tremors, coarse lateral oscillations, and an increase of pressure. The greater initial and the lesser subsequent steadiness he is inclined to place in relation with the initial increase and the subsequent decrease in the facility of liberation of motor impulses demonstrated for alcohol by Kraepelin and his pupils.

A similar apparatus which Ermes used for the study of katatonic conditions was made for the leg. The leg was held extended and in E.'s experiments the lateral and vertical motions were recorded. He found an unusually long retention of the same level but also signs of fatigue in the form of increasing tremors, hence nothing that would really

add anything to what can be observed clinically in cases with cataleptic phenomena. He attributes the phenomenon of catalepsy to a narrowing of the field of consciousness and a consequent perseverance of cortical innervations in the absence of displacing influences, — a view which is in some ways attractive.

As has been said above, the study of voluntary motions was undertaken by Kraepelin. After various experiments with reactions, especially the 'faulty' (too precipitate) reactions found under certain conditions (after alcohol, bodily exertion, exhaustion due to keeping awake), had pointed to an increased facility of liberation of central motor impulses, Kraepelin in order to study this and other alterations more accurately devised his 'writing balance,' basing his idea upon a cruder apparatus of Goldscheider. A small desk upon which the arm can rest naturally contains a plate upon which a writing card can be fastened. This plate which is movable in a vertical direction, represents one arm of a balance, the other, a longer arm, is connected with a recorder which writes on a revolving drum. The latter arm is held down by a tight spring. During the process of writing the plate is depressed and the spring becomes stretched; if the plate is at rest the spring is relaxed. The subject may be asked to write the figures 1-10, or a German M, or to connect two points by a straight line. The tracings on the smoked drum can then be studied. The pressure can be measured and variations noted. The abrupt or gradual beginning or ending of the curve produced by each figure gave an indication of the rate with which the motion commenced or terminated. The size and form of the movements could be seen on the card. The size could be measured in mm. (at first this was done only for the straight figures, the 1 or the M [Gross], later a curvimeter was used [Diehl]). From the distance covered by a letter (in mm.) and the time it took to execute the movement (as measured on the drum) the relative rapidity could be calculated.

With this apparatus Gross, who was the first to describe it, made studies on normal persons and on cases of manic-depressive insanity.

It may not be out of place to say a few words about this mental disorder. The group of manic-depressive insanity includes non-deteriorating cases, which show a tendency to recurrent attacks. These manifest themselves either as states known as mania or melancholia or as peculiar combinations of these syndromes ('mixed states'). The manic state is characterized by a motor excitement, 'flight of ideas' and exhilaration; the depressive state by a motor retardation, a slowness of thinking and an emotional depression. While formerly

these states were considered to be the very opposites, Kraepelin has demonstrated their fundamental relationship. One of the proofs for this is the fact that these fundamental symptoms may be variously combined.

It was natural that these conditions above all others should tempt one to study the alterations in the voluntary motor processes. This Gross has done after establishing normal data for comparison. He found that in cases with motor retardation the rapidity of motion and the pressure were diminished, there was a gradual beginning and ending of the pressure curves, which were low and drawn out. The pauses between the individual figures were in two cases not, in one markedly, increased. The latter points to a retardation in the transition from one motion to another. The letters were smaller. As the work went on the figures became smaller, while the pressure remained the same and the pauses showed a further increase in length. In the manic condition G. found large figures and sometimes increased pressure from the first, but the most striking feature was the change which occurred during the work. In the beginning there may be a diminished rapidity of motion, but this rapidly increases and with it the size of the letters, the pressure becomes greater; the pauses, at first not shortened, now become more brief, the work gets careless, the variations in pressure more marked, and there develops a precipitate beginning and ending of the pressure curves. These results are very interesting as they show that there exists not so much a motor excitement as an increased motor excitability. This, to be sure, may be seen clinically, but these experiments have fixed and emphasized it much more clearly. Finally some of the states were examined in which there was a combination of the syndromes. One patient presented essentially the traits of retardation. Others showed a retarded beginning which gradually passed into signs of excitement. Thus the most striking case showed at first low curves with gradual beginning and ending, with long pauses; progressively the pressure increased, the pauses became abnormally short, the curves irregular, and with abrupt terminations. It is certainly of great importance that Gross has here demonstrated a combination of motor traits which seem logically to be the very opposites, but which are here physiologically closely related. It is to be hoped that these experiments will be continued with other combinations of manic-depressive insanity, because it is these combinations which seem to be the most promising in giving us an insight into these interesting, yet in many ways still obscure, phenomena of this disease.

Owing to certain similarities which in some cases exist between what we may call malignant states of excitement and depression (*i. e.*, deteriorating states which are now to a great extent classed as dementia præcox), and the benign forms just spoken of, it is interesting to note that with cases of dementia præcox G. found a striking inconsistency and apparently a lawless increase or decrease of the different factors, as well as evidences of sudden 'blocking' of the impulses, all of which results are quite different from the harmonious regularity of the curves of manic-depressive insanity.

The same method was used by Mayer for the study of the influence of alcohol, in which, as we have above stated, the result of the choice-reactions had also pointed to a transient increase of psychomotor excitability. M. found with the writing balance a transient shortening (not very marked) of the pauses, and a transient increase of pressure, while the rapidity of writing was diminished (exclusive of pauses). This was followed by longer pauses, while the pressure fell. The rapidity was not influenced and the variations in pressure were retarded and diminished in number. Consequently M. found in alcohol also a temporary increase in the motor excitability, but it lacked certain traits of the manic state. This, as well as what is to follow, may well show the fine differentiation which is possible in these experiments.

Other states which have been studied are those produced by mental and physical work. Bettmann demonstrated that while the influence of a brisk walk agreed with that of mental work (adding of figures) in so far as it depressed the rapidity of simple mental processes, it differed in its effect upon the motor processes. His results with choice-reactions showed an increase in the 'faulty' (too precipitate) reactions. Mental work on the other hand not only leads to a result in the opposite direction, but may even counteract an existing increased facility of motor liberation. Miesemer repeated these experiments on the writing balance and showed that a brisk walk diminishes the pauses, increases the rapidity of motion, the size of letters, and the pressure, accentuating also the variations in pressure. This result agrees with Bettmann, also Oseretzkowsky and Kraepelin, who found an increase in pull number in the ergographic curves written after physical work (see below). After mental work, on the other hand, M. found an increase in the length of pauses between the letters, slower motion, a smaller size of letters, and a diminution in pressure. It will be at once apparent that these results agree much more with those of manic-depressive insanity than do those found in alcohol intoxication. This seems to me of interest, since the benign, non-deteriorating manic-

depressive states appear to have, more than any other mental disease, their normal prototypes. It may be added here that Miesemer found also motor states each characterized by different combinations as a result of the anticipation of the 'pleasant' walk, and the 'unpleasant' task of adding, and still another was found when the subject had to pass from an easier to a more difficult task. While the ultimate analysis of these states is not yet clear, the fact that differences can be demonstrated is of great value.

It was to be expected that the ergograph should also be used for the study of voluntary motor processes. Mosso's apparatus having been modified, Kraepelin and the writer undertook to study the effects of caffeine and of the ethereal oils of tea separately. It was found that the former improves the work and that this improvement showed itself entirely in an increase of the heights of the individual pull, while the ethereal oils had the effect of lowering the numbers. The opinion was expressed at the time that the pull-numbers were the expression more of the condition of the motor centers, while the height was the expression of the state of the muscles. It certainly seems that conditions which facilitate the liberation of central motor impulses, as has been demonstrated for example by Oseretzkowsky and Kraepelin in the case of alcohol, affect the pull-number, while caffeine, which is known to act upon the muscles, affects the pull-height. We shall presently see that the retardation of manic-depressive insanity also affects essentially the pull-number. We may therefore say that so far as our experience goes, changes in the central motor responsiveness show themselves, in ergographic experiments, in alterations of the pull-number.

We may add here the study with the ergograph which the writer made in cases of manic-depressive depression. As is the case in many of these studies, the problem arose from the question of differential diagnosis. The melancolias of manic-depressive insanity are characterized by a retardation of motion, as has been demonstrated so well by Gross. There are, however, cases in which this retardation is²totally absent so far as clinical observation goes. Whether it could have been demonstrated by means of the writing balance I do not know, but it seems questionable whether the alteration was sufficiently marked to go beyond the normal breadth. It was hoped that by means of the ergograph a method could be found in which, owing to the great resistance which the weight offered towards voluntary motion, even the slightest changes might be demonstrated. The method was the following. For several weeks three exhaustion

curves were pulled on the machine every morning, each curve being separated from the other by an interval of 15 minutes. In normal individuals it was found that with this interval the second curve is often higher than the first (warming up), the third again lower. From day to day the practice showed itself either by parallel rise of pull-number and pull-height of the first curve, or by a rise especially of pull-number. In the cases of melancholia which were studied these conditions were altered. The practice curve only showed a rise in pull-height, while there was a progressive rise in pull-number in the three successive curves on an individual day. In a more pronounced case practice as well as 'warming up' were absent. The explanation which seems to be the most plausible is that there exist resistances, especially towards the initiation of motor impulses, thus affecting the pull-number, while, the initial resistance being overcome, the rest of the pull (pull-height) is less influenced. In the mild cases studied, however, there was a distinct tendency towards an overcoming of these resistances as the work continued, which showed itself in the progressive rise of pull-number in the three successive curves. Interesting is the fact that these changes were found not only in depressive cases, but also in a 'mixed state' in which there was a slight exhilaration but no overactivity. It was therefore possible to demonstrate with this method in mild cases the same motor retardation which manifested itself as a more pronounced disorder in the graver cases, and, since the slightest retardation is associated clinically with a characteristic feeling of inadequacy, our results give to this a special significance.

We now turn to the domain of *feelings* in which Ragnar Vogt has given us the first, and thus far the only, experimental investigation. V. bases his work on the well-known studies of Lehmann and was able to use Lehmann's original plethysmograph. Several points which Lehmann had discovered were confirmed by V. and found to be much more pronounced in his pathological material. Thus Lehmann's claim that sudden changes in the arm volume are due to external impressions or arising ideas while the gradual changes are due to vague mental processes; for example, in patients who had delusions about the apparatus the sudden variations were very frequent. V. also confirmed Lehmann's finding that an expectant mood and a state of tension in general was associated with a small arm volume and a low amplitude of the pulse. For example, when in the beginning of the experiments some of his patients were uncertain as to what was to come, both volume and pulse were low, but rose when the patients grew accustomed

to the conditions. Of especial interest is the fact that he obtained two different plethysmographic pictures in states of fear, namely either a low volume and low pulse or a high volume and high pulse. In both cases the frequency of the pulse was increased. According to V. the difference depends upon whether fear is associated with tension or not. In one case we are dealing with an expectant fear (small volume, low pulse), in the other case with an immediate, or, as it were, unreflective fear (high volume, high pulse). He found that the former was present when in his experiments he only spoke of hurting the patient, while the latter appeared when a needle was brought close to the eye. He also met with the latter in imbeciles, whom he takes to be unable to concentrate their attention upon what will happen, but to be overwhelmed, as it were, by impressions. Differences were also noted in the attention reactions; sometimes the reaction agreed with Lehmann's typical results, but at other times it was associated with vascular dilation, namely, when, with the task of calculating sums, the patient experienced a feeling of bewilderment or shame about the result. If to this was added doubt or anxiety about having wrongly calculated, which was sometimes so marked that the patient hesitated to utter the result, it was associated with greater frequency of the pulse beats. V. points out how states in which the attention is directed ahead and strongly concentrated differ in the plethysmographic picture from those 'reactive' states in which the attention is diffuse (relaxation). V. certainly has shown how this difficult field in which psychiatry has many problems may be fruitfully attacked.

One more paper should finally be mentioned, namely that of Wizel, who studied with simple tests the ability to estimate time and space in cases of general paralysis and dementia præcox. He found most pronounced deviations from the normal, especially in the former, and attributes to this the well-known extravagance and absurdity of the delusions in these cases.

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PSYCHOLOGICAL LITERATURE.

Allgemeine Anatomie und Physiologie des Nervensystems. ALBRECHT BETHE. Leipzig, G. Thieme, 1903.

This extremely interesting and important contribution will be reviewed more at length in the *Journal of Comparative Neurology*.

Bethe's book, like Loeb's, is essentially a connected statement of a remarkable series of experimental studies. The greater part of the work refers to the peripheral nervous system. Above all we mention the demonstration by Bethe of the possibility of independent regeneration of peripheral nerves, limited to young animals. His evidence is very carefully collected, and the splendid series of experiments goes a long way to make the conclusion final. Whether it is necessary to infer from this that the development of the nervous system in the embryo must be the same as what happens when the abnormal conditions require atypical regeneration, is a wholly different question, consequently the general conceptions of the nervous system with a broad use of the concept of the neurone would hardly seem to lose its justification and usefulness.

Bethe's experiments show that function and trophism are considerably independent, and even the concept of trophism, that is, the life-regulating function of the nucleus of a cell unit, must evidently not be taken in too abstract a sense. Bethe shows that a nerve fiber cut from the cell does not degenerate in its whole length at once, but that the degeneration progresses from the point of lesion to the termination. Therefore, the concept of trophism must be extended so as to include what Bethe terms a polarization. In nerve fibers which are regenerated independently the same law of polarization holds as in the normal nerve tissue, that is, if a regenerated nerve is severed, the degeneration also spreads to the periphery. The products of this autogenetic regeneration in young animals disappears again within about ten months, if there is no union with the central nervous system. This finding, together with Bethe's experiment on the crab (see my review of Nissl's book), would show that the cell concept is unnecessary for nervous function as such.

The most interesting finding of Bethe is his demonstration of the direct or primitive stainability of the fibrils of the nerve elements, as being absolutely in harmony with the degree of functional conductivity. By pressure he was able to reduce the excitability of the nerve, and

found that the reduction was absolutely parallel with the reduction of stainability. With the same principle he was able to demonstrate histologically the conditions of anelectrotonus and catelectrotonus.

A number of facts allow Bethe to specify two chemical substances of fundamental importance, namely, the fibrillic acid which is at the bottom of the direct stainability of functioning nerve fibers, and the Nissl acid contained in the stainable substance of nerve cells, which is the substance of the central nervous system which Bethe is inclined to connect with a specific inhibitory function.

An important point in Bethe's findings is the demonstration of a special peripheral nerve net, independent from the central nervous system, and present in the heart, blood vessels, etc. This type of the nervous system is of a character of what is seen in invertebrates. These findings strongly discourage the view of non-nervous propagation of muscular activity in the intestines and heart, as had been maintained for a number of years by most investigators.

A review cannot do justice to the wealth of well-planned experiments reported in the book, nor to the interesting reviews of general topics of inhibition, etc. These notes must suffice to draw the attention of the reader to the original, and to the longer analysis referred to.

A. M.

Die Neuronenlehre und ihre Anhänger. FRANZ NISSL. Jena, G. Fisher, 1903.

The cock-sure generalizations which have become the center of neurological teaching, since Waldeyer gave his definition of the nervous system as a concatenation of independent cell-units, have called for Nissl's very searching discussion, which starts out to prove that the neurone theory is effete and finally overthrown. Like all concepts, the neurone theory had become a dogma for some, and a starting point for development for others. Nissl's motto 'écrasez l'infâme' goes against the very heresy of the principle. He obstinately claims that 'neurone-theory' can never mean anything but what Waldeyer meant, the assumption that (apart from the unessential vascular apparatus and the neuroglia) anatomical units of nerve-cells made up the functioning mechanisms called nervous system, and that these units were identical with the Golgi-silhouettes, not as Golgi saw them, but as Cajal described them.

Nissl's book is an arraignment of a series of workers who have made themselves champions of the word neurone. In a long-winded and formally awe-inspiring argument and with the zeal of inquisition,

he wants to have it out with all the workers who do not agree with him and Apáthy and Bethe. Nobody would deny that Nissl has laid bare a carelessness of expression and reasoning in many famous lights of neurology, such as partly excuses his reproving attitude.

Nissl's book is a peculiar mixture of pedantic dialectics, and a consequently much-diluted stream of statements of fact. A review is decidedly worth making in order to concentrate the facts so that they can be surveyed.

Nissl distinguishes gray and white matter, and as independent elements cells, fibers and gray; cells 'without gray' may be seen in the white substance beneath the convolutions; on the other hand gray matter may be interspersed among fibers 'with but few cells.' The 'cell,' is a well-circumscribed entity consisting only of the cell-body as it is shown in the 'fever-alteration' by Nissl's method. It has its nucleus, and a protoplasm body with dendrites, in most types with stainable substance; fibrils can be shown with Bethe's stain passing through the body, from surface to surface and dendrites to dendrites, and many passing out through the axone-process (which is free of 'stainable substance') and as a fibril-wire beyond the real axone-process (where it is probably lost before it enters a medullated sheath, since the Golgi-method is no proof for Nissl, and he evidently is extra-scrupulous on this point).

The cell is surrounded by a reticular 'Golgi-net' except in the region of the axone-hill. The net is smooth on the inside but passing directly into the pericellular substance, 'the gray,' a ground substance not analyzed histologically so far and 'certainly' not made up merely of dendrites and fiber-terminations. Nerve fibers are either connected with the nerve-processes of nerve-cells or they originate outside of cells from the 'gray,' because their number is much greater than the number of cells (?). Bundles of medullated fibers never connect more than two gray centers (?). The axis-cylinder (as such he only admits the part of the fiber which shows a stainable stroma with Kaplan's stain) cannot be followed beyond the point where the medullary sheath begins and ends. Only the neurofibrils connect with the gray, and with cells. Between the 'cell' and the medullated fiber there is a gap not filled in (?), because the acute alteration and Kaplan's stain of the axis cylinder fail to bring out the 'fibril wire.' In other directions, where even the Golgi-method fails, he admits his own postulates: not only fibers without cells, but paths in the gray which connect, for instance, the proper pyramidal fiber with the proper motor cell. Nissl doubts that the 'gray' should be a three-

dimensional diffuse net, as Apáthy claims. The central gray must be not only a nervous conductor, but a participant in nervous function. Like the intra-cellular and intra-neural fibrils, the gray is the 'highest form of differentiation of living matter,' with a metabolism of its own, by no means necessarily trophically dependent on nerve-cells. It is a postulate that the gray of various regions of the nervous system is far from identical in function. (In the older literature structural differences of the 'ground-substance' were well enough recognized, as is shown by the terms 'gelatinous' substance, etc.). It is a non-cellular, specific nervous substance, with provisions for localized conduction and capable of bringing into effect nervous activities of the most varied kind. Its nature is not settled, not even in the case of the neuropil, the point-substance of invertebrates, described as a 'gitter' by Apáthy; it is not certain that his fine net is identical with fibrils. Here, Nissl refuses to make even an hypothesis. He merely claims that the Golgi nets are an accessory apparatus of the nervous tissue which is the intermediary of the formation of conducting fibrils out of the constituents of the nervous gray.

Such a mixture of punctilious accuracy and idiosyncrasies, and freedom with hypothetical stipulations!

Beth's frequently mentioned experiment on the crab is interpreted by Nissl, and he introduces a very remarkable blunder. The cell-bodies are cut off and with them the perinuclear net and also the fibrils growing out from it as peripheral fiber or axone. Consequently for all motor purposes the cells are annihilated (and even their fibers would be wholly out of commission, even for Nissl). Since the reflexes reappear for about two days, Nissl assumes that special motor fibers originate directly from the neuropil. The first condition is that really no fibrils pass from the dendrites to the axone except through the perinuclear net and its efferent fibril. *This, according to Bethe, holds for Hirudo, but not for the crab* (pp. 98-99, and also Fig. 12, p. 35). Nissl's elaborate drawings which should refute such objections as mine in the *Journ. of Comp. Neur.* are made up of *Hirudo* cells for a *Carcinus* experiment! This, to my mind, ought not to happen to a man who is such a severe critic of others. The second condition — using Nissl's anatomical standard — would be the *demonstration* of fibers which go to muscles, and originate from the neuropil without passing through cells or parts thereof. Where is the evidence?

Nissl's chief wrath is expressed in the assumption that the 'neuro-nists' claim that nerve-cells and their processes should make up the

whole of the nervous substance. This, to my mind, has never been claimed as absolutely and irrefutably true, but merely hypothetically on the ground that it is best to start from the known, and not to assume new things unless profitable hypotheses lead us further. The attitude expressed in my extensive review of 1898 is a standpoint to which I have every reason to hold to this day, because it invites new facts and does not exclude any. The question might be raised whether the term *neurone* was a desirable term to deserve preservation after the numerous accidents of birth: an extreme definition by Waldeyer, and Shaefer's using it for the axone. Personally I am not inclined to be an extreme purist. With the proper definition and as long as the facts implied are plain, the term '*neurone*' is useful, although like the word '*cell*' not to be used very frequently.

The chief failing of the Golgi and Ehrlich methods is that they have been misinterpreted by some, and that they show more than the cells of Nissl's '*acute alteration*.' In my review, I strongly pointed to Golgi's views as contrasting with Cajal's. Golgi claims a passing of the cell into a *réseau diffus*. Nissl prefers to say: My own method in pathological states shows cell pictures which alone can be accepted as cells; that which goes beyond is largely unknown, and must in part be called '*gray substance*.'

Forel, as is well known, arrived at his views (which were not a dogma, but meant to be a simplifying correlation of formerly disconnected facts), from his experiments with the Gudden method and the Golgi-pictures. Nissl's peremptory claim against this direction of argument is that Waldeyer's theory is an anatomical theory and can only be explained anatomically; and that the theory does not *explain* the fact of circumscribed degenerations, as long as the details of the events in the ground substance (Nissl's gray matter) are unknown. The limitation of evidence to '*anatomy*' is sophistic. Nissl never adheres to it himself. It reminds me of the stubborn claims that mind can only be explained by mind, etc., and rulings of court-evidence, not of natural history logic. In the problem of degeneration, the *neurone*-theory is a convenient frame for many of the known facts, nothing more; there is no attempt to explain beyond the facts, but to formulate hypotheses to be tested in the light of fact. He also repudiates the value of a term like '*trophic neurone*' because it is '*practically nothing more than another way of expressing the results of secondary degeneration and the results of the Gudden method, and not an explanation of these*.' Such claims have of course been made; but they do not touch the question of fact, but merely the danger of simplifying presentation for certain minds.

The embryological researches of His are very haughtily treated by Nissl. Here again, he denies any weight to the embryological analysis, because it is not anatomy of the adult. He, however, introduces any evidence he chooses. The acute alteration gives his true cell-picture. He denies that the posterior roots arise from the spinal ganglia. His arguments concerning the effect of section of the posterior roots and the denial of their outgrowth from the spinal ganglia are experimental. He finds changes in a few cells of the posterior horns, but none in the ganglia, in harmony with what has long been known. This simply means that 'Nissl's law' of axonal alteration is not all-embracing, and would be a premature generalization. Why does he not draw in the inconvenient fact that in 'amyelic monsters' the spinal ganglia send posterior roots into the empty spinal canal (Leonowa)?

Apáthy's findings are a very interesting addition to our knowledge of details of the nervous mechanisms. They show that the concept of nerve-elements of vertebrates must not be generalized. He demonstrated neurofibrils and fibril-nets within the cells, and fibers and fibril-nets forming the neuropil. Bethe has added some facts for vertebrate neurology, calling for suspense of generalization, but without furnishing a sufficiently full picture of the organization to replace the present broader concepts. Between Bethe and Nissl there are considerable differences of opinion, and it is well that *no fundamental decision should be claimed to exist until a larger number of workers can agree on ground of personal experience*. Until then the larger facts will have to decide the general tone of didactic presentation.

The world is a very complex medium. Whoever wishes to move through it successfully must, by instinct and training, make the best of those chances for friction which *steady* the course of life, and glide along as smoothly as possible over the points of useless friction. Success is at best a compromise. To intentionally multiply points of friction, may do for the strong and untiring pioneer; but to give others a start, a sound choice of essential helps, and faith and an open eye for more helps, is necessary to avoid fumbling and disorder of habits. In this direction, a broad neurone-concept has its sphere.

In my Critical Review of the Data and General Methods and Deductions of Modern Neurology (*Journ. of Compar. Neurology*, Vol. VIII., 1898), I pointed out many open questions which should keep the neurone concept free from dogmatism. The following year (Vol. IX., pp. 38-45), I showed why Bethe's experiment is in line with our experience in vertebrates and not a contradiction. Since then Bethe's

evidence of autogenic regeneration of nerves has substantiated some claims considered in 1898. With all this new material I should feel tempted to reprint my comments of 1899 in full.

Nissl's book is far from doing fair justice to all the facts which enter into this question; and, in order to defend his chosen position he makes the most of the great number of gaps worth bearing in mind. He would have done greater service to the neurological world if he had admitted more broad-mindedly the facts of physiology and pathology, at least for what they are worth. He would then have been less in need of using unfounded hypotheses to make up his own hazy scheme of the nervous system.

Nissl does not repudiate hypotheses as such; but his great law says: as soon as one fact is established which contradicts the law, the theory must be dropped;—I should add, if it has not enough vitality to remain profitable when it is adapted to improved knowledge. By ignoring well-established facts, by misrepresenting Bethe's 'fundamental experiment' in borrowing the cells of a leech for the crab, by claiming more for his 'gray' than even Golgi claimed for his *réseau diffus* (to whom, by the way, he does not give credit), by distracting the innocent reader with arguments which would at once become unnecessary if he furnished a series of conclusive photographs of products of adequate experiments, and by exploiting the opportunity of showing the slips of his fellow-workers, Nissl makes an impressive plea for his thesis. He will have many followers. May they be among those who cannot get over *misusing* the neurone-concept as a cover of their ignorance of actual facts.

A. M.

Die Schrift bei Geisteskrankheiten. Ein Atlas mit 81 Handschriftproben. Dr. RUDOLF KÖSTER. Vorwort von Prof. Dr. R. SOMMER. Leipzig, J. A. Barth, 1903.

As part of the programme of Sommer, who aims to develop a system of methods of objective and accurate observation, this atlas of 81 samples of hand-writing is a supplement of the book on *Diagnosis of Mental Disease*, in line with Alber's Atlas of photographs of patients. The samples are well chosen from 41 patients. Each case has a brief summary of the facts on which the diagnosis is based, and an analysis of the samples: general paralysis (with ataxia of motion, omissions and repetitions and evidence of mental deterioration); cerebral lesions with agraphic disorders (fairly correct in execution, but with paraphasia or agraphia according to localization); multiple

sclerosis (very slow ataxic execution), in one case with peculiar mistakes; senile dementia (awkwardness with attempts at correction), is compared with ordinary senile tremor; delirium tremens. With the states of confusion, epilepsy, mania, catatonia, paranoia, etc., the arrangement and the contents of the writing become more and more characteristic as compared to the mere form.

The book aims to keep aloof from all graphological discussion. In the preface Sommer advises not to formulate the type of disorder dogmatically, but to make the findings appear as part of the general diagnostic task in definite cases. He especially draws attention to the absence of any changes which are supposed to be characteristic of anxious agitation. A brief introduction by Köster gives a survey of the literature.

No investigation with analyses by curves are given.

It is quite evident that samples of writing are extremely important documents, but that they should be used merely as part of the material in the entire clinical setting, and not for snap-diagnoses.

A. M.

Die Sprache der Geisteskranken nach stenographischen Aufzeichnungen. Dr. med. ALB. LIEBMANN, und Dr. med. MAX EDEL. Vorwort von Prof. Dr. E. MENDEL. Halle, a. S., C. Marhold, 1903.

Much more than Köster's book, this work raises the question of the value of symptomatological analysis on ground of principles extraneous to the issue of the establishment of evidence of distinct types of abnormal working. Morselli's *Manuale di Semiotica delli Malattie Mentali* (Milano, 1884 and 1894), a monument of zeal and good observation, is probably the most extensive effort at a description of what may occur in insanity, and may be grouped according to essentially logical principles: expression, external aspect, attitude, physiognomy and mimic, language, writing, conduct (general and special dyspraxias); then the analysis of consciousness, intellect, sentiment and will. Many text-books have an introductory 'general psychopathology' with an order borrowed from various psychologies; Kraepelin, and still more Ziehen, give such systematic presentations of symptom types. The question naturally arises, What is the advantage of an analysis which splits up events according to the mere appearance of detail? Symptoms mean something as part of a whole clinical complex or as evidence of the abnormal working of part of our biological regulations or mechanisms. The lengthened descrip-

tion of a special symptom means nothing or is directly harmful by distraction, if it does not advance either our knowledge of the working of a definite mechanism, or some relation in a whole complex, whether we know all the details about the working of the mechanism or not. Between these extremes, the evidence of elementary disturbances and the evidence of more or less roughly empirical characterizations, there are innumerable forms in which language or any other reaction may enter into the course of events without playing an intrinsic part, and to accumulate material on these fruitless fields is to accumulate raw material, probably without any value unless presented in its entire setting.

The authors study spoken language, for mechanical changes of sound formation, sound connection, sound sequence, tempo, and character and strength of voice, and for formal changes (odd contents, queer expression, deviations of syntactic and grammatical forms), and as a frame they use the nomenclature of the Prussian statistical bureau. Statistical classifications are bound to be compromises and what is put under one heading here is apt to be viewed quite differently by most alienists. The groups are :

I. Simple psychoses, divided by the authors into melancholia, mania, acute hallucinatory confusion, chronic paranoia psychoses of adolescence (*dementia præcox*, *hebephrenia*, *catatonia*, *stupor*), secondary dementia, senile dementia, and a few organic disorders — multiple sclerosis, and cerebral syphilis.

II. Progressive general paralysis.

III. Psychoses with epilepsy and hysteria and with imperative concepts.

IV. Imbecility and idiocy.

V. Intoxication psychoses: alcoholism, especially delirium tremens; morphinism and cocaineism.

Under each heading a brief summary of the cardinal symptoms of each disease form is offered, extremely schematic and fragmentary. Special disorders of language are then referred to, naturally without any reference to distinctions not implied in the vague definition, with instances and opinions selected from various writers; and this is followed by stenographic samples of utterances of various patients. They are introduced with the most meager statements; only in a few cases are the general setting of the conversation and the course of the disease indicated. The general statements are mostly anthologies from the literature, and the really well chosen and frequently interesting stenographic samples of utterances, are practically without analysis,

and the many questions to which they give rise in one's mind are not answered.

Liebmann is a specialist for disorders of speech, obviously without any but local psychiatric interests; Edel, the physician of the institution in which the records were taken. Their book is, I believe, the best instance of work on symptomatology as it ought not to be. For a general discussion of psychiatric symptomatology, symptom-complexes in the light of course and outcome, *i. e.*, empirical entities, should be the starting point; any abstract, however systematic the psychological scheme, splits the facts into merely formal elements, and the same holds for an isolated consideration of speech alone, or writing alone. The value of all detail work depends on whether it is in line with a natural setting. For this, neither the modified Prussian scheme of classification nor the splitting off of spoken language from the rest of reactions of a patient proved to make a favorable and sound ground. Had the writers given as good a summary of the setting of each case instead of the unnecessary abstract of definitions of obsolete general terms, the book might have gained much.

A comparison with Wernicke's 'Krankenvorstellungen' shows that even the technique of presentation of the talk of the patients is far from being equal to existing samples. A. M.

Le langage intérieur et les paraphasies. G. SAINT-PAUL. Paris, Félix Alcan, 1904.

The results of over twelve years of attention to the speech-mechanism of thought is here put together. Largely with the questionnaire method, the writer has collected records of types of thought forms. As was to be foreseen, the types are varied and numerous: of 240 returns, he found 31 auditory (type Egger), 15 motor (type Stricker), 14 visual (type Galton), 98 auditory-motor (78 of which belong to Saint-Paul's motor type with secondary auditory reaction), 41 visual-motor, 3 auditory-visual, and 38 non-determined or indifferent. The author follows very closely a very simple scheme of localization and connection of the various centers: the visual, auditory, graphic and verbo-motor centers are connected with one another and with a 'center of ideation.' In the discussion of paraphasia he distinguishes paraphemic with or without realization of the blunders, the former an interruption between the Broca-center and the psychic centers or the leading center to which the motor center may be subordinated; the second form with an alteration of the connection between Broca-center and the incito-motor and motor centers

(p. 247). In the sensory paraphasias, after first showing the necessity of using not only usual words, but also non-sense syllables for the tests, he similarly defines 'aprojective' paralexia: loss of conscious recognition of words read, with possible preservation of a reflex recognition or reflex reading and copying of words read — a break between the psychic center and the center of sensory memories. This would even allow a transposition from print into writing. 'Aprojective para-word-deafness' is the possible preservation of reflex recognition and reflex reproduction in speech and writing of words heard but not understood by hearing. The projective sensory paraphasias (a break between memory and perception center, but integrity of connection of memory and psychic centers) imply loss of the recognition of words read or heard, with preservation of the mental projection of words thought, pronounced or read or written, but without reflex reading or transposition of print into writing.

The discussion of conduction-aphasias brings out clearly the scheme of types of endophasia, but also the lack of sufficiently analyzed cases which would not seem to be arranged *ad hoc*. The rôle of 'leading centers' evidently varies much, and it will take much persistence to develop plans of examination in each case, for the purpose of a careful study of the endophasic and aphasic changes in the patient, on which, after all, a system of reëducation depends. Especially agraphia and paragraphia remain a very complex individual problem difficult to bring under one formula.

In amnesias, Saint-Paul provides his scheme with independent paths from the psychic center to the memory center and from the memory center to the psychic center. Thus the centrifugal amnesias make impossible the rousing but leave intact the revival of memories (the patient understands, but cannot produce at will). In the centripetal amnesias the projection of the image on the psychic center is suppressed, the memories are not roused by impressions; the patient does not find names, and does not even understand them when he meets them. Where the projections work normally, but the rousing of memories and identification is inadequate and disturbed, we deal with true 'psychics,' alienation, imbecility, idiocy, intellectual weakness, and no longer with a mere amnesia.

A final chapter deals with the 'subnormal states' of dreams, hypnosis, somnambulism (Helen Smith), and finally deliria, intoxications and insanity generally, and promises, as a continuation of his studies, practical deductions (internal language and the art of rhetoric, the phenomena of thought transmission, and the study of languages).

The generalities in the first part of the book (anatomical correlation and method of work) show the immense difficulties of the proposition which the author has put before the reader. The simplicity of his diagrams is very commendable. The simpler they are, the better, as long as they have so little actual anatomical correlation. The attempt at psychophysical correlation with the conception of the 'fonction-miroir' of consciousness and the differentiation between endophasia and verbal memory forms an excellent exposé of matters to be borne in mind in the study of endophasia. For some time to come every worker will have to work out his own scheme to fulfill the absolute condition of further advancement of the theory of aphasia: a careful analysis of the working of the modalities of speech in aphasic cases with subsequent correlation with accurate anatomical studies. This task still seems too great to attract many neurologists to more than a superficial study; but this work of Saint-Paul, that of Wernicke, of Pitres, of Pick, of Bastian, and others is bound to overcome the unsatisfactory schematic theories of the present day.

A. M.

Ueber das Primärsymptom der Paranoia. DR. JOSEF BERZE.
Halle, Carl Marhold, 1903.

The difficulty of the paranoia-question could hardly be better characterized than by what Berze has to exclude owing to the rigid adoption of Neisser's definition. "The main clinical feature consists in chronic delusion-formation, continuing from the beginning to the end throughout the entire course of the disease." He eliminates the cases of 'originäre Paranoia' (dating back to the earliest childhood), of psychopathic inferiority (casual paranoid development owing to excessive affects or domination of definite concepts), the cases of residual paranoia (with a transitory plus of symptoms at the beginning), cases in whom acute or chronic disorders, which have nothing to do with true chronic paranoia, call for lasting explanatory delusions, further the cases of neurasthenia, hysteria and hypochondriasis with paranoid conditions, unless he 'recognizes their truly paranoic character'; further, secondary paranoia (although in some cases a connection of dementia præcox with the subsequent chronic delusion formation in the sense of paranoia cannot be refused altogether), cases of Griesinger's general paranoia or dementia, and of course all the cases of symptomatic paranoia. Berze dispenses with the report of his case-records, 'because they add little to the plausibility of the author,' since the statement may easily be influenced by suggestive questions,

and because the usual anamneses do not consider the points of special interest to the author. It would seem that the desire for communication of the material should not be shaken for such considerations. Without the report of the cases it is difficult to see what is the proportion of direct observation and of inference in the author's work — a matter of considerable interest in such a complex field as psychiatry.

After a very brief review of the leading opinions on the origin of paranoia from Westphal to Störring, Berze asks: Will the chief representatives of the claim that paranoia originates from *affects* really convince us, or is the preference for such an explanation chiefly due to the dissatisfaction with existing intellectualistic theories? The strongest advocates of an affective, not intellectual, origin of paranoia, are Specht and Marguliés.

Specht's view is that emotion is the very center of the personality, that it has but two fundamental qualities, pleasure and pain; that the delusions of paranoia, too, show always a mixture of two cardinal directions, of persecution and exaltation; these two are the necessary compound which will create the attitude of suspicion, and, as a sort of counter-test, he claims that this affect and consecutive delusion formation invariably arise when states of depression and of exaltation blend, as in the transition period of circular insanity (?). He leaves unanswered the question, what produces this peculiar specific mixture so as to determine paranoia. Circular insanity would certainly prove that paranoia need *not* follow such an affect.

Marguliés assumes that a paranoic individual has a perfectly orderly intellectual life to start with. It would be difficult to see how a certain trend of ideation would become faulty by itself, unless the first disorder were emotional. He therefore assumes that under certain predisposing conditions some important event calls forth affects and a certain unrest, which lead to hypochondriacal concepts and morbid self-reference; these morbid states next lead to suspicion and apprehension and the ground for persecutory delusions is furnished. The plausibility of such an explanation and the difficulty of other explanations is, however, no sufficient evidence of the necessary conclusiveness of this picture. It remains impossible to prove that an emotional disorder must necessarily be primary.

The common initial condition is a certain sensitiveness, seclusiveness, and irritability. Berze expresses this as a rising of unpleasant feelings by events which attract the attention of the patient, while in a normal person, they would not annoy, either through the contents or through the way in which they command attention. The varia-

bility of the initial symptoms is due to the fact that the 'affect' is not constantly active, but merely temporarily produced in the beginning. The fundamental disorder is thus recognized as a *disorder of apperception, especially of passive apperception*.

For this view, Berze adduces some empirical evidence (the complaint of the helpless passive situation). The pathologically exaggerated feeling of passivity and the pathologically weakened power of criticism determine the development, partly because the person may be defective to start with, partly because the unpleasant feeling of passivity distracts. The paranoic person does not react as actively as a normal person would to similar actual experiences. Both the inquiry and the reaction are often suspended. There is an inability to digest and dispose of experiences, and many patients complain that certain thoughts take hold of them, sometimes in absurd but irresistible combinations. A patient with tooth-ache simultaneously had to think of the round shape of the earth, and finally had to believe that his tooth-ache had something to do with the shape of the earth (something that happens also in dreams and deliria — M.). The feeling of passivity leads to the idea of damaging influence, and in connection with the dominant ideas and the inability to dispose of them, morbid self-reference and ideas of persecution arise. The reduction of normal criticism leads further to grandiose ideas. Hallucinations are frequent but unessential symptoms of true paranoia. The psychic defect of the paranoic is a characteristic defect of apperception, not a dementia in the ordinary sense.

It is easy to see that Berze, by adopting Wundt's complex concept of apperception, with its necessary components of expectation, etc., succeeds in showing the onesidedness of the somewhat extreme incrimination of 'affects' as the foundation of paranoia. The pamphlet contains many good analyses; it furnishes a good formula of a complex happening; Berze also claims that on ground of this formula he can group together cases of a disease *sui generis*. Some kind of lesions of the apperceptive mechanisms (prefrontal lobe) are assumed; the nutritive attraction of the individual prefrontal cortical elements must have suffered so that the function of that part can rise with difficulty only to the level which is necessary for the integrity of apperception.

A. M.

Archives of Neurology from the Pathological Laboratory of the London County Asylums, Claybury, Essex. Edited by FREDERICK WALKER MOTT, F.R.S., M.D., F.R.C.P. Vol. II. Mac-Millan & Co., 1903.

The very creditable collection of studies is opened by Dr. Mott with 327 pages on 'Tabes in Asylum and Hospital Practise,' probably the best monograph on this topic. This is followed by a very noteworthy study of Amentia (Idiocy and Imbecility) by A. F. Tredgold, and by a study of the *Histological Basis of Amentia and Dementia*, by Joseph Shaw Bolton. It is this latter paper which shall be reviewed here more fully as most interesting from the point of view of possible correlation of cortical and mental efficiency in mental disease. Bolton examined 200 cases. He classed them in 5 groups: 33 without dementia, 52 with appreciable dementia, 51 with moderate dementia, 37 cases of dementia 'which still show symptoms of insanity,' and 27 cases of gross dementia. The clinical description is very scanty, hardly anywhere sufficient to allow of a diagnosis, but merely standardizing very roughly the amount of 'dementia.'

In each case Bolton looked for thickening or adhesions of the dura, presence of subdural deposits, excess of subdural fluid, the stripping of the pia-arachnoid (naturally, rather more readily than natural, readily, very readily, like a glove), excess of subarachnoid fluid, dilatation and granulation of the lateral ventricles and granulations of the lateral sacs of the fourth ventricle. In all these items (table of p. 471) the abnormality increases toward the fifth group. Thus the average weights of the pia are 17, 19, 25, 34 and 35 grammes: dilatation and even granulation of the lateral ventricle become frequent, and also granulation of the lateral sacs of the fourth ventricle.

The weight of the two hemispheres, the increase of weight through formalin-hardening, and the role of vascular disease are discussed; also the changes in the skull, the subdural deposits, the effect of gravity on the intra-cranial contents of the cadaver. The influence of heredity is spoken of on ground of statistics obviously too meager (in only 84 of the 200 cases a history was obtained and pathological heredity in 56 of these 84).

"Neuronic insufficiency is the necessary antecedent of mental disease." Underdevelopment and effects of stress and vascular degeneration and neuroglia over-growth combine. The introduction of dementia paralytica into the discussion makes the problem as broad as possible, to show that the *regions* of cerebral wasting are practically the same in all kinds of dementia.

Pages 506-545 are taken up by the discussion of general paralysis. According to Bolton paralytic dementia is *not* an organic disease of the brain, but a branch of ordinary mental disease, special clinical and pathological features being introduced in consequence of a former attack of syphilis. "It develops solely in the actual or potential subjects of those types of mental disease which, owing to a hereditary deficient durability of the cortical neurones, tend to end in dementia." 102 cases shall prove this heterodox thesis. He classes them as:

(I.) Dementia paralytica.

- (a) Juvenile dementia paralytica. (1) in imbeciles (usually chronic). (2) in high grade imbeciles who show mental symptoms about puberty (usually more acute).
- (b) Ordinary chronic dementia paralytica in higher grade degenerates.
- (c) 'Tabetic general paralysis,' [or dementia paralytica associated with extensive degeneration of lower neurones.
- (d) Acute or subacute dementia paralytica in the highest grade degenerates (general paralysis of the textbooks).

(II.) General paralysis without mental symptoms.

This standpoint in nosology and pathology forms a marked contrast to the views of Kraepelin and Wernicke.

The second part begins with a 'classification of mental disease.' Amentia (a term which has been introduced by Meynert in a totally different sense, and therefore is available only at the risk of confusion) includes the normal infant and patients suffering from deficient neuronic development: (a) All idiots and imbeciles, whether primary or secondary; (b) paranoiacs, or cases with fixed and systematized delusions who do not develop more than mild dementia; (c) cases of recurrent insanity not liable to develop more than very mild dementia, even in some instances in the presence of extreme vascular degeneration; (d) cases of chronic insanity without visible dementia, chiefly single women, of the dangerous, excited or 'moral' type; (e) cases of 'hysteria' in the widest sense; (f) cases of true epileptic insanity (see later). The second heading is 'confusion' attributed to direct or indirect action of toxins. In both amentia (at least the highest grades) and in confusion 'stress,' determines the onset. Dementia is, (a) Senile (dementia of worn-out neurones); or (b) dementia of degenerates who, owing to 'stress,' have become insane, the dementia is only moderate; in these the group embraces all the ordinary and the

primarily toxic insanities, from puberty to the climacteric period, with insufficient neuronc durability; or (c) dementia of degenerates which is associated with premature (as a rule) vascular degeneration following 'congenital' or acquired syphilis. Finally, the relation of epilepsy and insanity is stated; true epileptic insanity is a 'high-grade amentia.'

I give this brief abstract to show how different Bolton's psychiatric standpoint is from that of most alienists with clinical interests; an extremely vague and apodictic statement of constructions in harmony with the type of histories furnished in the first part, untouched by any work done by alienists in recent years. On such ground as this we are reduced to the principles of deficient evolution and of dissolution, to a statement of poor make-up and ill-health. It is quite obvious that the progress of pathology depends on the recognition of much more specific conditions, so that we can shape conclusive pictures of etiology, symptomatic development, course and outcome, and types with some definition.

The most interesting problem is approached on p. 553 under what Bolton calls the general histology of the cerebral cortex. In this he limits himself to the measurements of the laminæ of the cortex in 20 cases: 3 normal adults (a woman of 38 who died of peritonitis, a deaf mute of 13 killed in an accident, and a woman of 36 who died of typhoid fever, and may have been below par), 5 'normal aments' (2 fœtuses of 4 and 6 months, 2 still-born children, and one child of 6 weeks), 4 'congenital aments,' 3 cases of chronic insanity without dementia (1 from group I., and 2 from group II.), one case each from groups III. and IV. (with marked dementia), two cases of gross dementia (group V.), and one case of gross paralytic dementia. Of these, case 9 is obviously an imbecile, case 10 a dementia from epilepsy (possibly traumatic, from the age of 9), case 11 also epileptic dementia in a child of 11, with convulsions since 5, up to which time she was evidently bright, but sleepless, etc. (*i. e.*, 'potential' ament?); at death she profoundly demented. The evidence of dementia in the records is very indirect; in case 16 and 17 it is emphasized by the remark: 'note the severe mental confusion.' The report of case 17 rouses suspicions that general paralysis might have been present.

The clinical evidence does not allow of any correlations with more definite principles of psychiatric diagnosis. The measurements are, however, firm ground, and point very interestingly to the special vulnerability or variability of *the second or pyramidal layer* which shows special underdevelopment. In general paralysis Bolton finds percentages of the layers returning to the condition existing at birth, 'allowing

for neuroglial and vascular proliferation in the two external layers'; in the prefrontal cortex of chronic insanity without dementia, underdevelopment of the pyramidal layer of nerve-cells exists, the other layers being approximately equal.

In his conclusions the fifth or polymorphic layer, which is the first to be differentiated, is said to be 'the last to fail in the retrogression,' 'in extreme aments and in demented who are unable to carry on the ordinary animal functions, such as attending to their own wants, etc.' "This layer, therefore, probably subserves these lower voluntary functions of the animal economy."

The third or granule layer develops afterwards; in the primary visual area it is the reception station of the optic radiation. "This layer, therefore, probably, reasoning by analogy, subserves the reception or immediate transformation of afferent impressions, whether from the sense organs or from other parts of the cerebrum." The second or pyramidal layer develops last and fails first. "This layer, therefore, subserves the 'psychic' or associational functions of the cerebrum."

This very rough sketch shows the possibilities of a relatively coarse method, far easier than the methods of cell-counts carried out by Hammarberg and recently by Lawrence, yet sufficiently accurate to make out differences. It is an interesting question whether sets of clinically well observed and well differentiated cases will lead to the same sobering results concerning greater differentiation in localization and disease-process in various types of disease. Bolton stands on an essentially nihilistic ground with his distinctions of amentia, confusion and dementia, and his records do not throw any light on improvements in psychiatric nosology.

The fact that he found interesting variations in the prefrontal regions should serve as a stimulation to investigate these *and* other regions of well studied cases. It would be easy to prove that his scale of vulnerability (prefrontal region, next the remainder of F 1 and F 2, next Broca's convolution and the ascending frontal, next T 1 and the parietal lobules, and finally the rest of the hemisphere as least vulnerable) has its exceptions, and not merely under vascular and traumatic influences. Taken as evidences of possibilities the paper is very suggestive and meritorious; but its conclusions demand a rather critical attitude.

Pages 621-724 bring a pathological-anatomical study of twelve cases of juvenile general paralysis by George A. Watson, a worthy counterpart of Mott's work. The coagulation-temperature of cell-globulin, and its bearing on hyperpyrexia, by Halliburton and Mott,

the prevention of dysentery and a number of other valuable studies, concern us less in this review than a contribution of W. G. Smith, on the 'Range of Immediate Association and Memory in Normal and Pathological Individuals' (pp. 767-805). Smith uses the method of immediate oral reproduction of series of letters. Somewhere between 4 and 10 letters the capacity of reproduction was found to break down; in others series from 6 to 12 letters could be used. He had to discard the reading from a typewritten slip, and the method with a shutter, and resorted to auditory impressions at the rate of 108 beats a minute. The results of the repetition are classed as: (1) rightly placed; (2, *a*) group transposed; (2, *b*) inversion in right position; (2, *c*) inversion in wrong position; (3) wrongly placed; (4) omission; (5) insertion; (6) repetition; (7) defect; (8) excess. The results allow of many inferences, but the method appears rather complex considering the issues to be covered in the examination of patients. Smith found that with healthy persons the range of immediate memory lies as a rule at 5 letters; the next addition produces a very decided fall in correct replies (40-50 per cent. on the average). With abnormal subjects the relations are less clear. In the normal and the abnormal the total of errors indicating partial dissociation or disorder remains relatively constant; no special fluctuation of attention or distinct improvement by practice is experienced. It is possible to differentiate with some precision between the more permanent memory and the power of immediate reproduction. There seem to be relatively distinct metabolic processes underlying the two activities.

To judge from my own experience, these studies have more general psychological importance than bearing on psychiatric problems. As a rule simpler tests are sufficient and conclusive, and they might easily be elaborated to lend themselves for graphic presentation.

The main criticism is that familiarity with the issues of clinical psychiatry and its problems would lead to more direct plans. Whether the elaborate apparatus of psychophysical methods and calculations will ever get a prominent place in psychiatry seems to me doubtful. For psychology proper, work on the abnormal is confronted with too many incalculable quantities; and the practical questions are usually met by simpler procedures.

The Archives are good evidence of the earnest work of Doctor Mott and his associates. It is to be hoped that it will get more support by thorough clinical work in insanity. In this direction the work of Bolton and Smith was not furnished the best foundation. The hospital authorities will, no doubt, soon fall in line with the movement and thus assist in the very creditable work of the laboratory. A. M.

Das Krankheitsbild der Apraxie ('motorischen Asymbolie') — auf Grund eines Falles von einseitiger Apraxie. H. LIEPMANN. Monat. f. Psychiatrie u. Neurologie, 1900, p. 15.

On Apraxia. H. LIEPMANN. Arch. f. Psychiatrie, Vol. 38, p. 300. 1904.

Liepmann has recently reported the autopsy findings of his famous case of one-sided apraxia. The importance of his observations is such as to warrant a review of the whole work at this somewhat late date. There is no contribution to neurology of late years that deserves so well to be put forth as a model of careful study of nature's experiments as this one. Nor can we point to any better instance of the remarkable influence of Wernicke's teachings. "That a man can act with his right extremities as if he were deeply demented, as if he understood neither questions nor orders, as if he could grasp neither the meaning of objects, nor the sense of print or writing, while he can show with his left extremities that all these apparently absent functions are present, has not been described so far."

The patient in question, born in 1852, an official with University training, had had syphilis about 1880, transitory fainting spell during the summer of 1899, and finally on December 2, 1899, a sudden attack which made him aphasic and produced a condition which for ten weeks was considered as one of 'aphasia with profound dementia following apoplexy' in one of the Berlin hospitals. He was transferred to a hospital for the insane.

The peculiarity was that the patient obeyed all requests which implied the use of the body as a whole; he would rise, would go to the window, to the door. When asked to pick up and show the use of some objects before him, he blundered in every attempt, acted perversely, and made odd movements with the right arm. *When the right arm was held* and he had to use the left, he correctly picked out cards which he could not do with the right; movements of the foot could be imitated with the left but not with the right foot. When the right side was inhibited the appearance of dementia was stopped and the patient could be examined. There evidently existed *motor confusion and perplexity on the habitually used right side and inability to spontaneously use the left capable side.* The right side would at once fumble and distract hopelessly. A careful study demonstrated a *typical right-sided apraxia*, not merely dependent on defective recognition of the objects.

The *aphasia* was *purely motor* — orders were understood, also conversation.

In reading, only short sentences were understood, not only in German but also in French.

Spontaneous speech was limited to ja, jawohl, ach, ach Gott, ach Gott ja, au, ne. At the request to repeat words, only rarely, the sound 'a' was obtained; otherwise the patient bows instead, or once he gave the match-box several times (executive perplexity).

Movements of the head as a whole, of the tongue, or face were bilaterally ataxic; movements of the eyes free, except that an order to look to the right was slower than that to the left at first, and to other orders he occasionally substituted a movement upward of the eyes.

The responses to orders to use the *arms* were very characteristic. To the request, 'touch your nose,' he fumbled with the right, but when the right was held, he promptly and correctly reacted with the left. The request to touch the nose with the left hand was carried out, but with simultaneous fumbling of the right; and a request to repeat this with the right, led again to mere fumbling. 'Show the right hand with the left' — he fumbles and picks up an inkstand; with the left he had promptly shown the right hand. Occasionally he makes correct movements on the right, (such as putting on his hat), but as if per chance, as they could not be repeated.

Imitations of movements did not succeed any better than the reactions to order.

The legs showed the same trouble as the arms.

Movements to auditory stimuli: Pointing to the direction of sounds failed on the right.

Response to tactile stimuli. Tickling of right ear brought no response with the right hand. He did not pull out a pin stuck in his right thigh. On the left he showed prompt response.

When asked to select objects from a number lying before him, he picked up a cigar, before any distinct request was finished; then, when asked to take the keys, he again took the cigar; but on repetition, he picked up the keys, and bowed.

At times, while he still blundered with the right and held the cigar, he picked out the right key with the left. There evidently was *precocious response*, and further it was shown that when he made mistakes, they could be corrected on simple repetition of request, or even simply on sign of dissatisfaction, or without repetition, to the remark,—'do it with the left hand only,' which shows that the request was grasped. On days of fatigue, errors occurred also on the left.

To test the understanding of names for objects, the patient had to make a + or — sign with the left hand according to whether the name

given an object was correct or wrong. Other signs (knocking with the left foot for *no* and raising of the left arm for *yes*), were less successful.

The mistakes which occurred in this test of *choice* were determined by: (1) Especially high objects; (2) very exposed and prominent or near objects; (3) perseveration (pseudoapraxia); (4) proximity to the object called for; (5) there was no preference for any special object.

Erroneous projection and mere mistake in grasping was excluded. He always touched or grasped correctly any point or object where no choice was involved.

Writing and *drawing* were fair with the left, but in mirror writing; quite deficient, however, with the right, but not totally perplexed.

Actions in which he always succeeded well were: Gait, use of spoon, mastication and swallowing, buttoning (even with the eyes shut), at times spontaneously, but especially when the button was once grasped; pointing to large objects (window, stove, lamp); smoking (but he often puts the burning end of the cigar on the table); playing simple tunes on the piano. Dressing was rather difficult (he puts the right hand and arm into the sock). The use of the comb brought out plain *apraxia*; the tooth-brush was only rarely used correctly. When he had to use both arms, the left usually did well, but it was confused and completely side-tracked by the fumbling of the right. An attempt to telephone led to quite an absurd reaction. Such a condition naturally suggested a disturbance of *sensibility*.

Vision was good, the perimetric field normal; nor was there any one-sided mind blindness (he recognizes objects without fixation). Color sense normal (sorts wool). Pictures are recognized, also the physician's photograph. Hearing, taste, and smell are intact; he points to the correct card.

The *tactile sense* on the *left side* is practically normal, beyond a slight indifference to pricks on the left hand.

On the *right side*, however, sensation of trunk and face is less affected than that of the extremities. Deep pricks and deep pressure are perceived; medium pricks are felt, but not as pain; medium touch is not felt on arm and leg; pricks at times elicit *slight motions of the finger* which remain unconscious; fine touch is not felt on the face. Localization is good on the left, quite defective on the right arm and leg. The error usually is passing trunkward, up to two feet from the leg. The temperature sense is dulled on the right. Weights

(match-box empty or with sand) are recognized but relatively under-rated by the right hand. The position of the right arm can be imitated by the left with the eyes open, but not with eyes shut. Passive motions of the right arm are not followed by the left, while he can imitate attitudes and passive movements of the left leg with his left arm. Imitations and simultaneous execution of passive motions of the left side by the right side does not succeed (contrary to what Anton observed in three of his cases, *Z. f. Heilkunde*, 1893, Vol. 14). *These facts do not, however, prove that, with his eyes closed, the patient has no knowledge of the position and movements of the right extremities*, because he does indeed use his limbs correctly for many things. *Stereognostic perception* was very difficult to test. The patient handled the objects and palpated them like a normal person; but with eyes closed the attention drifted. To avoid this, Liepmann had two sets of objects; he put one into a bag and had the patient feel and point with the left to the same object before him. There were 14 mistakes in 17 trials. Another test was to have the patient say whether he had the same object in the bag that had been there in the previous test. As to *motor symptoms*, the left angle of the mouth was plainly paretic without electric alteration. The tongue was freely movable, but could not be protruded; only once just after L. pulled it out, the patient withdrew and immediately afterwards put it out again, but could not repeat this. All other movements are possible, but perplexed on the right. The reflexes were weak; no contractures; no disorder of sphincters.

The patient could play simple *tunes* on the piano; he sang tunes correctly, occasionally with an indication of correct vowels. *Games* (checkers and 'mill') were lost.

Time *orientation* was fair. The orientation concerning his own personality preserved. He knocked when the correct number of his age was mentioned, or he found it among other numbers, or wrote with the left. But he required constant urging.

The memory was tested as follows: Optic: He is shown the number 817 and finds it again among 8 numbers, three and ten minutes later.

Auditory: He is told the number 1813 and finds it again in ten minutes among 8 written numbers.

Tactile: He only remembers things felt with the left.

Passive motions (cross, etc.), remembered only on the left. Personal memory without demonstrable gap. Attention habitually and spontaneously very deficient, but easily roused and held on urging.

Numbers and calculation: With the left hand he picks out a special number of matches; but cannot put out 2×3 , or $8 - 5$. Yet he *can* show the results of these calculations on a small table of figures; and he can add numbers with 3 figures with the left hand in mirror writing. Hence a *slight indication of apraxia of the left hand*.

Emotionalism was very marked; he would shed tears at first, but showed more indifference later. He is appreciative of compliments about his son, and shows signs of shame on seeing a hole in his sock.

Spontaneous mental activity: With the paper in hand he does not seem to grasp things; but understands what is read and later he asks at times to have the paper read to him.

For illustrations the reader should look up the original.

In most cases of so-called apraxia defective recognition of the visual and auditory impressions accounts for the difficulty and perplexity of manipulation (Heilbronner). In this case this is excluded. There is *no* one-sided *mind-blindness*; moreover the patient also shows apraxia to *requests*—to make a fist, to point to his nose, and when asked to scratch himself. The condition in the patient is *not ataxia, but deficient adjustment to a purpose*; it is therefore distinct from what happens with ordinary loss of sensations of touch and position. The writing is neat, but paragraphic; movements are correct as such, but inappropriate. This is not 'cortical ataxia.' Other cases with cerebral loss of muscular sense have been found to be unable to move the side with the eyes closed. In the cases of Anton (with hemianopsia) and Bruns (Nietleben, 1898) the voluntary activity of the affected side was diminished, difficult, and *ataxic*. Closing of the eyes did not change the picture in our case. He even persisted in using the right hand first, and there was absolutely no palsy as would be the case where real hemianæsthesia of this extent had persisted several months. The whole condition is, indeed, most correctly called *isolation of one function from others*—a condition quite different from abolition, a condition of deeply-founded distraction. The right arm evidently uses many sensations in buttoning, etc., but the centers of the left arm cannot imitate the position of the right; it cannot get access to the impressions from the left hemisphere. This agrees also with the fact that the patient moves the finger or the knee when it is pricked, although he cannot localize correctly with the left hand.

In the analysis of the motor symptoms Liepmann distinguishes carefully between those activities which are always normal and those

which at times succeed under favorable circumstances. Those which are constantly preserved should undoubtedly be considered as having an intact mechanism; thus our knowledge of human pathology shows that for intact gait, the so-called leg center *must* be intact: innervation from the other hemisphere would not prevent the appearance of defect in some of the muscles of the leg. It is, however, obvious that some movements, as chewing, movements of the tongue in chewing, swallowing, the grip of an object once taken hold of, and buttoning a button once grasped, are possible; hence the motor area is obviously *sufficiently* intact. Orders to button and unbutton the coat are not always obeyed; that is, the response through the auditory impressions cannot always be obtained. Orders, such as 'clinch the fist,' are not responded to properly. Even showing him the fist does not help him to the reaction, but the feeling of an object in the fist gives him the start to clinch it. This is similar to the inability of the aphasic patient to repeat single words out of the so-called recurrent utterances. For instance, Gowers reports a case which could not repeat the word 'no,' but finally in a state of annoyance said 'I can't say no.' The actions which are possible under short-circuit, remain in our case, but collateral influences fail to bring the modifying adaptations.

In the literature of cerebral pathology we often hear the terms memory picture, picture of movements, etc., and the loss of these pictures as referring to the destruction of definite 'centers.' This is evidently an attempt at harmonizing facts of pathology of the nervous system with the facts of psychic alterations. In reality the two ideas are not identical. That which is conscious in us concerning a simple movement or an action, does not at all represent all the *parts* which must be in activity to bring about the movement. And what is meant by 'memories' and 'concepts' in neuropathology is not a psychological fact, but merely a term for the lasting character which the nervous substance retains from previous actions. It is, therefore, better to speak of 'mechanism for motions and for activities,' and not synonymously of concepts or pictures, as if what is conscious were identical with the mechanisms themselves.

The psychic part is as a whole difficult to describe and analyze, and especially so in the aphasia. In the tests as to whether the patient recognized objects when feeling them in the bag, it was practically impossible to say whether the patient did have a sort of a limited remembrance of what he felt. All we know is that he could not *use* the remembrance even if at times he had it 'perchance.' The difficulties in choosing objects, especially the premature reaction and the

perseveration, are explained by a lack of attention to more appropriate responses; the same holds for the absence of correction of mistakes, and perhaps also for the tendency to grasp for objects and pictures, instead of merely pointing to them. But the exact extent of inner language is difficult to grasp if not beyond reach.

For some motions the patient has double apraxia, namely, for the muscles which move the head, the face, and the tongue, and the movements he makes are not in harmony with ideas and affects; he is amimic or paramimic; he cannot '*look angry or cross*' to order. He cannot even *frown*, that is, use the muscle for orders which have nothing to do with emotion. *Amimia* has been observed by Perroud in connection with an apoplectic cyst of the third left frontal gyrus and the Island, and the neighboring marrow; this might be explained by the fact that the left hemisphere is the 'driving center.' In our case there is indeed a slight lesion of the right facial center.

The *mirror writing* is a defect of correction of the spontaneous and elementary symmetrical abduction. Simple mental weakness is not quite sufficient, since paralytics usually do not use mirror writing with the left hand.

For a localizing diagnosis Liepmann suggests lesion of the third frontal convolution and perhaps the Island, to explain the aphasia, and further a cutting off of the motor region of the extremities, especially from the auditory and the visual areas. This would be possible by a lesion in the parietal lobe. If it were as far back as the angular gyrus, reading would be destroyed and probably there would be hemianopsia owing to involvement of the optic radiation. A lesion in the marrow of the supramarginal gyrus and of the upper parietal lobule would, however, not necessarily have this effect. There is probably a small lesion in the right facial center accounting for the paralysis of the left angle of the mouth. Since the disorder of sensibility improved after the month of May (the apoplexy had occurred December 7, 1899), it is probable that the parietal lobule, as a whole, was not completely involved. The apraxia, however, did not change much through the recovery of the sensibility.

The picking out of objects became easier, but he could not put a bottle beside the keys on request; he could not clinch his fist, point to his nose; speech did not improve, only once he said 'it is all the same to me' (*ist mir egal*).

There was a slight improvement in the summer of 1900, then an apoplexy in October, producing right hemiplegia, rapidly improving on inunction. In December, even return of some indistinct speech.

January, 1901, again loss of speech, the right arm recovered, but was more ataxic; the leg paretic. End of 1901 the left hand too had partial apraxia. March, 1902, a third apoplectic attack with total left-sided hemiplegia without recovery and termination with pneumonia.

Anatomical findings: Extensive arteriosclerosis, especially of the basilar and the left Sylvian artery, depression of the left supramarginal gyri and upper parietal lobule; their convolutions atrophic but preserved; beneath them a large cyst, the posterior end of which reaches the anterior marrow of the angular gyri, but leaves intact the three layers of the sagittal marrow. The anterior central gyrus quite intact; the posterior nearly intact with the exception of a superficial bean-sized yellow patch and small superficial cyst; in the left island a small cyst; the Broca convolution very atrophic but free superficially. In the marrow of the left frontal lobe a degeneration of the thickness of a pencil. A small cyst in the rostrum of the corpus callosum; the entire callosum very atrophic. An approximal symmetrical similar focus in the *right* angular gyri involving marrow and cortex and a pea-sized focus of the internal capsule, perhaps the cause of the final left hemiplegia.

The terms asymbolia and apraxia have so far been rather hazily used to designate inadequate activity as distinguished from paralysis or simple ataxia. Meynert (*Clinical Lectures*, 1890, p. 271) had suggested the possibility of a separate existence of an essentially motor form with integrity of purely sensory memories, in distinction from the usual cases of secondary apraxia due to sensory defects. A third disorder, described as mind-palsy, reported by Nothnagel, Bruns, Anton and Bleuler, with a direct loss of definite motions, but without palsy, and also without apraxia, is to be kept apart. Liepmann's case is the first one of pure motor perplexity of the form of pure motor apraxia.

The case is a splendid demonstration of what degree of clearness a good and accurate knowledge of a patient's condition can bring. The patient was looked upon as demented, but through a careful examination an avenue for relations between the patient and the outside world was found to exist through the right hemisphere, while the left, driving or leading hemisphere was fumbling owing to isolation of its executive centers. Thus the case is not only one of the most interesting cases of cerebral pathology brought out during the last ten years, or perhaps since the discovery of the forms of aphasia, but a splendid illustration of the *practical* importance of accuracy.

Nothing but a complete translation would do Liepmann's excellent description and analysis justice. The original is certainly worth repeated perusal as a classic of neuropathology.

A. M.

Halbseitiges Delirium. PROF. BLEULER. Psychiatrisch-Neurologische Wochenschrift, No. 34, Nov. 22, 1902, p. 361.

An extremely interesting counterpart and addition to Liepmann's case, is this demonstration of the possibility of one side of the body enacting a delirium independent of the condition of the other side of the body, which may be relatively normal, or also engaged in a delirium, but of another character. Bleuler had a remarkable opportunity of observing a case of general paralysis who was lying in bed, perfectly calm with his left side, but in an active occupation delirium with his right arm: the hand seemed to grab for a rope, to chop things with an axe, sowing seeds (on question, the patient actually said he was sowing barley), or slinging away things with great effort as the face of the patient showed. The hand sometimes would get hold of the spread or the pillow and pull it away and go on in its delirium, while the left hand would again adjust the bed, wipe the mouth, and remain clearly in contact with reality. For a while the patient slept, but the right arm went on in its delirium. Touching, pricking and stroking of the left side was adequately appreciated and well localized; but on the right side it called for energetic fighting movements of an aggressive character, without any attempt to localize and without any participation from the left arm.

The right hand never grasped objects except by accident. The left hand grasped correctly but without doing anything unless he was asked to. Part of the time the right leg also participated in the delirium, apparently in coördination with the movements of the arm. For a short time both sides were in delirium; the right arm struck as if catching and throwing away small animals, or against a man, with a threat that he was going to pull his moustache; finally he shouted, 'now I have pulled it out,' and once, 'I have cut it off,' although he had only made pulling motions. With the left hand he independently made motions as if he were defending himself against wasps attacking the left side of the head, evidently something that he felt on on the head; whereas, the right side delirium referred probably to things *seen* in hallucinations. Later, when his left hand was held, he he was calm, when the right one was held he became violent. When spoken to from the left he turned calmly to the left; from the right side he responded violently, but probably only when touched. This condition was transitory.

No introspective information could be obtained later. It seems, probable, however, that the two complexes of consciousness were simultaneous, that one was delirious and in command of the language; that the other was not delirious, and occasionally with language at its disposal.

Considering the complexity of such a condition the observation is extremely suggestive and it will be well to be on the lookout for such conditions. An explanation is hardly to be expected for the time being.

A. M.

Démence précoce. Anatomie pathologique et pathogénie. M. KLIPPEL ET LHERMITTE. *Revue de Psychiatrie*, Février, 1904, No. 2.

Four cases form the subject of the study. The clinical notes are very meager. The brains were examined especially for the size of the cell-bodies. One hundred large pyramidal cells of each of the motor zones and of the association centers were drawn and measured, so as to form means of comparison.

The first brain is small especially in the frontal region: the gyri are measured; the left central fissure shows a peculiar bifurcation into two deep sulci at its lower end. In the frontal cortex the cells of the normal size of 20 or 30 μ are rare, and are mostly replaced by much smaller cells of the same form; of 182 large pyramids only 31 measure 20 μ or over. A similar diminution holds for the temporal and occipital gyri, while the parietal cells are less affected and the motor region least.

The atrophied cells are rounded, with few and thin processes, granular protoplasm and marked pigmentation; the cells of the motor area are normal and have but rarely a small quantity of pigment. The small pyramids are nowhere affected. In the corpus striatum many cells show especially central chromatolysis and pigmentation, though less than the large pyramids of the association centers; many cells have from 6 to 8 satellites. Certain anterior horn cells of the oblongata are small and pigmented. Vessels and neuroglia normal.

The second case had a very simple convoluted brain with a few anomalies; the cortex measures from 3-3.5 mm. over the entire surface. In the occipital, temporal, parietal, and especially the frontal lobes the large pyramids show pronounced chromatolysis and pigmentation, in the frontal region often with dislocation of the nucleus and even splitting of the nucleolus. Near the vessels (not in the sheath) and around the cells there were numerous nuclei with almost invisible

protoplasm. The cells of the striatum are free, also the cord. No vascular changes.

The convolutions of the third brain are also small, without any diminution of the thickness of the cortex. A slight (evidently trivial) asymmetry of the cerebellum is mentioned. The distribution of atrophic pyramids is the same as in the other cases. The motor cells were varying but mostly large. There were no giant-cells of Betz, as seen in the other cases (obviously an accidental difference, as it is difficult to obtain identical regions). The motor cells of the ninth, tenth and twelfth nucleus much pigmented. No vascular changes. The liver with fatty degeneration.

The fourth case had first been suspected of general paralysis by some physicians. The diagnosis was, however, corroborated by the autopsy. The convolutions were generally atrophic; a marked asymmetry of the cerebellum is shown by measurements and in a drawing (as there is absolutely no explanation in the histological examination, very probably the distortion in hardening so frequently seen?). The findings in the brain were exactly as in the other three cases.

The absence of vascular lesions leaves the peculiar cell-changes, which may be:

1. Congenital anomalies, pointing to hereditary taint;
2. The essential changes, atrophy of the 'neurone' with precocious pigmentary granulation;
3. After-effects as shown in a lack of later development.

The writers point seriously to the cerebellar asymmetry, as the brain was that of a male, and since 'one knows how important the normal progress of puberty is for the development of the cerebellum.' The atrophy of the nerve-cells (only the cell-bodies are measured; yet the writers speak of atrophy of the 'neurone,' just as Bethe claims is usually done) is considered both direct and as an arrest of development. It is limited to the association centers. A fourth type of changes from the intercurrent disease is spoken of (liver, etc.).

In the discussion of pathogenesis the cellular disaggregation through destruction of dendrites is claimed as the basis of all dementia; in idiocy, dementia præcox, and in the adult. The absence of any other changes but those of the nerve-cells points to a functional constitutional selection. It might depend either on a specific cause or on an abnormal vulnerability of the 'neurone.'

The latter might be the result of a long series of weak but repeated pathogenic actions, involving both the heredity and previous diseases of the patient. The distinguishing of the two rests with the impor-

tance of the nature of the pathogenic agent itself, if it were a specific cause, and the mode of activity where it merely aggravates the vulnerability.

The haziness of the etiological factors in insanity comes out in the discussion of Morel's concept of degeneracy, which should in part be questioned owing to the fact that many writers find cases in previously normal individuals without hereditary taint. In order to preserve the concept a distinction is made between *dégénérescence immédiate* and *évolutive*; infectious diseases, alcoholism, intellectual and physical over-work, which during puberty lead to auto-intoxication; the characteristic feature of the condition evidently is the *mode of action* of the cause which ends in vulnerability and atrophy of the neurone with only casual proliferation of neuroglia, and without vascular disturbance. Thus, the point of attack of the anatomical process gives us a valuable interpretation; in organic dementias the tissue as a whole becomes diseased, but where the same causes (?) operate but slightly, but repeatedly, that is to say, when the *form of action* is mitigated, such a pure functional atrophy is produced as in dementia præcox.

He leaves open this possibility that dementia præcox comprehends all kinds of disorders and is an artificial complex.

A. M.

Un metodo de coloración selectiva del retículo protoplasmático y sus efectos en los diversos organos nerviosos. S. RAMON Y CAJAL.

'Trabajos del laboratorio de investigaciones biológicas de la Universidad de Madrid,' Tomo II., Fasc. 4, 1903.

This study would seem to take out of the hands of the opponents of any kind of neurone theory the exclusive command of the situation concerning fibril stain in the nervous system; with a very simple process which gives fairly uniform results, Cajal has obtained pictures which lead him to uphold strongly his theory of the anatomical individuality of the neurone—that of contact and of polarization. With marvelous persistency he has examined practically all the cell types, and even invertebrates and developmental stages. The fibrils in most cells are not independent but form a net.

It is probable that the correlation of the results of this method with the results of the method of Bethe will add a new field of contentions to the already vexed problem, and it will be necessary to collect a wide experience with all the available methods, but no *exclusive* generalizations are to be attempted.

A. M.

Quelques considérations sur la théorie du Neurone. J. DEJERINE.
Revue Neurologique, No. 5, March, 1904, p. 205.

The practical value of some such simple statement of facts as the neurone concept allows, induces Dejerine to defend the term. For him it stands more on ground of experimental and anatomo-pathological than of histological viewpoints. But he acknowledges Cajal's recent reinstatement of his views on ground of his new method. The great point of attack is directed against Bethe's rejuvenation of the views of Philippeaux and Vulpian (1859). He emphasizes Vulpian's final declaration (1874), according to which the occasional regeneration of nerve trunks apparently permanently severed from the central nervous system must be attributed to recurrent fibers of peripheral plexuses.

In a case of Durante's of excision of a tumor of the median nerve, with death four years after the operation, a partial regeneration was found in the peripheral part of the severed nerve; since sensibility had persisted after the operation in the entire territory of the nerve Dejerine has good evidence of an atypical peripheral anastomosis in this case. There is, however, hardly any doubt that Bethe's demonstration that the differences concerning the autogenetic regeneration in peripheral nerves depends on the age of the animal, is better in harmony with the facts than such an explanation which runs counter to so many careful experiments.

Dejerine is on firmer ground where he speaks of the pyramidal tracts. He shows that the lesion is always limited to the pyramidal neurones and never involves an atrophy of the anterior horns. The latter are also exempt in the degeneration of the afferent reflex collaterals in locomotor ataxia.

There is no reason why the truths established in so many directions should lead to the exclusion of what good there is in the views of Apáthy and Bethe. That which occurs in regeneration in young animals is an event under abnormal circumstances, and the new situation may well be met on its own laws. Such findings as are offered by the regeneration process in the nervous tissue and other organs are bound to be extremely instructive. Like those of teratology they force us to broaden our conceptions of organization; they present dissociations worth knowing; but they do not necessarily disprove such generalizations as a non-dogmatic neurone conception represents in neurology and neuro-pathology.

The questions involved are extremely complex, and it is very difficult to get the individual observers to take all the facts into consid-

eration. Work in specialized fields invites narrower definitions justified for that field; but these narrower definitions should not give rise to dogmatic objections in larger spheres.

A. M.

BOOKS RECEIVED FROM MAY 7 TO JUNE 7.

- L'Année Biologique.* Y. DELAGE. 7th Année, 1902. Paris, Schleicher Frères, 1903. Pp. xcii + 642. [We call attention again to this most excellent annual. It is of especial value to psychologists both because it presents an authoritative and accurate résumé of the year's biological advance, and also because of its full treatment of psychological work (under the heading, *Functions Mentales*, edited by M. J. Philippe) — in this issue 120 pp.]
- Der Ausdruck der Gemüthsbewegungen des Menschen.* H. Rudolph. *Textband* and *Atlas*. Dresden, Kähntmann, 1903. Pp. xiv + 228. [Atlas not received.]
- Memoirs of a Child.* A. S. WINSTON. New York, Longmans, 1903. Pp. 169.
- La Vision.* J. P. NAEL. Bibl. Intn. de Psychol. Dep. Paris, Doin, 1904. Pp. 376. 4fr.
- Die Ausstellung von experimental-psychologischen Apparaten und Methoden bei dem Kongress, etc. Giessen 18-21 April, 1904.* SOMMER. Leipzig, Barth, 1904. Pp. 78. [A descriptive and illustrated list of apparatus and arrangements as exhibited and demonstrated at the Giessen Congress.]
- Wissenschaftliche Beilage zum sechzensten Jahresbericht (1903) der philosophischen Gesellschaft an der Universität zu Wien.* Leipzig, Barth, 1903. Pp. 139. [Papers by Twardowski and others on *Das Wesen der Begriffe*, by Gorstel on *Die Axiome der Geometrie*, by Menzel on *Natur- und Kulturwissenschaft*, and by Urbantschitsch on *Die Beeinflussung subjectiver Gesichtsempfindung* this last having a table in colors showing the modification of the colors of after-images and subjective images in consequence of accompanying tactual and other sense-stimulation: a longer report of the experiments is to be found in *Pflüger's Archiv*, Bd. 94, 1903.]
- Der Ursprung der Kunst.* T. KIRN. German translation by M. BARTH; preface by P. PARTH. Leipzig, Barth, 1904. Pp. viii + 338. [A German rendering of Kirn's excellent *Origins of Art*.]

- Maine de Biran's Philosophy of Will.* N. E. TRUMAN. Cornell Studies in Philosophy, No. 5. New York, Macmillans, 1904. Pp. 93.
- Principia Ethica.* G. E. MOORE. Cambridge (England), University Press. 1903. Pp. xxvii + 232. 7/6.
- Essai sur l'Esprit Musical.* L. DAURIAC. Paris, Alcan, 1904. Pp. v + 304. Fr. 5.
- La fonction de la Mémoire et la Souvenir affectif.* FR. PAULHAN. Paris, Alcan, 1904. Pp. 177. 2 fr. 50.
- Grundzüge der physiologische Psychologie.* W. WUNDT. Fifth enlarged edition in three volumes. Bd. III. Pp. ix + 769. With separate Gesamtregister by W. WIRTH, pp. 133. Leipzig, Engelmann, 1903. Mk. 40 the set.
- Leitfaden der Psychologie.* TH. LIPPS. Leipzig, Engelmann, 1903. Pp. ix + 349. Mk. 8.

NOTES AND NEWS.

THE semiannual meeting of the Northwestern branch of the American Psychological Association met at the University of Chicago, Saturday, May 7, A. W. Moore presiding. The following papers were read and discussed: 'Image or Sensation?' W. C. Gore; Report on recent neurological work, H. H. Donaldson; 'An illustration of Psychology as Metaphysical Method,' S. F. MacLennan; Report of Experiments on relations between Sensations of Taste and Smell, Matilda Castro. After the program the association dined at the Quadrangle Club. Professors Scott, Tufts, and Tawney were chosen as the committee in charge of the next meeting which is to be held at Northwestern University on Saturday following Thanksgiving.

PROFESSOR JAMES H. TUFTS has been appointed to the headship of the department of philosophy in the University of Chicago, vice Professor John Dewey resigned.

PROFESSOR JAMES R. ANGELL has been appointed to a newly formed department of psychology in the University of Chicago.

The following items are taken from the press:

PROFESSOR JOHN G. HIBBEN, of the Princeton University logic department, has accepted an invitation to become editor of a new philosophical series, to be published by Charles Scribner's Sons. The series will be known as 'The Epochs of Philosophy,' and will con-

sist of twelve volumes, six of them to be written by leading American philosophers and six selected from prominent English and Scotch authorities. Dr. Hibben sails for Europe on June 7, to make arrangements for the foreign contributors, but will return to Princeton for his college duties next fall. He will himself contribute to the series a volume on the eighteenth century, to be entitled 'The Philosophy of Enlightenment.'

THE Woods Hole Biological Laboratory announces the revival of the *Journal of Morphology* (Vol. XVIII.) and also the establishment of a *Journal of General Biology*, which latter it would appear will cover largely the same ground as the newly established *Journal of Experimental Zoology* and also the British journal *Biometrika*. The question is suggested whether this duplication of journals may not be an indirect result of the expenditure of the funds of the Carnegie Institution.

As a result of the Congress held at Giessen in April, a German Association for Experimental Psychology has been formed, to arrange for meetings and also to undertake coöperative research.

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INTERNATIONAL JOURNAL OF ETHICS, XIV., 3. The Problem of Teleology: *Felix Adler*. The Ethics of Passive Resistance: *J. C. James*. The Development of a People: *W. E. Burghardt DuBois*. Is Vivisection Justifiable? *C. S. Myers*. Professor William James' Interpretation of Religious Experience: *James H. Leuba*. Wordsworth's Ideal of Early Education: *John H. Muirhead*. What Should be the Attitude of Teachers of Philosophy Towards Religion? A Reply: *J. Clark Murray*. Byron Versus Spenser: *J. Kindon*. Book Reviews.

REVUE DE MÉTAPHYSIQUE ET DE MORALE, XII., 2. Les derniers entretiens, publiés par Louis Prat: *Charles Renouvier*. Ce que la médecine expérimentale doit à la philosophie: *F. Colonna d'Istria*. Les principes des mathématiques.—II. L'idée de nombre.—III. L'idée d'ordre: *L. Couturat*. La Raison et les Antinomies, III.: *F. Evellin*. Le 'devoir-faire' et le 'devoir': *A. Fouillée*. L'idée de Patrie: *P. Lacombe*. Miscellany.

JOURNAL OF NERVOUS AND MENTAL DISEASE, XXXI., 4. A case of erythromelalgia: *Arthur S. Hamilton*. Astereognosis in cerebral affections: *William N. Bullard*. Fracture of the Basis Cranii: *O. Waterman and B. Pollack*. Miscellany.

THE PEDAGOGICAL SEMINARY, XI., 1. Editorial. The Cat and the Child: *C. E. Browne*. How Words get Meaning: *Will Grant Chambers*. An Introductory Study of the Psychology of Foods: *Sanford Bell*. A Glimpse at a Nature School: *Cephas Guillet*. Literature.

THE PSYCHOLOGICAL REVIEW, XI., 2. Theory and Practice: President's Address: *William Lowe Bryan*. On the Attributes of the Sensations: *Max Meyer*. An Inquiry into the Nature of Hallucination, II.: *Boris Sidis*. The Mechanism of Imitation: *F. C. French*.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, I., 5. The Relation of the Science of Religion to the Truth of Religious Belief: *A. K. Rogers*. The Concept of Consciousness: *Hartley B. Alexander*. Discussion. A Deterministic Analysis of Free Will: *C. A. Strong*. Miscellany. I., 6. A Criticism of Scientific Method as Applied by Sociologists: *Alban D. Sorensen*. Discussion. Pragmatism: *J. A. Leighton*. Miscellany. I., 7. Recent Philosophical Procedure with Reference to Science: *Ralph Barton Perry*. Notes Upon Logical Topics, II. The Meanings of the Term Idea: *John Dewey*. Discussion. A reply to Doctor Spaulding: *Walter T. Marvin*. Miscellany. I., 8. The Social Standpoint: *James H. Tufts*. Recent Literature on Scholastic Philosophy: *William Turner*. Discussion. The Standpoint of Instrumental Logic. *A. K. Rogers*. Miscellany.

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE, XVII., 3. Hobbes-Analekten. Ein bisher falschlich Locke zugeschriebener Aufsatz Shaftesburys: *Paul Ziertmann*. Ueber die Spuren einer doppelten Redaktion des platonischen Theaetets: *Alessandro Chiappelli*. Sur une erreur mathématique de Descartes: *Paul Tannery*. Die beiden Bacon: *A. Doring*. Locke, eine kritische Untersuchung der Ideen

des Liberalismus und des Ursprungs nationalökonomischer Anschauungsformen: *Georg Jaeger*. Die Lehre von der Bildung des Universums bei Descartes in ihrer geschichtlichen Bedeutung: *A. Hoffman*. Miscellany.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE, XXVIII., I. Egoismus und Altruismus. I.: *Demetrius Gusti*. Schopenhauer über die wissenschaftliche Philosophie. I.: *Cay von Brockdorff*. Ueber die Entwicklung des Begriffes der höheren arithmologischen Gesetzmässigkeit in Natur- und Geisteswissenschaften: *W. G. Alexejeff*. Miscellany.

THE MONIST, IV., 3. The Christ of Primitive Christian Faith. In the light of religio-historical Criticism: *Otto Pfleiderer*. The Coming Scientific Morality: *George Gore*. The Principle of the Conservation of Energy. From the point of view of Mach's phenomenological conception of nature: *Hans Kleinpeter*. Madame Blavatsky: *Henry Ridgely Evans*. Psychology on the 'New Thought' Movement: *John H. Noble*. The Élite of Democracy: *N. Vaschide* and *G. Binet-Valmer*. Miscellany.

MIND, XIII., 50. Professor Bain's Philosophy: *William J. Davidson*. Hegel's Treatment of the Categories of Quantity: *J. E. McTaggart*. Meinong's Theory of Complexes and Assumptions (I.): *B. Russell*. The Use and Abuse of Final Causes: *G. E. Underhill*. The Psychological Meaning of Clearness: *I. M. Bentley*. Miscellany.

THE
PSYCHOLOGICAL BULLETIN

THE ACQUISITION OF SKILL IN TYPE-WRITING;
A CONTRIBUTION TO THE PSYCHOL-
OGY OF LEARNING.

BY EDGAR JAMES SWIFT,

Washington University, St. Louis.

This investigation was undertaken in the hope of getting further information about some uncertain factors in the learning process.

Method and Conditions.—One hour each day was given to the test (and this testing constituted also the sole practice of the subject). The number of words written during the hour was recorded, and from these daily records the curve for this learning process was drawn. The subject kept track of his daily average, though in most instances the introspective notes were written before he was aware of the record that he had made for that day. The writing was from copy and the subject wrote as rapidly as possible, trying always to keep himself at the highest degree of effort. The hour for work was in the afternoon. In a few instances university duties made a change of time necessary, but such variation in the regular program was always recorded and its possible effect upon the curve was considered. The physical condition of the subject was also carefully noted each day. Unforeseen professional duties coming immediately after the first day's practice interrupted the work for the four following days, but during the remainder of the investigation there were only two interruptions in the continuity of the work, *i. e.*, on the sixteenth and thirty-first days. These two interruptions were caused by sickness. It will be seen

from this that while the investigation covered fifty days only forty-four entered into the curve.

The type-writer used was a Smith Premier No. 4. The subject (the writer) had never used any kind of a type-writer except to slowly finger out about a dozen short business letters two years before. It is doubtful if the number of words in all these letters exceeded five hundred.

Preliminary Statement.—The number of words written during the hour is shown on the vertical axis and the days are on the horizontal. The light line represents the daily record, while the heavy line is the smoothed¹ daily record.

On account of the variation in the length of words it seemed best to control this possible source of error by also recording the number and parts of lines written during the hour. This was begun on the twenty-third day and continued without interruption until the end of the investigation. The resulting curve differed so little, however, from the one given below that its reproduction here would be useless. The general course and form of the curve were unaltered.

At the close of each hour's test a record was made of any facts that had a bearing on the curve. Type-writing is particularly adapted to introspection as the subject is able to catch some of the fleeting processes that elude him when learning to write short-hand. These introspections were also carefully noted at the time.

Description of the Curve and Discussion of its Form.—

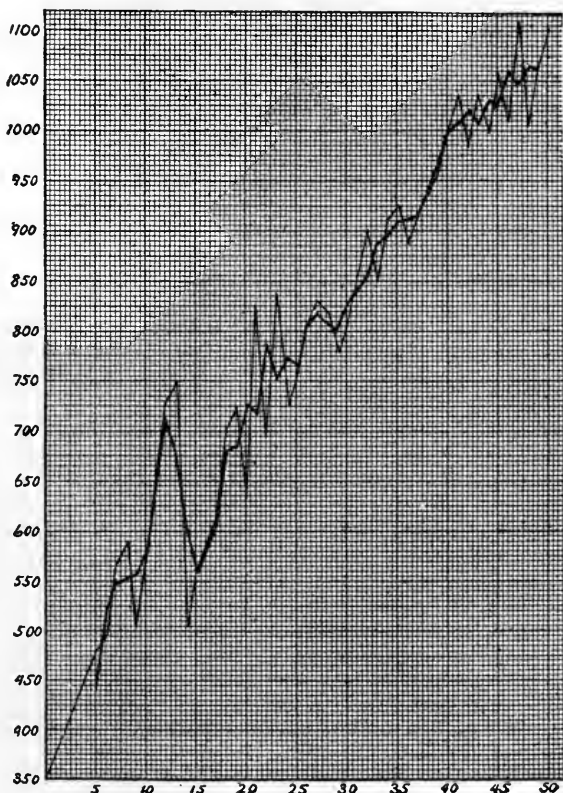
The initial rise, as before in learning short-hand,² was clearly due to the ease with which a few imperfect coördinations and associations are learned and to their effectiveness at this early stage. This rise is even more rapid in type-writing, because one learns to locate letters on the key-board more quickly than to associate new symbols with sounds.

The long drop on the fourteenth day was due, in large part

¹The method used in smoothing was to average the records for the first three days, then those for the second, third and fourth days, next those for the third, fourth and fifth days, etc., to the end. Naturally smoothed values could not be given for the first and last days. Consequently these days are not represented on the smooth curve.

²*Am. Jour. of Psychology*, XIV., 1903, p. 227.

at any rate, to harder 'copy.' Up to that time the subject had copied long personal letters, but on the fourteenth day he changed to lectures on the history of education. The average length of the words was much greater, and there were fewer of the short words frequent in letters and which the subject had come to write with considerable ease. As the curve for this period shows, seven days were required to excel the highest



record reached with personal letters. That the greater difficulty of 'copy' was the cause of the drop was evident not merely from the immeasurable 'feeling' of greater effort with lessened result but also from actual comparison of the two sorts of material. In one respect it is unfortunate that a change was made, since it breaks the continuity of the curve. But for the change the curve would probably have continued an upward

serrate course. From another point of view, however, it is fortunate, since this unevenness of assigned subject matter is just what often happens in the class-room.

The same irregularity from day to day that was observed in tossing balls and in the short-hand practice¹ was apparent here. Retardation alternates with progress. In many of the cases no reason could be found for the drop. The record for the ninth day illustrates this. The notes for that day say that 'the material was no harder than usual' and the subject was apparently in his usual state of health. Throughout the practice, on that day, he thought that he was doing at least as well as at any previous time. The only day when the low record could be accounted for by lowered physical vitality was the forty-eighth day.

From the twenty-second day the subject tried to observe the mental processes that accompanied the writing, and as these introspections were carefully written down at the close of the hour while everything was fresh in the memory, they form a kind of continuous history of the psychology of this learning process, so far as the subject could observe without interfering with the process itself, and in type-writing one may do this with little or no mental disturbance.

Introspective Notes with Discussion of Their Significance.—

It has seemed best to give these notes quite fully, indicating the days on which they were taken.

22d Day.—The past week has been one of discouragement. The pleasure in the work that characterized the first ten or twelve days gave way to ennui.

It will be observed that the period of enjoyment of the work coincides with the first rapid rise. The work was new and progress continuous. The mental depression and the first drop in the curve begin at about the same time. In the experiments on ball-tossing,² and in learning short-hand writing,³ the same ennui was observed, and at that time it was thought to be an important factor in making plateaus. The same feeling during arrest of progress in type-writing sustains this view, though

¹ *Am. Jour. of Psychology*, XIV., 1903, p. 201.

² *Am. Jour. of Psychology*, XIV., 1903, p. 213.

³ *Ibid.*, p. 229.

here the greater difficulty of the material was an additional element in the retardation.

Uncertainty concerning the significance of periods of no progress was the immediate cause of this investigation. Bryan and Harter are of the opinion that 'a plateau in the curve means that the lower-order habits are approaching their maximum development but are not yet sufficiently automatic to leave the attention free to attack the higher-order habits,' and they add that 'the length of the plateau is a measure of the difficulty of making the lower-order habits sufficiently automatic.'¹ Previous investigation had led the writer to doubt whether there is any such separation of lower and higher-order habits, and notes bearing upon this were made from day to day.

23d Day.—Observation to-day left no doubt that after the first extended plateau the reaction on the keys is the same as it has been from the start, *i. e.*, writing by letter—only the associations are made more quickly. Up to the present time there is nothing that can properly be called a higher-order habit.

The several constituent factors that contribute to the acquisition of skill in type-writing are evidently operative together, though seemingly with varying degrees of prominence at different stages of the process. This will be seen from the introspective notes that follow.

24th Day.—Hands and fingers are clearly becoming more flexible and adept. The change now going on, aside from growing flexibility, is in learning to locate keys without waiting to see them. In other words, it is location by position. Observation, however, reveals the fact that association and location by sight are as yet far from perfect and are still in process of improvement. That is to say, both kinds of association are growing at the same time—that by sight improving and that by location (muscular, etc.) forming. The ennui so noticeable during the last ten days is disappearing. The feeling of pleasure which characterized the beginning of the work has returned.

The same difficulty in keeping up a maximum degree of effort to which the writer has called attention in an earlier paper² was observed in this investigation. Its effect upon the curve is undeniable, as will be seen from the note and score for the twenty-fifth day.

25th Day.—I wrote³ easily to-day—so easily indeed that I often found myself dropping into a state of relaxation, and great effort was continually

¹ PSYCHOLOGICAL REVIEW, VI., 1899, p. 357.

² *Am. Jour. of Psychology*, XIV., 1903, p. 213.

³ It has seemed best to give these introspective notes as they were originally written, retaining the first personal pronoun.

needed to approximate the maximum effort. It seems evident that the process of association and automatization is exceedingly complex. There is clearly no separation of periods in which lower- and higher-orders of habits are formed. Early in the practice certain very common and short words like 'the' and 'is' and 'an' seemed to lose their letters and the reaction to them became word-reaction. While this is clearly the case at the present time, still the general run of reactions is unquestionably of the letter type. Location (muscular, etc.), letter and word associations are now in process of automatization.

The variation, from day to day, in the learner's effective power is seen in the record for the twenty-sixth day. Frequently it is impossible to account for the difference.

26th Day.—The keys were not struck so readily to-day. Associations were slow, though my physical condition was apparently as good as usual. The feeling was very different from yesterday, when the associations were made so easily that at times it was impossible to avoid dropping into a state of ease which seriously interfered with the rapidity of the work. Though the score was kept up to-day it was done only with the greatest effort.

27th Day.—The work went easily to-day, but it was clearly letter-writing. Association by position is becoming more rapid, but sight is still an absolutely essential prerequisite to striking the right letter. The gain is evidently in increased rapidity of letter association. At times I found myself tending to drop into less intensive work, but this tendency was easily overcome. The feeling of yesterday was altogether absent. I felt that I could do it and that I was doing it successfully.

28th Day.—As one increases in skill dispersion of the attention becomes more marked. Growing automatization of associations and movements lessens the attention needed for each movement and so makes it possible to take in more of the situation. In this way one is able to look ahead somewhat, and this facilitates the reactions.

The notes for the twenty-ninth day are important in connection with the question of lower- and higher-order habits. A higher-order habit is evidently in the beginning of its formation, though the lower-order is still very imperfect, and in the acquisition of these higher-order habits the emotional state of the subject is seen to be a factor, as has been found to be the case in the formation of plateaus.

29th Day.—Reaction by the muscular sense is improving. Up to the present time the only words that can be said to be responded to as words, instead of as words composed of certain letters, are still 'the,' 'an,' 'of,' 'is' and a few other like common and short words. But even in these cases reaction is not infrequently response to the single letters composing the word. The question of maximum attention also is involved here. Only when I keep myself keyed up to the highest pitch of effort do I react to these words as words instead of to the letters composing them. It was impossible to-day to keep up the maximum effort, though associations seemed fairly correct and rapid.

32d Day.—The feeling that failure to maintain the maximum effort was the cause of the slight advance during the last few days led to the determination to resist every tendency to lag. To-day's improvement in the score is chiefly due, without doubt, to continual strain to keep up the maximum degree of effort. I doubt whether I wrote any faster, indeed I seemed to find the letters with a little more than the usual difficulty, but I 'pulled myself together' quicker after finishing a word. I kept nerved up to the work. The result was very exhausting and could not have been continued much longer than the hour. The writing to-day was clearly by letter.

33d Day.—It was very evident to-day that the writing was by letter and not by word. Even in the short, common words previously referred to, the letters constantly tended to obtrude themselves into consciousness when the least difficulty was experienced. The learning process is not, however, uniform from day to day. Certain elements in the process at times outstrips the others. In type-writing position-associations (localization by the muscular sense), sight-associations (letter associations) and the more complex word-writing, each have their turn in the foreground. We learn by sections. Energy is not equally distributed and when one element, as perfection of muscle movement or of some association, is having its turn the others must wait. But there is no proper time-separation into lower- and higher-order habits. Indeed it is not at all certain that the several component events in the process will always succeed one another in the same order in different individuals who are learning to do the same thing nor in the same individual in learning different acts.

34th Day.—I exerted myself to the utmost to-day to keep up a continuous maximum effort. Even with this continued strain I found myself at times dropping to a lower degree of efficiency. Severe effort to maintain a maximum degree of efficiency comes to be a continual recalling of oneself from a condition of sinking efficiency. With effort we put forth great energy, but it at once begins to droop and a new effort is needed to bring it up again to the point of greatest efficiency. It is probable that the variability of attention, which must be continually recalled to duty, is an important element in the variation of maximum effort. Later, of course, physiological fatigue enters, but hardly at the outset.

It is an interesting fact that on the thirty-fifth day, three days before the beginning of a new and almost continuous rise, the subject felt confident that he had practically reached his physiological limit. This is probably a phase of the emotional element culminating in the monotony that plays so large a part in the formation of 'plateaus.' Because of its significance the note is given below, just as it was written on that day.

35th Day.—It was clear to-day that I had practically reached my physiological limit for copying from fairly difficult matter, owing to the necessity of frequently referring to the manuscript. Any progress after this, I should say, would be exceedingly slow and the final limit cannot be much higher. It requires constant effort to bring the attention back so as to keep reasonably close to the maximum effort. There is a continual relaxation and the spurs must be applied instantly to keep up this speed.

The note for the thirty-sixth day shows the unreliability of one's feelings as a guide. At no time had the work gone so easily and the lessening of the maximum effort was not especially evident, and yet the drop was decided.

36th Day. — To-day I seemed to be writing more by words than at any previous time, though it was difficult to determine accurately as close observation disturbed the process and reduced it at once to what was clearly letter writing. In any case the associations came very easily.

Subsequent examination of the notes and their comparison with the curve shows that this period marks a turning point in the process. Everything seems to have been culminating at about this time. While the writing for the following day was by letter, that for the thirty-eighth day was unquestionably word writing. This strengthens the view of the writer noted on the thirty-sixth day, that at that time he was occasionally writing by word.

37th Day. — There was a noticeable difference between yesterday and to-day. While associations to-day were rapid they were undoubtedly letter associations, except, again, in the short and frequently recurring words. It would seem from to-day's introspection that muscle movements and letter associations have now reached a fair degree of efficiency, though the latter, at any rate, are as yet by no means instantaneous. Meanwhile mass associations (word associations) seem to be making more progress than formerly. The steps by which this was reached, if it turns out that they predominate during the succeeding stage of progress, were altogether subconscious. All factors of the perfected process have clearly been present almost from the start and the only justification for characterizing any particular stage by one element rather than the other is the prominence of the one or the other factor.

Word associations did predominate during the succeeding stage, as will be seen from the notes for the following days.

38th Day. — To-day I found myself not infrequently striking letters before I was conscious of seeing them. Until now it has not been possible to feel sure of this, except for some of the short, common words, but to-day word associations took a long jump forward. They seem to have been perfecting themselves just below the level of consciousness, since on previous days in one or two instances, there have been uncertain indications of their activity. Though clearly more frequent than before, they are still very rare and any little difficulty causes the learner to drop into letter-writing, even after he seems to have begun on the word as a whole. Position associations (muscle sense), also, is coming to the front. I found to-day that I was using them with much more accuracy than at any previous time. Indeed the whole process to-day seemed to show greatly increased power. Associations that in the past have given only the faintest suggestion of their activity — so faint that it was impossible to speak of them with assurance — clearly revealed themselves. It is evident that

the various associations are improving together, though certain ones are perfected earlier than others, *i. e.*, certain processes are well along while others are still in their beginning, at least so far as effective utilization of them is concerned. It has become more evident to-day that the several elements in the process reach a certain degree of efficiency below the level of consciousness. The learner suddenly finds a new factor to reckon with and this new element may not appear above the level of consciousness until it has attained some effective value.¹

39th Day.—The work did not go so easily to-day, though at the end the score was found to be the highest yet made. Constant effort was needed to keep reasonably near my maximum efficiency. All elements of the process, letter, word and position associations, were clearly at work but the letter associations predominated. At times, however, I found myself writing a word without being conscious of the letters, and position associations were clearly improving.

Irregularly alternating prominence of letter, word and position associations as shown during the days of this period is characteristic of a learning process.

41st Day.—The writing to-day was clearly by words. The number of words that are written at once without consciousness of the letters is increasing.

42d Day.—After one has reached a fair degree of efficiency the enthusiasm that increased his available maximum effort lessens and he drops to a lower level than he is really capable of at that time. At this time also one is apt to do better in the second half of the hour for the simple reason that he feels his tendency to relax and 'braces up.' Loss of enthusiasm was the only cause that could be found for to-day's drop. The feeling of monotony was marked.

43d Day.—All forms of association were noticeable to-day, but I was mentally fatigued.

44th Day.—It was quite evident to-day that all forms of association—letter, position, and word—were operative.

45th Day.—The active presence of all forms of association was clearer to-day than at any previous time. Moderately long or unusual words are still written wholly by letter, but the greater number and gradually increasing length of words whose letters do not come into consciousness in the writing is noticeable.

46th Day.—I made great effort to-day to raise the score but failed. The strain of attention was so great that, at the end, I was exhausted. All of the associations were at work and it was interesting to observe that they seemed to alternate with one another.

47th Day.—To-day everything went easily and again I pushed myself to the utmost to try to rise above the present level. Word- and position-associations were clearly in evidence along with those of letters.

The effect of fatigue on the learning process is shown in the notes for the forty-eighth day. The latest acquisitions—those that count most for growing skill—are for the time being lost.

¹This same fact was observed in learning to keep two balls in the air with one hand. *Am. Jour. of Psychology*, XIV., 1903, p. 216.

48th Day.—I was mentally fatigued to-day and the work did not go well. Word associations were entirely in abeyance and those of position largely so. I worked very hard in order, if possible, to overcome the difficulty, but throughout the hour the writing was wholly by letter and even finding the letters was harder than usual.

49th Day.—All forms of association were evident, but the position associations were rather more conspicuous. It seems as though the different elements in the process were irregular in their activity. Even after they have all been observed for some time they vary on different days in their comparative prominence.

The unreliability of one's 'feeling' regarding his success on any particular day has already been noted (see the 39th day) but it was especially evident on the fiftieth day.

50th Day.—I seemed to write to-day with an ease not before experienced, and I had no doubt that I would greatly exceed my previous record. One thing was clear: not one form of association merely, but all, were improved and all were operative. The word association is probably, at least in its beginning, brought about by dispersion of the attention, as was shown by the fact that I not infrequently struck the key representing one or two letters ahead of the right one.

Summary of Results and General Inferences.

1. The learning process is irregular. Periods of advance alternate with those of retardation. The learner makes no progress for several days and then he leaps forward. His new position may be permanently held or he may fall back again; but if he does, it is only for a short time. Sometimes retardation or loss of power may be accounted for by physical condition or in some other way, but again no cause can be assigned for it.

2. As in ball-tossing and in short-hand writing, so here, maximum effort is a variable quantity, at times altogether beyond the learner's control.

3. The acquisition of skill in type-writing is an exceedingly complex process involving both mental and physical elements.

4. The elements involved in this process do not have separate periods for their beginning and development. Both simple and complex factors betray themselves to introspection early in the work, but they are present in different degrees of activity. This difference varies also from day to day, one being predominant one day and another the next. After the acquisition of a few imperfect coördinations and associations the

simple and complex processes intermingle with no distinct separation.

5. There are not one or two periods of delay in which lower-order habits are automatized and preparation made for a higher-order. The investigation in short-hand writing¹ left this question in some doubt, because of the difficulty of introspecting while writing, but this investigation has shown conclusively that in type-writing, at all events, such periods do not exist. Type-writing lends itself especially well to introspection and the subject was able on several days to detect all of the elements from simple letter associations to the complex word associations. Both of these were operative early in the work and, again, at the very last, letter associations were frequent.

6. The learner gradually passes from a period when lower-order habits predominate to a period of predominant higher-order habits. The latter, however, are a part of the process almost from the beginning. Automatization is going on all the time.

7. Plateaus have at least two causes. Considered from the point of view of automatization they are resting places. The learner has overshot his permanent power and must wait until the automatization is perfected. They are also due to a slump in enthusiasm. Monotony overcomes the learner. Further, these two causes react upon one another. After improvement in automatization the learner is able to do better and takes courage. Enthusiasm to advance, now that it is easier, overcomes the ennui.

8. Effort to spurt is helpful if not too severe, but overstrain exhausts the learner and hinders his progress by bringing into the focus of consciousness processes that serve him best when in the background.

9. Physical condition is always an important factor.

10. The process is subconscious. The learner suddenly finds himself doing something that he has not before been aware of. The new acquisition is well along, however, before it is discovered.

¹ *Am. Jour. of Psychology*, XIV., p. 727.

PSYCHOLOGICAL LITERATURE.

The Mind of Man. A Textbook on Psychology. GUSTAV SPILLER.
The Macmillan Co., 1902.

The author starts out with the commendable purpose of accentuating the need and assisting in the establishment of a psychology of a strictly scientific character. To this end he avoids the company of any who have settled doctrines, and excludes all philosophic speculations. In the introductory discussion the hand of the writer seems to be raised against every method of psychological inquiry which has been employed in the past or is still being used by his contemporaries. The reflective method, if it happens to have discovered any truth, has failed to establish the same scientifically. And whatever psychophysics may accomplish in the future, it has done nothing up to the present. After some defense of Introspection, he himself adopts the method of 'Experimental Introspection.' Wherein this differs so radically from the ordinary experimental method it is not easy to discover; true, he lays the main stress on introspection, but the latter term seems to be used simply of the immediate observation of the facts of experience experimentally arranged or aroused.

Further, the lack of an adequate system of terminology leads to the adoption of a new system of terms, based upon the degrees of complexity of the facts. The formation of a radically new system of terminology even in so young a science as psychology may be considered a somewhat questionable procedure, and that which is offered is neither very complete nor is it based upon strictly scientific distinctions; *e. g.*, the simplest class of 'given things,' 'Integrals' are divided into three classes: (1) Advanced sensations, *i. e.*, sight and hearing, (2) 'Semi-advanced sensations,' *i. e.*, taste and smell, (3) 'Vague undefined systems called elementary sensations or feelings, of which the feelings of touch, of hunger, of pain, of doubt, of effort, of astonishment, afford examples' (p. 503). Such a classification needs no comment. Next in the order of complexity comes the 'compound,' which occurs 'where several systems (*i. e.*, things given) are intimately blended, as in the matter of ordinary observation' (p. 504). And thirdly, the 'complication,' where 'otherwise unconnected systems appear uniformly together.' This terminology is simply covering again, and in a loose manner, what has been done by Wundt and others much more scientifically.

It will make the discussion clearer if one notes at the outset his statement, that it is in neurology, or brain science, coupled with introspection that the hope of the psychologist lies; *i. e.*, psychology separated from physiology can give no consistent account of the facts of mind. Proceeding to the general development, his definition, stated at the beginning but avowedly reached only after the examination of all the data, is as follows: 'Psychology treats of the nature and satisfaction of those distinctive needs which are connected with the central nervous system, and this it treats in systematic conjunction with the systems of sights, sounds, smells, etc., which are developing concurrently; *i. e.*, Psychology treats of the needs which arise out of the relations of the various systems in the organism, and out of the relations of that organism to its environment' (p. 38).

The simplest given elements of mental life are the 'Integrals'; they are the units of thought and comprise the sensations advanced, semi-advanced, and the vague undefined systems called elementary sensations and feelings, together with memory images of these. These qualitatively different integrals, he maintains, may be reduced ultimately to a vague detailless feeling; *i. e.*, there is probably a point where these lowest elements or minimal systems first become differentiated, and this would be the threshold of each particular system. Hence, he concludes, 'probably' all sensations finally shade into one another. In tracing an advanced sensation (*e. g.*, one of vision) back to that elementary homogeneous starting-point of all sensations, he states the following experience: in gradually closing the eyes, the first characteristic of the visual system which disappears is that of depth, then other outlines, then color, and finally the blur passes into a confused feeling void of any optical suggestion. One can but feel that the logic of the conclusion based on such observations as the above leaves much to be desired. As well might one conclude that the elements of water, oxygen and hydrogen, could be reduced to a simpler, by gradually reducing them quantitatively till their particular properties were no longer distinguishable.

There is no full scientific treatment of the sensations. For a very good statement of what is known about the sensations the reader is referred to Külpe's Outline. The question of space comes up in this connection, and after rejecting the views of James and Ward, he takes a position in some respects akin to Herbart's: that sensations for the adult are given in an organized system; in other words, one sensation in respect to its spacial properties is explained by its relation to others.

The feelings proper differ from sensations as integrals of a lower

order, and pleasure-pain, which is regarded as different in nature from the feelings, is identified with a 'neural disturbance,' *e. g.*, 'the cold as felt, and the neural disturbance resulting are separate effects of the objective cold on our organism' (p. 242). Pleasure and pain are connected with the instability of the inmost nervous center; so long as it remains intact the stream of attention flows smoothly and continuously, so soon as it is disturbed or capriciously attacked then we experience pleasure-pain.

The combination of these elements into complex systems is not left, with the old associational school, to be explained by the fact that the corresponding physical elements of the mental complex are already united, nor with what might be called the new associational doctrine, which calls in the activity of apperception to account for the uniting of the elements into compounds, but in his own words: "Just as one who uses a type-writer employs the same steel letters over and over again in copying a book, so we imagine that combinations are produced neurally by some simple process" (p. 207).

His view of the attention is the key to the further explanation of the interconnection and the direction of the stream of thought. Taking as the field of attention what is generally understood as the field of consciousness, rather than the more limited field of apperception, he asks such questions as, "Why does the attention normally not vary in any one individual, or from individual to individual? Why do we during waking hours normally attend to, or tend towards, something or other without interruption?" etc. He can find no clue to the solution of these questions by the examination of 'secondary systems or facts of non-bodily feeling'; hence he is driven to the bodily facts. And assuming now that the central nervous system is the complement of the laboratory of thought, all the facts are readily explicable. Attention is then defined as 'neural functioning.' In the attention he has during normal waking hours a constant activity, it embraces all activity, it functions to the same extent continuously and in varied directions. 'Thus when we say that we attend in a certain direction we mean that we are active in a certain direction' (p. 89). This constant activity, however, is not independent of either organic or extra-organic stimuli, *e. g.*, we do not hear or see except the attention be directed in certain channels, but direction of the attention alone would be futile except for the stimulus.

In attention there is a continuous process, and there is always a more or less complex content present in the field of attention, the elements of this content being combined by some simple neural process.

It remains to be shown how the direction of the attention, or activity, is determined. To quote again: 'We are born with certain gradually changing wants, or functional tendencies, and with a mechanism approximately able to reëstablish equilibrium' (p. 505); *i. e.*, there are present discontinuous needs and a continuous attention process. The direction of the attention process or the succession of the elements which make up the stream of mental life is determined, not by association, nor by will except as will may be identified with the ruling need, but by the above mentioned needs; *i. e.*, 'the flow of thought is only fully explained by the gradually developed process of the satisfaction of needs, or by functional readjustment' (p. 146).

To follow at all fully the nature of central needs, which play so important and novel a rôle, would take one too far afield. In a word, different rôles are performed by different systems in the body, *e. g.*, the heart, or the alimentary system: these systems are of an unstable nature, and respond to certain stimuli, *i. e.*, there are certain tendencies or needs which stimulate the alimentary system. But these needs of the alimentary system cannot enable it to secure food; that can only be accomplished through the mediation of other systems; and these other systems are set in operation by the central nervous mechanism, the great mediating system. This central system is influenced by other systems and in turn influences them. Central needs, then, are the functional tendencies inherent in the central system under the particular conditions of the present moment. 'A need might be defined as a condition where there is absence of equilibration, as in a feeling which persists until certain changes occur' (p. 297).

To remove the charge of materialism which might be brought by some against such a treatment of psychology, one need but state the author's contention that the antithesis between mind and matter is a false one; since, *e. g.*, a change in the nervous system which may run parallel to a visual picture, does not indicate two disparate groups of facts, the one psychical and the other physical, on the contrary, the former is a visual complex, and the latter is nothing more than a visual-touch complex.

A view somewhat similar as far as the disparateness of the physical and mental facts are concerned, but much more logically and systematically developed, is worked out by Kirschmann in his contribution to the commemorative number of the *American Journal of Psychology*, entitled 'Deception and Reality.'

The principal weakness of Spiller's book lies in its failure to make any satisfactory distinction between the psychical and the physiologi-

cal, which leads to the assumption, at times, that psychical processes have been explained when they have merely been referred to the physiological processes corresponding to them. Again, when one reads, among the statements with reference to the nature of attention made by a group of psychologists, such as Baldwin, Höffding, James, Ladd and others, that 'Külpe holds the regulation views' (p. 62), the value of the references to the literature seems somewhat impaired.

The teleological element, which is freely used, *e. g.*, in the functional tendencies of the central nervous system, as the writer himself observes, requires some clearing up, and the whole book might be more concisely stated. I have indicated what appear to me to be some of the weak points of the book; there are many valuable ones, however, of which only a few could be mentioned in so short a review. The whole is exceedingly bold and independent, and consequently fresh and original, and it is abundantly supplied with concrete illustrations. It contains also the valuable quality of inspiring the reader to investigate and test for himself, which makes the book valuable to a student. But most of these points excepting the last are not the qualities which are specially sought in a general text-book. And one can but conclude that those who are looking for a general text-book on psychology will have still to reflect on the necessity of inspiring someone possessed of the requisite gifts to write such a book.

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DEFINITION OF PSYCHOLOGY.

On the Definition of Psychology. JAMES WARD. *British Journal of Psychology*, I., pp. 3-25.

The aim of this article is to clear the rough definition of psychology — as the science which describes mental processes — of the implications which lurk in the term 'mental processes.' Professor Ward attacks the subject historically, outlining three stages, each of which is marked by a distinctive conception of the field of psychology.

The first point of view to be considered is that of Aristotle, whose conception implies the organism and the environment, and is essentially biological. But Aristotle differs from modern biologists in making the soul the directive principle in all interaction between organism and environment and in making the soul the final cause for which the organism exists. Looking at the facts from the outside, Aristotle fails to recognize what we now call consciousness as the central feature of all psychological facts.

The psychology of Descartes, restricted as it was to the immediate facts of consciousness, is placed in opposition to this extreme objective position. While recognizing the service which Descartes rendered in placing the emphasis on the conscious subject and in clearing up the hazy materialism of the Aristotelian and scholastic psychology, Professor Ward shows that the reaction was extreme, and that it sprang from a distinction between subject and object which was too analytic in character. Descartes' *res cogitans* really excludes everything empirical, giving rise to the dualism of reason and experience, and Dr. Ward agrees with Kant that such a consciousness is not really conceivable. From the objective point of view Aristotle saw that the soul was necessary in order that the organism should have life. "Descartes, who began from the subjective side, ought to have seen that the organism and the environment were necessary in order that the conscious subject should actually have experience." Because the problem of the relation of mind to body and the problem of the reality of human experience remain unsolved, Professor Ward rejects at once 'the perfunctory definition of psychology as the science of mind, over against which there stands a distinct science of matter.'

In the third stage, according to this retrospect, the extreme subjective position is so modified that it ceases to clash with what is essentially true in the objective view. Kant is given credit for having overcome the difficulties arising from the Cartesian metaphysical assumptions, when he confined all knowledge to sense-given realities and recognized the duality of subject and object as essential to experience. But Kant, in company with his predecessors, fell into other errors which were the result of Descartes' imperfect analysis of the facts of experience. Since Descartes recognized only self-conscious experience, he tended, as Professor Ward indicates, to identify the cognitions of self-consciousness with the facts cognized—an error which dies hard—and, secondly, to confuse the experience with the self-consciousness. The latter error is traced back to the failure to recognize the fact that the 'objective' and 'subjective' of psychology are not the same as the 'objective' and 'subjective' of epistemology. As a result of this error, internal experience, with which psychology has to deal, comes to be considered as derived from an 'internal sense.' But 'internal experience' loses its significance when it is shown that such an 'internal sense' is preposterous. The true internal experience is the experience of the individual mind, as contrasted with scientific knowledge, which is the common product and common possession of many minds.

Professor Ward completes this historical survey with a summary of the results of the reaction during the past century against extreme intellectualism, showing how this movement, together with the growth of genetic and comparative psychology, has tended to shift the emphasis from intellect to will, from cognition to conation, from sensitivity to activity. There is no longer any talk of mere cognition, only the interesting is known. It is urged that, for the psychologist, there can be no consideration of an independent realm of truth. Rather knowledge is a means to ends in evolutionary development, not an end in itself, and accordingly 'the sole function of perception and intellection is to guide action and subserve volition.'

In speaking of the psychical life, Dr. Ward advocates the use of the term 'experience' rather than the ambiguous word 'consciousness.' In particular he takes exception to the use of such expressions as 'states of consciousness,' 'operations of consciousness,' 'form of consciousness,' etc. In this connection he attributes the error underlying such expressions to the separation, in the Cartesian system, of the 'modes of consciousness' from the 'conscious subject.' He claims that those who speak of operations of consciousness have eliminated the subject along with the substance; while others have resolved the modes into ideas or presentations and out of such mind-stuff and its interactions have proceeded to build up experience. Considerable attention is devoted to confuting this last doctrine, for which the name presentationism is suggested as preferable to sensationism or associationism.

At the close of the paper there is a plea for the precedence of analytic over genetic psychology, concluding with the statement that 'whatever method is followed, physiological and comparative psychology must fall back on the facts and analogies of our own experience.'

Evidently Professor Ward did not contemplate the formulation, in this article, of a precise definition of psychology, but by devoting himself exclusively to the consideration of mental processes, and by omitting all but the most meager reference to bodily processes, he practically confines the science to the treatment of the phenomena of private experience, and neglects that important side which is concerned with the conditions under which psychical processes occur, except as those conditions are themselves pure psychical processes.

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ETHICS AND VALUES.

Sentimenti Morali. GUGLIELMO SALVADORI. Florence, Lumachi, 1903. Pp. v + 148.

In this interesting work the author repeats certain conclusions reached in his previous study on the Ethics of Evolution (*L'Etica Evoluzionista*). He does not pretend to construct a new theory of Ethics, for that, he asserts, would be impossible after the profound and accurate investigations of the great masters. Novelty is a mark of philosophic dilettantism; what is needed is to criticize and complete previous views, to popularize their true parts, to destroy what is weak. The writer would therefore put forward a sort of rational eudæmonism compounded of the empirical realism of the utilitarians and the abstract idealism of the metaphysical schools.

One might criticize this project as a piece of dogmatic eclecticism were it not for the originality of the treatment and the charm of style. Thus in the introduction ethical liberty is defined not as a special faculty of the human spirit, but a property of the reason called out by the sovereign needs of the moment. Hence arises the query: How can one put in the conscience of the individual norms of conduct rigidly fixed and valid for all cases? The author's answer is a searching criticism of the Kantian Ethics, a revolt, as it were, of the south against the frigid morality of the north. That the soul is naturally cold and insensible, that it performs good actions simply from a sense of duty, that the natural inclinations to virtue have no moral worth, robs virtue of its graces and attractions. A moral law without feeling, a morality without the affections and sympathies is pronounced inferior to the Ethics of Hellenism and Christianity which made virtuous such things as are sweet and attractive to the human heart. Here arises the need of a psychological analysis of the moral sentiments. Bentham's opportunism, which would make the extrinsic results in pleasure or pain to determine actions, is declared insufficient. There must be some interior principle, else the sanctions of physical, social, political and religious life in all their variety have no unitary substratum. The earlier English utilitarianism is too simple to be true. While the later utilitarians such as John Stuart Mill showed that the external factors were extremely complex, yet the criterion of the moral worth of the feelings is given in the more or less clear consciousness of the right. The moral sanction consists not in the hope of reward or fear of punishment, but simply and solely in an inner feeling of satisfaction or dissatisfaction in which we consider our acts independent of any external authority. Psychology goes too far in making the feelings

determine conduct. They constitute the content of consciousness, whereas intelligence constitutes the form. Feeling is the immediate stimulus to action which could not be determined simply by an idea. The office of reason is to illuminate the moral intuitions. The classes of motives are: (a) Those of sensibility, which are pure psychic facts like simple and immediate reactions to sense perceptions, (b) intellectual motives, which lead to a code purely external to morality and are adverse to that essential quality of morality, namely, spontaneity, (c) rational motives, which are inadequate to explain altruism, since simple reflection is not sufficient to lead to the preference of social utility over individual utility. There are really no moral sentiments in hedonism and utilitarianism. If they take account of the caprice of the moment or the immediate result of the action, conduct becomes irrational and we are driven to an absolute scepticism because such conduct represents the practical negation of every moral law.

The author here rapidly reviews the sentimental school from the Epicureans to Bentham, and the rationalists from the Stoics to Kant. The former have determined the immediate motives of morality but fail to consider a norm, law and universal form for actions. With the Kantians the right becomes an abstract law void of content, not corresponding to the nature of the subject. A good will signifies nothing unless it first determines what the good is, since every voluntary act implies of necessity an object. The sentimentalists are wrong in making morality purely instinctive, the rationalists in making conscience to consist in effort. Virtue implies the fervid enthusiasm of feeling; it also implies a comprehension of abstract rules, the cold exercise of reflection. In the doctrine of perfection is found the reconciliation of the desire for happiness and the idea of the right. Kant considered the will a static something which considered and operated apart from those elements which compose the psychic life — feelings, desires, wishes in intricate and constant interaction. But the will is the last link in a long chain of acts, the last moment in a spiritual process. It is not a faculty but a process through which psychic activity manifests itself in external actions. The character of the will depends on the quality of the motive, *e. g.*, sensible or rational. Hence it is one-sided to speak of the will as legislative and attribute to it the essential function of reason.

After this searching criticism of the Kantian ethics the writer attacks more recent notions. The biological view, he says, makes conduct simply a phenomenon of action and reaction, reducible to an order purely reflex and mechanical. But the conscience itself pos-

sesses an original activity. In the growing complexity of psychic motives, the sentiments represented as most developed are able to prevail over simple presentations, the motives more complex and more ideal over simple sensations and pure appetites. The moral act is not a simple reaction of the state of conscience produced by the exterior world, but the result of a conscious determination which presupposes a complex of feeling, of ideas, and of intentions envisaging an ideal end. Psychic evolution shows the rise of moral ideals. As from the simpler sensations arises the more complex evolution, and from primitive perceptions more developed intelligence, so from feelings and acts ethically indifferent are derived the moral feelings and acts. Man's instinctive energies operate at first in an indeterminate way, and only in virtue of the contrary forces of external nature are they brought to the concentration necessary to attain the ends of existence. When the end is attained pleasure arises; when not, pain. The ethical norms represent necessary relations, uniform and constant, and as such are laws analogous to natural laws of the external world. But these relations are ideal, derived from a process of abstraction, and so presuppose the activity of the creative conscience. So-called physical altruism, animal ethics, sub-human justice, social and sympathetic instincts cannot constitute morality. The essence of morality lies in the ideal.

Chapter II. deals with the classification of the moral sentiments into egoistic and altruistic; it presents the views of the individual as a means in society and of the primacy of society over the individual which impedes the realization of individual happiness. Thus the doctrine of Nietzsche is declared contradictory in that, while it wishes to elevate human individuality, it ends in its mutilation and destruction. Every immoral desire is a diminution of human individuality, whereas every moral desire, which develops in sociability, is an expansion of the ego. For the same reason Schopenhauer is in error in reducing all duties to mere self-preservation. Psychological analysis shows that justice and benevolence have a common root in sympathy. Justice is the more fundamental because necessary to attain the end of existence. Sympathy is a secondary condition less imperative but perhaps of greater moral worth. The conflict between egoism and altruism is less than that recognized by Spencer, because the merely individual ego is not the true ego, but the social ego is. The process of the adaptation of man to his ideal social state is a process in the spiritual evolution of humanity. Acts of heroism and martyrdom are done for the very pleasure of attaining the ideal. In the final sacrifice of self,

we should see the supreme manifestation of a sublime egoism. Thus the apparent antithesis is resolved.

In this eloquent conclusion the writer leaves out, as does Spencer in his *Principles of Psychology*, the question of the choice of motives, the fact that there are differences in the degrees of man's egoism, and greater selfishness in self-centered enjoyment than in the 'pure joys of the mind' through acts of charity. But as translator of Spencer's work the Italian goes more deeply than does the Englishman into the question of the origin and development of the moral sentiment — the subject of chapter III. Discussing the principles of the intuitive and empirical schools he shows that there is an historic relativity not only in the application of ethical principles but in the principles themselves. Here the conscience would seem to be a plastic and unstable faculty. This is against the intuitional theory of the moral faculty as independent and transcendental. Yet how are we to explain the existence and authority of the moral sense and the feeling of obligation in uncivilized man? Utilitarianism makes the sense of obligation and constraint a product of the action exercised on human nature by the rigid discipline of social life. But this does not explain how during the life of a single individual there can arise the idea of virtue in the form of a concept transcendental, independent, autonomous. The moral faculty cannot be derived from the pleasurable and painful experiences of the individual. Yet morality benefits the psychic life as pleasure the physical; therefore in the evolution of humanity morality tends to increase. Justice and love are the conditions necessary to the development of the higher life. By the laws of adaptation and natural selection the social and sympathetic feelings become habitual, organic, and transferable to posterity. Yet these biological and evolutionary laws are not sufficient to explain the formation of morality, which presupposes the ideal factor as the indestructible element of the ethical conscience.

The author next disposes of the associational school. John Stuart Mill is said to commit the same error as Bentham in making morality consist of rationality plus the association of ideas and in confounding the popular sanction with the moral sanction. Certainly each altruistic sentiment is a manifestation of the ego, but how can pure egoism carry the individual outside of himself? So modern voluntarism as represented by Wundt and James is wrong in confusing impulsive actions with simple voluntary actions. The will should be considered to be inserted between the motive and the action. When the action follows immediately upon the motive, the action can be called in-

stinctive, impulsive but not voluntary. So in the objective world causation appears the product of a blind necessity, in the subjective dependent upon changeable motives, *i. e.*, the causality of voluntary actions is not mechanical but psychical, and associationism is weak in deriving all the mental processes from representations. Again, in the evolution of the ethical conscience there is a gradual passing from the simple reflex action, in which there is an immediate relation between stimulus and motive, to those lengthy deliberations and calculations of the probability of the various consequences and the worth of the correlative sentiments which constitute the mature judgment. Nevertheless the feelings still form a norm of conduct whose authority is greater the more remote they become, through their complexity and ideality, from simple sensations and mere appetites.

In the conclusion, part IV., of this work, the author sums up his theory of the evolution of the moral conscience by a further criticism of the rival schools. Associationism, he asserts, makes man an automaton and his conscience a complex of psychic states determined by action of the external world. Transcendentalism makes him a being purely logical and rational who can determine his actions in virtue of a purely theoretical faculty, independent of the feelings, and the two extremes meet in a common determinism. Kant's moral law is an incorporeal phantasm of physical laws, a mechanical conception of the moral order. The categorical imperative, as Felix Adler remarks, comes down like a blow on the head. Suppose, as Kant conceived, that every word pronounced and every action done were determined by the abstract idea of universality and necessity. How, then, would that be superior to the physical order? Such a perfect automatism could only be accomplished in the distant future and during a long interval the conscience would be a superfluity. So the writer returns to his original plan of a compromise between an empirical realism and a transcendentalism. He concludes that the foundation of the moral sentiments in human nature is an integration of both feeling and reason. The one implies the other, since neither content without form nor form without content can constitute the essence of the moral character.

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The Place of Values. REV. G. R. MONTGOMERY, Ph.D. Bridgeport, Conn., The Author. 1903. Pp. 62.

This pamphlet, a private publication, is another contribution to the discussion started by the general interest in the antithesis of appre-

ciation and description. 'What relation or articulation is there between values and truth?' is the way the writer presents his problem. It is unfortunate that he felt called upon to devote so much space to emphasizing the importance of the question, — surely a procedure now scarcely necessary, — otherwise his conclusions might have gained both in clearness and significance by a less sketchy presentation. As it is, it is not clear that any new light has been thrown upon this vexed relation of truth and values, unless such light is given in the conclusion that 'the advance into reality is an advance on two legs, worth bringing truth into new fields and truth leading the way to new worths!'

The author's general position is the well known view (for which, however, he seems to claim novelty) that worth is the irreducible subjective aspect of experience left over after all content, including feeling and will, has been relegated to the objective presentational side. It cannot be identified with feeling or will, therefore, and cannot be presented or described in these terms or in those of unity or energy which belong to the object. "The subjective characteristic of the Ego or Self is not its unity (Ladd) nor its energy (James). It is the appreciation of worths." So far, so good. With this cutting of the knot we are familiar. Having learned so much of Münsterberg, he ought, we should expect, to follow him farther and banish worth to a region where it will cease from troubling, where it does not meddle with description and does not itself ask to be described. But no — instead of that he arraigns Münsterberg for banishing worth from psychology and for handing it over to a transphenomenal, attitudinizing will. He asks how Münsterberg knows enough about this subject to call it will, instead of letting it answer to 'Hi' or any loud cry. In fact, he insists that worth is primary and fundamental in psychology, at the same time refusing it description in any terms by which it will be recognized by that science. To what cry of the writer's will this same elusive worth answer?

His method of developing this position is somewhat sketchy and oracular and it may be that we do not understand him. Yet, it does seem that we have to do here with a fundamental contradiction, and one, too, which arises from a failure to quite grasp the psychological problem. Surely psychology can do nothing with worth unless it is in some way presented for description. It may be subjective 'meaning,' but it must be a founded meaning among elements, affective-volitional meaning, and is incapable of entering within the range of psychology without connection with descriptions of feeling and will. No one imagines that description of worths in terms of

feeling and will is exhaustive, but it is the only way that they can enter into psychology. What meaning is there for psychology in the following attempt of the writer to define worth psychologically by negation — "The birth of consciousness in the lowest animal life is indicated by the appreciation of worths not by feeling. The subjective factor in the simplest organism is not feeling but worth, and only in the highly developed consciousness are certain subjective elements degraded to feelings"? Surely none.

But enough. We have perhaps taken this contradiction as a text for too long a sermon. The truth of the matter seems to be that, if we may make use of a homely figure, one cannot have his cake and eat it too. We cannot enjoy the many immediate pleasures, the simple solutions of difficulties that the antithesis of appreciation and description seemingly affords, and at the same time keep worths within the land of phenomenal existences to be looked at, handled and described. Dr. Montgomery, it is to be feared, has not sufficiently realized the force of this practical dilemma. But he is scarcely alone in this and his thesis may be taken as a good illustration of the kind of confusion that seems to inhere in much of the discussion of this problem.

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Ethics, a Science. EVANDER BRADLEY MCGILVARY. Philosophical Review, Vol. XII., pp. 629-648.

Science, according to Professor McGilvary, is knowledge; whereas art is production. Sciences are divided into two classes: (1) those dealing with objects of human production and achievement (and these have correlated arts), and (2) those dealing with objects not brought about by human agency.

Ethics is a science of the first class, its correlated art being morality. Moreover, it is not what is commonly termed a 'normative science,' for "we may say that no science lays down any rules whatever, hence if a normative science is defined as a science that lays down rules, it must be replied that it is by that token not a science" (p. 633). The thesis being that ethics is a science, it follows that "ethics did not create morality, nor does it legislate to moral beings better moral laws. It describes the various types of morality and the results flowing severally from these types" (p. 634). The science of ethics finds its 'empirical data' in morality.

It studies these data, and in the 'implied statements of connection between certain courses of action and certain generally desired ends

which the moral individual reads into the scientific description, lies the *practical value* of ethics.

Dr. McGilvary thus treats ethics as pure science: in method descriptive, in subject matter empirical, in aim epistemological, theoretical through and through, yet of more or less clearly defined practical value.

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Les Principes de la Morale Positiviste et la Conscience Contemporaine. GUSTAV BELOT. *Revue Philosophique*, LVI., 1903, No. 12.

M. Belot's aim is to show that the positivist view of morals has more than merely historical value. In ethics, he holds, Comte's independence of theology and metaphysic is a merit. Science cannot avoid the critical problem, but morality calls for no foundation other than the autonomous human will. Even the principle of the unity of Humanity is not metaphysical, since Humanity need not be given, it need only be willed. Altruism is for Comte a primitive fact, enabled by social influences slowly to absorb egoism. Thus, as in the best recent thought, man is regarded as essentially social. The individual is not sacrificed to the whole; rather Humanity is realized in the individual's free identification of himself with his social function. Comte supposes that as knowledge grows positive and the will self-disciplined, exposition will forestall discussion and safeguards for liberty will become as needless as coercion. These naïve assumptions and the psychological errors permeating his view of religion give an impression that he opposes the modern demand for freedom of thought and political liberty; but if we penetrate beneath details to the principles stated above, such a judgment is seen to be unjust.

The prejudice that M. Belot combats is naturally less prevalent outside of France; for one reads a foreigner as one reads an ancient, hoping for value in his main conceptions, but not expecting to agree with him in details.

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PRAGMATISM.

The Eternal and the Practical. JOSIAH ROYCE. *Philosophical Review*, XIII., 1904, pp. 113-142.

All thinkers in contemporary philosophy are more or less both empiricists and pragmatists. Therefore the central questions of modern investigation are, first, the problem as to the place which our empiristic tendencies ought to take in our philosophical system, and

secondly, the problem as to the part which our practical considerations and undertakings ought to play in determining this system. The author proposes to discuss this latter question of the relation of our doctrine of conduct to our theory of truth.

As a preface to his argument, Professor Royce makes a general statement of his own point of view. He says that while he believes in pragmatism in so far as to maintain that every one recognizes no truth except that which he helps to constitute, that truth is not a finished thing but is now in the process of becoming, and that our judgments are made in response to a need for control over a present empirically given situation — while he believes all this, yet his final hope is in something eternal and absolute.

In exposition of the spirit of pragmatism, Professor Royce says it maintains that all mental activities are essentially practical. Will and intellect are not two different things. A man thinks because it is to his interest to think. Moreover, though apparently inactive, the thinker is planning motor processes and in the end or even while he is thinking them he is putting them into effect. Mentally he constructs scientific instruments and methods and so ultimately in these expressions of his thoughts he may direct the activities of a vast number of men. Nor does the thinker regard his ideas as mere passive objects of contemplation but as his own deeds, for a thought out of relation to any deed is an impossibility. It is true that thought is in one sense a suppression of overt activities, yet these activities are incipiently taking place and are prevented from outward expression because of certain inhibitions, not because the appearance of a new consciousness which may be called volitional is necessary. After the removal of such inhibitions, even decidedly abstract thinking is displayed in very practical attitudes, as for example in gesticulations such as the placing of a forefinger upon the palm of the other hand, the speaker so 'showing how he lays his finger upon truth itself.' Our thinking is, in fact, the consciousness of our adjustment to our present situation.

But pragmatism attempts to define not only our thinking consciousness in practical terms, but also the reality of which we are conscious. It holds that reality is not something given to us from outside which judgment copies. What is directly given to us at any moment is our specific need for further intelligence in action. And our clear judgment, that is, what we make out of this given need, is *ours* in the sense of our adjustment of ourselves to our present needs. In other words, we have no object except that which we construct

through reflection in necessary response to our momentary needs and in accordance with our habits of thought.

So much as to the statement of what the author calls pure pragmatism. This view, he asserts, though avowedly held by some, actually is and can be held without modification by no one. Unmodified it leaves no room for any sort of absolutism; it predicates a world of transient meanings which conform to no universal truth. Each one of us has his own needs; these needs change. Pragmatism is therefore a pluralism; its evidence rests upon what you can now observe of your present thought and its objects. On this basis the truth of a judgment means nothing more than that it just now meets my needs.

This statement forces us to observe our need of companionship in our beliefs. The most stubborn pluralist always wants other thinkers to agree with him. This fact is exemplified in the tendency to expound pragmatism in forms that are not pure. For instance you find so-called pure pragmatists emphasizing the necessity of taking careful account of the theory of evolution. Like all things, they say, thought and the categories of thought, truth, reality, objectivity, are products of a process of evolution which is determined by the need of adjustment to environment. The pragmatist, therefore, recommends his theory on the ground that it is a corollary of the generally accepted doctrine of evolution. That is, the pure pragmatist is guilty of a fallacy; he says that his belief in evolution is pragmatic and then attempts to confirm pragmatism on the ground that it logically follows from the theory of evolution. The reason for this is just his need of companionship suggested above. By appealing to accepted doctrines he can get hearers for his argument. He is not content with the mere pragmatic sanction; with a judgment which is just a reaction to the present conscious situation; he wishes that what is true for him should be true for others.

Now this need for championship in its ultimate analysis is our need for an objective, eternal truth, for truth which is something that is not merely what we at any one moment need to believe, but something that we *ought* to need to believe both now and at all times and that others *ought* to need so to believe. That is, the truth of a judgment is not merely the unity of my construction of the present moment and of the momentary constructions of others; the truth of a judgment implies an *ought*. Are these other momentary judgments what they ought to be? Are our agreed judgments merely our present reactions, mere attitudes, not genuine truths at all? The *ought* goes beyond

mere multiplicity of constructions. If there is a true and a false, there must be a view from which the ought is known, not as simply a single passing, unstable, chance point of view, but as the object of one self-possessed and inclusive insight which remains invariant. This presupposes a self that consciously includes all pragmatisms in such a way that if you conceive of other points of view no change would result in the characterization of its object which this self could view as true. A judgment has a place in a complete system of truth or else it is not true. If there is such a self, then the significance of the practical, namely, everything that is finite and temporal, is borrowed from that which is eternal not in the sense of something that outlasts time — only abstractions do that — but in the sense of something that includes and knows that it includes all the varying points of view in the unity of a single insight, so that every possible additional point of view would leave this insight invariant. So much for the summary of the author's discussion.

If the above conclusions may be questioned, it might be asked if this conception of a selfhood which is on the one hand absolute, invariant, and out of time, and on the other hand made up of innumerable finite changing, temporal selves — if this conception does not involve an antinomy such as characterizes all metaphysical explanatory assumptions ?

The necessity for these conclusions the article bases on the statement that pure pragmatism fails to meet all of its own conscious needs. In order to consider how far this statement is true, we may ask whether the evidence of pragmatism rests upon 'what you now can observe of your present thought and its objects' or upon the efficiency of the method you are now pursuing in your ongoing observations and judgments. Ultimately the test of this efficiency is of course in the consequences. But we do not have to wait for this sequel; foresight, deliberation, conscious inquiry, serve to function for the actual experience. Now these processes are in each case at once both the definition and identification of means and ends, of object or instrument and subjective purpose, whether designated as practical, intellectual, or spiritual, and since we can know nothing apart from experience, these processes are in each case the definition and reconstruction of opposing phases of experience, variously interpreted as subject and object, Ego and Alter-Ego, the eternal or absolute and the transitory or practical, the transcendental and the particular. In the course of reflective thought these categories have been set up as independent entities, so that the problem of understanding the nature of experience has been somehow to bring them together. And the theory of evolution as

applied to experience is a pragmatic belief in the degree to which it solves this problem. We may conceive of experience as a growth unity in which thought categories are organic, functional differentiations, not symbols of independent entities. Thus we find that there is no problem of connecting subject and object and so on. The term *growth* as applied to experience gives us both the eternal and the transient, for it means on the one hand that everything is passing because it is always growing and on the other hand that everything is eternal just because it is a phase of the total growth process. Moreover, the organic conception of experience recognizes no consciousness which is merely individual. The present aspect of consciousness is an outgrowth of the past of the race and of the present processes we call communication, sympathy, and coöperation. So the so-called particular, momentary need is in reality the focus of the social situation. Moreover, from this point of view the universal is an abstraction considered apart from the particular; the true universal or standard is method, which has its validity in the efficient realization in the particular.

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PHILOSOPHY.

Nature of Man; Studies in Optimistic Philosophy. ELIE METCHNIKOFF, Professor at the Pasteur Institute. English Translation edited by P. Chalmers Mitchell, M.A., D.Sc. Oxon., Secretary of the Zoölogical Society of London. New York and London, G. P. Putnam's Sons, 1903. Pp. xvii + 309.

Dr. Metchnikoff, 'one of the high priests of Bacteriology and a guardian of the Pandora's box of modern times' (p. iv), has proposed an ambitious program in this work. On the whole, it is an attempt at a theory of the future of humanity, based on 'a new faith, that in the all-powerfulness of science' (p. vii). In this large connection it is assuring to be told, by Dr. Mitchell, that 'for the first time proper knowledge has been brought to the task' (p. vii). Whether the author will thank his sponsor for a somewhat rhetorical testimonial is another affair, with which we need hardly trouble here.

The book might be characterized as the last of four main steps in the development of a certain line of post-reformation thought. First came the old materialism, with its occult, crass substance or unknowable matter; with its consequent phenomenalism of masses and substances related to one another according to mechanical laws; and with its deterministic doctrine of human nature. It may be interesting to note that it is not very long since this view, now abandoned, arrogated

to itself the notion that 'for the first time proper scientific knowledge has been brought to the task.' Followed the classical idealism of Germany which, basing on man's ideal nature, found a last refuge for a hyper-rational interpretation of human life. Then theological agnosticism appeared, with its blow-hot, blow-cold views, and attempted to rend the seamless garment of experience. Now Dr. Metchnikoff makes his entry and, like the lean kine of the vision, calmly devours all these fattened oxen. In the circumstances, his plan takes on large outlines; so, after showing the futility of religio-theological and of philosophical theories, he proceeds to a sketch of human nature as it is and of its accordant future destiny. Admirably equipped for this task on certain biological lines, as every expert is aware, his outfit otherwise hardly inspires like confidence in his ability to carry the great issue to successful conclusion. One is inclined to recall the useful adage, that the cobbler should stick to his last. In particular, our author seems to rely to a great extent on psychological conditions for the solution of his problems. Yet, his psychological basis, so far as it presupposes competent knowledge of what is now accepted by psychologists, appears somewhat slender. Indeed, his comparative disregard of all that our knowledge of man's psychological organization involves is one of the most interesting and tell-tale features of his book.

Briefly stated, the thesis runs as follows: The first men, being 'probably ingenious children, born of anthropoid parents' (p. 59), their descendants have become the prey of certain disharmonies, thanks to the operation of evolution. There are disharmonies due to the presence of vestigial and inimical (*e. g.*, the digestive tract) physiological organs. Again, there are disharmonies connected with the organs of reproduction, and consequent disharmonies in the family and social instincts. Finally, there are disharmonies in the instinct of self-preservation. At best, religions and philosophies have been unable to do more than palliate these evils. It remains for science to find a real cure. "Science has undoubtedly gone far in the successful treatment of disease, both as regards prevention and cure, but it is powerless before those other evils from which Buddha implored his father to grant him exemption—old age and death. * * * Not only is no remedy for old age known to science, but little or nothing is known with regard to that period in the lives of men and animals. It was no easy task to compress an account of the present position of medicine within a few pages, the subject matter being overwhelming in quantity. With regard to old age it is quite the contrary, our knowl-

edge being so limited that the subject may be dealt with in a few lines" (p. 229). Now, old age and death are caused by "the atrophy of the higher and specific cells of a tissue and their replacement by hypertrophied connective tissue. * * * So universal a symptom of old age is the invasion of the tissues by macrophags that it must be regarded as of immense importance. * * * The human race has inherited from its ancestors an enormous large intestine and conditions favourable to the life of bacteria. It has to endure the disadvantages of this heritage. On the other hand, the brain of man is very highly developed, and with the increase of intellectual power has come a consciousness of old age and death. Our strong will to live is opposed to the infirmities of age and the shortness of life. Here lies the greatest disharmony of the constitution of man" (pp. 238, 242, 253). If science can acquire command over the physiological factors involved, it will acquire power over the disharmonies, to their transformation. Its aim must be to safeguard man against the invasion of the higher elements by phagocytes, and thus to render natural death, which is 'probably a possibility,' an 'actual occurrence' (p. 277). When this is accomplished, the instinct for natural death will appear, or at least, man will be placed in a position to cultivate it. "Old men, in spite of their attachment to life, do not attain the capacity to know all that is good in it, and die, in the fear of death, without having known the instinct of death. They may be compared with unhappy women who have married before their sexual instincts have awakened and who have died in childbirth, without ever having known the real joy of loving. * * * The advancement of civilization and of medical knowledge has greatly reduced the number of such unhappy women. We must hope that the progress of knowledge will bring about a similar advance in relation to the instinct of death. With that progress, the number of men who will live until the instinct has been attained will become greater and greater" (pp. 283-284).

All in all, the book must be judged stimulating and suggestive, abounding, as it does, in original points of view; besides, it is marked by a species of optimism that cannot fail to win upon the reader. But it is very feeble on the philosophical side, unsatisfactory on the psychological, and, on the whole, based on premises far too narrow to bear the magnitude of the conclusion. Nevertheless, Dr. Metchnikoff's sensitiveness to problems of this character cannot but be cited as one of the many encouraging signs of the times. They are not new, nor are the remedies few; even if, to an inquirer who has suddenly come upon them from an unusual angle, they may seem startling, and the remedy one and one alone.

R. M. W.

Transitional Eras in Thought with Special Reference to the Present Age. A. C. ARMSTRONG, Ph.D.,||Professor of Philosophy in Wesleyan University. New York, The Macmillan Co., 1904. Pp. xi + 347. \$2.00.

Professor Armstrong has occupied a field which has long lain open and in need of tilling. His method of preëmption has many things to commend it. Most of all, he contrives to maintain a remarkably judicious attitude, which makes for confidence in his guidance. Chapters I.-V. are admirably executed; while, partly by contrast with these, partly from their inherent hesitancy, chapters VI. and VII. suffer by comparison. They are limited, as it seems to me, by absence of a definite, constructive standpoint, as if the author himself were caught up in the swirling eddies of transition.

The most valuable feature of the work is to be found in its suggestiveness. Passages which set one thinking are by no means infrequent. If taken as texts, they are found to contain ideas which might well be developed at some length, and to much profit. The following may serve as illustrations. "Often as the variations in scientific theory have wrought their momentous consequences in human thinking, it has been their reflex effect on other departments of thought—philosophy, for example, or religious faith—that has constituted the chief element in their influence"(pp. 8-9). It is a well established fact that Newton, the Deists, and their orthodox opponents, all contemplated the same general view of the universe, which might well be termed neither Deistic nor anti-Deistic, but Newtonian. The passage on pp. 20-21, noting the rise of ethical systems in stages of intellectual transition, might surely become the theme of a fascinating volume. For, 'the disappointment which scepticism breeds is never so acute in the intellectual as it is in the moral stage' (p. 32). Similarly, much wisdom is concentrated in those brief sentences: "Wherever we strike into the stream of religious change, how plain it is that the movement is in fact a reformation of faith and practice, rather than an abandonment of them" (p. 61); "Important also was the lack of historic insight into the origin and growth of human institutions which formed so marked a characteristic of eighteenth-century reflection and made it an easy prey to the passion for reform by means of artificial re-creation" (p. 69); "Despite the mordant character of their doubt * * * the negative thinkers of the time are peculiarly sensitive to the claims of the spiritual nature, * * * they are animated by a constructive impulse in matters of morals and faith, even when the principles from which they start constrain them to reach results which are for the most

part meagre, in some instances little better than grotesque" (p. 85). And here is a wise passage, which explains many puzzles in the prevalent attitude of science: "The scientific investigator is not haunted by the lurking suspicion that after all his work may be illusory, because it is given to no finite mind to reach the truths which form the goal of his inquiries. If a mistake is made, it is incidental to the general fallibility of human thinking. If a new discovery takes the place of some time-honored theory, thought does not dwell in sadness on the limitations of human intelligence, but rejoices that once more an addition has been made to the long series of triumphs over the mysteries of nature. * * * The most poignant distress engendered by transitions in thought is therefore unfamiliar to the scientific mind" (pp. 96-97). The account of the manner in which the success of science in recent times has acted as a check upon the development of scepticism (p. 111 ff.) presents points at once original and attractive. Attention should also be called to the judicious remarks on the fallacies inherent in such otiose metaphors as 'the social mind,' 'the social organism,' and the like (p. 209 ff.). In the same way, many irritable and irritating theologians would do well to digest the practical applications of these passages: Jesus "centered his labors and those of his disciples upon the redemption of the individual, leaving the redemption of the community to follow from the regeneration of its members" (p. 231); "Christian men and the Christian church should shrink from the peril of bringing discredit on the faith by a timorous literalism, which, forgetting the example of the Master and his early followers, hesitates to live in the light of open day, to bring religion into touch with the needs and the movements of the times" (p. 237).

As I have indicated, the treatment of the 'faith philosophy' leaves much to be desired. It is indefinite and lukewarm, to some extent even encouraging obscurantism. It would have served the purpose better had Mr. Armstrong taken more decisive ground in working out his acute view, that these movements 'belong still in the era of confusion' (p. 295), with strong emphasis on 'confusion.' In a word, he has permitted his materials to dictate to him here, and so has failed to mold them to his will. One other blot. In places the style makes needless demands on the temper. "Revolutionary in their significance because subversive of accepted views concerning the origin of species, his conclusions were based on so broad an induction from the facts, as in themselves they were so carefully wrought out and with so close observance of the rules of scientific investigation, that they established for modern thought a principle which had hovered before the mind of

thinkers since very early times, but which has waited until the middle of the nineteenth century for its definite confirmation" (pp. 158-159). I call attention to this for a reason which appears in the next paragraph.

The book ought to prove most useful to teachers who insist upon thought from their students. As a text, tending to stimulate thinking rather than memory, it is to be commended highly. In this regard I press it upon the attention of my colleagues, showing my faith by works—I have already prescribed it. My anticipation is that it will effect not a little to prevent that besetting sin of the 'bright' student, 'the fallacy of hasty and exclusive application in the employment of a new theory of inherent and comprehensive value' (p. 183). There is a good working index.

R. M. W.

ÆSTHETICS.

Einfühlung, innere Nachahmung, und Organempfindungen.

THEODOR LIPPS. Arch. f. d. ges. Psych., 1903, I., 185-204.

The author here makes a strong presentation of the theory that the cognitive element is absent or at a minimum in the æsthetic impression. "The specific character of æsthetic enjoyment lies in the enjoyment of an object (Gegenstand) which, in so far as it is the object of enjoyment, is not object, but subject." This process of fusion he calls 'Einfühlung.' It is the fact that the opposition between the subject and the object disappears, or rather, does not exist.

All æsthetic impressions are derived ultimately from sensory presentations or representations. When one views a graceful movement he becomes identified with the movement in his consciousness; and, in so far as one can speak of the spatial relations of consciousness, he is right there in the place of action. This losing of one's self in the action is the 'innere Nachahmung.' This æsthetic imitation extends also to situations in which there is no actual, but merely suggested movements or strain. There is a tendency to realize the suggested movement in self and this tendency is satisfied by seeing the movement in the object. The same principle applies to attitudes, strains, forms, especially architectural, whether real or suggested.

The organic sensations in question he calls induced strains and his main proposition is that these induced strains, as such, have no significance whatever in æsthetic enjoyment. Hence he rejects the views to the contrary in three forms: (1) The confusion of these induced strain sensations with the feeling of activity, the feeling of effort, etc.; (2) that these sensations constitute the ground of the æsthetic enjoyment or contribute toward it; and (3) that the æsthetic enjoyment

consists in having these organic sensations. 'Einfühlen' is not to feel something in one's body, but to feel one's self into the æsthetic object. In short, organic sensations do not enter into the æsthetic enjoyment, and it is the duty of scientific æsthetics to recover itself gradually from this 'Organempfindungskrankheit.'

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Ein Beitrag zur Experimentellen Æsthetik. OSWALD KUELPE.
American Journal of Psychology, Vol. XIV., pp. 215-231.

In this article Professor Kuelpe reports some preliminary tests in experimental æsthetics, which he made in order to determine what factors were present in the judgment of an æsthetic object.

By means of a projection lantern a picture 1.5 meters in diameter could be thrown upon a screen, and at the end of three seconds could be instantaneously cut off. The twenty-eight pictures he used in these experiments were chosen for variety, and he selected those that would be unfamiliar to a person having only an ordinary knowledge of art. They included human figures, and objects such as ancient buildings, temples, and columns.

The observers sat in a dark room, four meters in front of the screen. They were told that a picture would be shown them for three seconds only. Their instructions were to look attentively at the picture during the three seconds, and at the end of that time to give as full an account as possible of it, stating whether it had seemed pleasing, displeasing, or indifferent, and what particular things had attracted their attention. They were asked to sit as passively as possible but to report any tendency to movement they felt. In order that the three observers might always begin their observations at the same place in the picture a fixation point was first thrown upon the screen. Two seconds before the picture was projected the subject was warned by a 'Jetzt' to look at the fixation point. As soon as the picture was seen he was free to observe it in any way he wished. The reports of the three observers differ greatly. Professor Kuelpe does not find the æsthetic sympathy (Einfühlung) which Lipps points out as the essence of æsthetic enjoyment. Color and brightness play a great part in forming the judgment of a picture; but as only three of the slides were colored, the factor of color could not be a prominent one in his experiments, nor had it a constant effect. One subject failed to notice the colors, another found them very pleasing, while the third was indifferent to them.

Brightness in itself was not important, but the relative brightness of the different parts, the lights and shadows, often caused the subject

to comment on the technique of the picture. Much of the enjoyment was due to the form, arrangement, proportion, symmetry, and harmony of the objects depicted, and the dislike was due to the lack of one or more of these factors, but more pleasure was found in the meaning, the real significance of the picture as a whole. This is the more striking as a full understanding of the picture could scarcely be obtained in the short time during which it was seen.

One observer found a unity in every picture. The principle of unity and gradation of interest (*Einheit und Abstufung des Interesses*) which Professor Kuelpe has spoken of elsewhere,¹ greatly influenced the judgments of this one observer. The other two observers found pleasure in the variety of ideas. To them the pictures were seldom too uniform or too monotonous, since in general in the short time of exposure the attention was kept fully occupied with the objects in the picture. In the judgments of these observers Professor Kuelpe thinks that the principle of fitness (*Zusammengehörigkeit*), which he has formerly described,² has had more influence than the principle of unity. The principle of fitness he feels was an important factor in the judgments of all three of the observers.

In the recognition of the idea or significance of the picture we have the source of pleasure which Aristotle pointed out in his *Poetics*. The associations and memories awakened are those which are embraced under Fechner's association principle, and can in part be traced back to the 'æsthetic sympathy' of Lipps.

All the observers felt sensations of movement, a tendency to imitate the attitude or the motion seen. But as these sensations became pronounced only when the objects were human beings in unusual or peculiarly lifelike attitudes, Professor Kuelpe does not think they are of general significance. He finds in these experiments additional evidence in support of his former criticism of Groos' 'inner imitation' theory. The 'æsthetic sympathy,' which Lipps says is typical, he finds, in spite of careful questioning, to be scarcely present at all when Doric and Corinthian columns were the objects looked at.

Professor Kuelpe points out the need of further investigations in this field, which he has just opened up. He suggests a greater variety of pictures, an increase and decrease in time, and a different type of observers. His observers were all men and trained psychologists. The individual differences found in their judgments makes it seem probable that children and others untrained in art would differ still

¹ *Vjs. f. wiss. Philos.*, XXIII., 170 ff.

² *Götting. gel. Anz.*, 1902, 909 f.

more greatly. If care is taken in recording and analyzing the statements of the observers, the systematic carrying on of experiments by this method would, he feels sure, throw light on the criterion of judgment of æsthetic objects.

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- Recherches algésimétriques.* J. IOTYKO and M. STEFANOWSKA. Brussels, Hayez, 1903. Pp. 86.
- Rapport Quinquennal sur les travaux du Laboratoire psychologique Kasimir (Université de Bruxelles).* [MLLE.] J. IOTYKO. Brussels, Hayez, 1903. Pp. 20.
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- L'Année Psychologique; Xe année, 1903.* ALF. BINET and others. Paris, Masson, 1904. Pp. 680.
- Edgar Poe, sa vie et son œuvre.* EMILE LAUVRIÈRE. (Bibl. de phil. Contemp.) Paris, Alcan, 1904. Pp. 732.
- La mimica del pensiero.* SANTE DE SANCTIS. Milano, R. Sandron, 1904. Pp. 209.

NOTES AND NEWS.

THE International Congress of Arts and Science, which is to be held in connection with the Exposition at St. Louis, will meet September 19 to 25, 1904. We note the following from the official program. The first day is to be devoted to the Opening Exercises, at 3 p. m. On September 20 the seven Divisions hold meetings at 10 a. m., one address in each Division. Division A, Normative Science, includes Philosophy; the speaker is Professor Josiah Royce, of Harvard. Division D, Mental Science, includes Psychology; the speaker is President Hall of Clark. Following this are the meetings of the Departments. Philosophy meets at 11.15 a. m., with Professor A. C. Armstrong (Wesleyan) in the chair; the speakers are Professors A. E. Taylor (McGill) and A. T. Ormond (Princeton). Psychology meets at 2 p. m., with Professor Noah K. Davis (Virginia) in the chair; speakers, Professors J. Mark Baldwin (Johns Hopkins) and J. McK. Cattell (Columbia). On the four following days the meetings of the Sections are to be held, sessions lasting from 10 to 1, and from 3 to 6. The arrangement for these, which is provisional, however, and subject to alteration, includes the following. Social Psychology, September 21, 3 p. m. Psychiatry, September 22, 10 a. m. General Psychology, September 23, 10 a. m. Experimental Psychology, 3 p. m. Comparative Psychology, September 24, 10 a. m. Abnormal Psychology, 3 p. m.

It is with very great regret that we record the death, at the age of sixty-one, of M. Tarde (Jean-Gabriel de Tarde), the distinguished sociologist of Paris.

MR. W. M. STEELE, assistant in the Yale Psychological Laboratory, has accepted a call to a professorship of philosophy in Furman University, Greenville, S. C. Mr. Steele will take up his duties in September.

THE *Année Psychologique*, the tenth volume of which has just come to hand, is from now on to be published by the Librairie Masson, 120 Boulevard St. Germain, Paris. It will appear regularly in the month of June.

AT a meeting of the Yale Corporation, held June 27, the resignation of Professor George T. Ladd from the chair of moral philosophy and metaphysics was presented and accepted, to take effect at the close of the college year 1904-5.

PROFESSOR E. H. SNEATH, of Yale University, has been transferred at his own request to the headship of a department of the the-

ory and practice of education. Professor Sneath will organize the work in education at Yale, including a summer school, the first session of which will be held in 1905.

THE following items are taken from the press:

DR. H. AUSTIN AIKINS, professor of philosophy in Western Reserve University, is in Europe on leave of absence for the coming year.

AMONG the lecturers announced for the Glenmore Summer School of the Culture Sciences (July 11 to September 3) are Professor C. W. Bakewell, on 'The Philosophy of Plato'; Dr. E. G. Spaulding, on 'Dogmas in Philosophy and Science'; and Professor J. Mark Baldwin, on 'Social Psychology.'

MLLE. JOTEYKO, lecturer on psychology in the University of Brussels, has been elected vice-president of the Neurological Society of Belgium.

DR. THADDEUS L. BOLTON, assistant professor of philosophy at the University of Nebraska, has been made professor of psychology at the same institution.

AMHERST COLLEGE has conferred the degree of doctor of laws on Dr. J. H. Tufts, who has recently been appointed head of the department of philosophy of the University of Chicago.

CONTENTS OF THE MAGAZINES.

AMERICAN JOURNAL OF PSYCHOLOGY, XV., 2. The Soul — A Study of Past and Present Beliefs: *L. D. Arnett*. General Intelligence Objectively Determined and Measured: *C. Spearman*. Miscellany.

ANNÉE PSYCHOLOGIQUE, X. La création littéraire. Portrait psychologique de M. Paul Hervieu: *A. Binet*. La biologie et la psychologie d'une araignée: *Lecaillon*. Un cas d'amnésie continue, avec asymbolie tactile, compliqué d'autres troubles: *Bourdon et Dide*. Sommaire des travaux en cours à la Société de psychologie de l'enfant: *A. Binet*. Méthodes de mémorisation: *Larguier des Bancelis*. Questions de technique céphalométrique: *A. Binet*. Herbert Spencer et Charles Renouvier: *H. Michel*. Sur la sensibilité de l'oreille aux différentes hauteurs des sons: *Zwaardemaker*. La graphologie et ses révélations sur le sexe, l'âge et l'intelligence: *A. Binet*. Revues générales. Analyses bibliographiques. Table bibliographique.

THE PSYCHOLOGICAL BULLETIN

HUMANISM.¹

A reviewer of *Humanism* has an unusually hard task set him and one whose accomplishment he is bound to view with dissatisfaction. For he must either sacrifice its rich variety of concrete content to a statement of a few generalized features; or he must, in behalf of a scheduling and summarizing of detached essays on a multitude of different subjects—as different as ‘Mephistopheles,’ ‘Non-Euclidean Geometry,’ ‘Darwinism and Design,’ ‘Lotze’s Monism,’ etc.—forego a consideration of what gives the book a claim to be a representative of a single philosophic point of view, the herald of a philosophic system which, if not so new nor yet so unformed in the ages from Plato to Hegel as Mr. Schiller seems to suppose, yet issues in fresh, clarion tones from his trumpet. And in this dilemma the present reviewer elects to stand with the Schiller of the title-page and the preface rather than with the Schiller who in the dozen years between 1892 and 1902 wrote fifteen interesting and most suggestive, but somewhat detached, essays. In a word, it is the general tone and temper of the book that seem to me significant, and to which I shall devote myself, even at the expense of inevitable passing over of pages of fresh and pregnant philosophic construction and criticism—even at the cost (to which it is somewhat harder to reconcile myself) of not recording my almost total dissent from the positions taken in the essays entitled ‘Activity and Substance’ and ‘Philosophy and the Scientific Investigation of a Future Life.’

First, then, as to Humanism itself—not the name, but the fact. What is that attitude which as Mr. Schiller naïvely says—for as even Homer nods, so a sense of humor occasionally fails even Mr. Schiller—he ‘knows to be habitual in William James and in myself, and which seems to be sporadic and inchoate in many others’? The answer is

¹ *Humanism. Philosophical Essays.* F. C. S. SCHILLER, M.A. London, Macmillan & Co. 1903.

that as a philosophic standpoint and method it "takes Man for granted as he stands and the world of man's experience as it has come to seem to him. This is only the starting point, from which we can proceed in every direction, and to which we must return, enriched and with enhanced powers over our experiences from all the journeyings of Science" (pp. xvii-xviii). Or again, Humanism is "content to take human experience as the clue to the world of human experience, content to take Man on his own merits. * * * To remember that Man is the measure of all things, *i. e.*, of his whole experience world, and that if our standard measure be proved false all our measurements are vitiated; to remember that Man is the maker of the sciences which subserve his human purposes; to remember that an ultimate philosophy which analyzes us away is thereby merely exhibiting its failure to achieve its purpose, * * * is the real root of Humanism" (pp. xix and xx).

Humanism thus conceived seems to me a method not only sane and sensible, but inevitable almost to the point of the truistic, and it required the chorus of objections in which a dozen critics have joined in the last few months to persuade me that there was, as a standpoint, as a method, anything particularly novel, not to say revolutionary, involved. But the critics with one voice have acclaimed this point of view as subjective, irretrievably so, as individualistic, as solipsistic. When Mr. Schiller remarks that if Man as the standard measure be proved false all further measurements are thereby vitiated, he has, to my mind, answered the critics by anticipation. The standpoint cannot fairly be labelled as per the above, unless the human nature which is taken as furnishing the key and clue to human experience be purely subjective, be enclosed within an exclusively psychical individuality. And if such be the case, it is clearly impossible for this individual to transcend these limits in his philosophizing any more than in any other of his industries or pursuits. The critic has indeed, in such case, the right to condemn 'Humanism' as sceptical and solipsistic in tendency; but his right is earned and maintained only at the cost of putting his own critique and his own philosophizing in the same boat. He has pursued the expensive process of fatally disparaging the organ and medium of all science and philosophy in order to put in an unfavorable light a particular method which he does not like.

But surely a thinker may freely avow that he is going to take Man as he finds him, rather than as he might fix him up to be, and is going frankly to recognize that Man so taken is the measure of experience, without thereby having committed himself to 'finding' Man made of

stubble blown together on a quicksand. Even the Scriptures give us the right to think of Man as composed of a substance as tough, even if as plastic, as clay. It is not clear to me why it is not as open to Schiller, to James, to myself (it is the critics who embolden me to this temerity), as to others to make use of whatever universal and objective factors enter into the human make-up. But as for building upon a hypothetic universality which exists not in everyday concrete human nature, as observation and description, history and analysis reveal that human nature; which exists only in projections which are the special monopoly of philosophy, and which turn out to be projected by a humanity which in its immediately present constitution is only subjective and individualistic — that is a flight which I am willing to deny myself. Meantime there are those who do not share in these pessimistic views of human nature, even 'as it is,' those who take a more generous view not merely of its possibilities, but of its actualities; who, indeed, are loath to speak of its possibilities save as there is found for them a basis in the actualities.

Humanism necessarily assumes a sympathetic, not an antagonistic attitude towards all the natural sciences. This is not because it reduces philosophy to naturalism, but because it finds it can draw freely upon the methods and results of the sciences in forming its conception of Man as the Measure, or in applying this measure to this or that realm of experience. It is no surprise accordingly to find where Professor Schiller stands as regards the contemporary *crux*: the relation of philosophy to psychology. At many points, most notably throughout the important essay on Truth, he shows himself a thorough disbeliever in that modern revival of the old time heresy of two-fold truth, which holds that something may be true for psychology, and false or else meaningless for logic (and *vice versa*); while he insists upon the renascence of logic which is bound to come when thinking, when truth seeking and testing, is considered in its concrete implications with the emotive and voluntary life. And when the critics object that we have here confusion of merely descriptive science with normative and evaluative science, they make their point (as in the case already noticed) by first ignoring the real position of those whom they criticize, and then by attributing to them the critic's own beliefs.

For the contention of the humanist is precisely the unreality of the separation from each other of describable facts and normative values. The humanist really believes that values *are* normal, even to the extent of being current in life itself. Hence, aims, ideals, standards, are a part of the facts which psychology itself has to reckon with.

The factual continuity of biological function and psychological operation with logical norm is one of the most significant things to be noted and described. Similarly the humanist, while feeling the social sciences to be especially near to him, will not balk at any method or datum of the physical sciences, because the physical sciences help one in forming a right conception of what Man the Measure is, and, as Mr. Schiller puts it, of how Man measures, and by what devices one may make concordant his measures with those of his fellow-man. The humanist is thus able to transfer the conception of the unity of all knowledge, which to the epistemological idealist is a barren postulate of an ultimate but unrealizable achievement, into a working postulate of present method. It becomes the idea of the *continuity* of experience; the only idea, so far as I can see, which saves us from the mutually sterilized, and hence sterile, nothing of the natural and the ideal in which the transcendentalist indulges, and from the wholesale merging of the spiritual in the natural which is the materialist's objective.

In the second place, characteristic of Mr. Schiller's work is a worthy and adequate recognition of the significance of experience in its *immediate* aspect. Were not the term sure to be misconstrued as one of denial (that is, of the mediate as real), humanism as expounded by Mr. Schiller might almost be termed *Immediatism*. This phase of his thought is so well wrought out in what seems to me the ablest essay in his volume, that 'On Preserving Appearances,' that I need hardly do more than refer to it. "The only reality we can start with is our own personal, immediate experience. We may lay it down therefore that *all immediate experience is as such real, and that no ultimate reality can be reached except from this basis, and upon the stimulation of such immediate experience.* * * * The distinction of 'appearance and reality' is *not* one which transcends our experience, but one which arises in it. It does *not* constitute a relation between our world and another, nor tempt us to an impossible excursion into a realm inexorably reserved for the supreme delectation of the Absolute" (p. 192). And the same may be said of course of the distinction between the absolute and the relative, the finite and the infinite, the real and the ideal, subject and object, and all the other antitheses which are dear to philosophy's heart. They all arise *within* immediate experience. And to quote further from Mr. Schiller: "The process of reaching them is everywhere the same; we experiment with notions which are suggested to our intelligence by our immediate experience, until we hit upon one which seems to be serviceable for

some purpose which engrosses us. * * * They remain on the same plane of interpretation, and all alike are attempts, more or less successful, to supplement some unsatisfactory feature or other in our primary experience" (pp. 193-194). Here I shall simply add what indeed Mr. Schiller does not deny, but hardly seems to realize the full force of: the necessity of the *genetic* method to put before us (1) the *meaning* of philosophic categories and philosophic antitheses, in terms of their *origin* in typical crises or junctures of immediate experience, and (2) the *validity* of such conceptions in terms of their relative success witnessed in their further career in 'supplementing the unsatisfactory features' which called them out. It is this methodological feature which, so far as I understand the matter, specially characterizes the recent *Studies in Logical Theory*, rather than a broader Humanism on one side, or a narrower Pragmatism on the other.

In the third place, a feature which used to be called Voluntarism, which is now termed Pragmatism, and which personally I should, for reasons which I shall not go into, prefer to call Instrumentalism, is characteristic of Mr. Schiller's thought. In his own words: It is the "thorough recognition that the purposive character of mental life generally must influence and pervade also our most remotely cognitive activities. * * * It is a systematic protest against the practice of ignoring in our theories of Thought and Reality the purposiveness of all our actual thinking, and the relation of all our actual realities to the ends of our practical life. It is an assertion of the sway of human valuations over every region of our experience, and a denial that such valuation can validly be eliminated from the contemplation of any reality that we know" (p. 8). Or, as he develops one phase of it in a footnote which contains some of the most pregnant thinking of the entire volume (pp. 11 and 12), it is the recognition that knowing is itself a kind of action, which like any mode of action modifies the world of reality in which it occurs, the objects at which it is directed. In my judgment the volume would be noteworthy if it advanced only this one idea: that it is sheer superstition, crude survival, that knowing simply reveals a nature which Reality already has, not affecting or transforming or farther determining it in any way. "The determinate nature of reality does *not* subsist 'outside' or 'beyond' the process of knowing it," and all our knowing is a mode of action in which the known reality gains more specifically determined character — this is an Idealism which is experimental, not merely epistemological, and which is ethical, not merely intellectualistic, and which, so far as I can see, alone makes possible a metaphysic which in truth and not merely in word acknowledges Evolution.

This is little enough to say of Mr. Schiller's Pragmatism. But it ought to be enough to suggest, (1) that it is *one* feature of Mr. Schiller's thought, not the 'whole thing.' It is an important feature, indeed; but it gains its especial prominence just now because of the persistent ignoring in current epistemology of psychological, biological and sociological teachings as to the intimate connections of thought processes with larger emotive and volitional issues. I confess to surprise that its critics have not recognized that if this phase of the new philosophic movement is at times exaggerated beyond its due import, this exaggeration is simply a natural reflex of the prevalent minimizing of it. In any case, there is no excuse for the view which identifies this philosophic movement, in head and in members, with just and only pragmatism. Mr. James, who surely ought to know since he gave the term its present currency, has used it only to express a certain method of testing and evaluating philosophic conceptions. He has never designated the *substance* of his philosophy (as distinct from one aspect of its method) anything but Radical, or Pluralistic, Empiricism. The category of purpose is *a* category, not the only one, and it is a category which, like any other, has its own specific conditions and function within experience; it is not *a priori*, and externally determinative.

(2) There is nothing in pragmatism which commits it to a narrow or offensively practical conception of 'Practice.' I would not say that there are no serious problems involved in getting a sufficiently broad and comprehensive conception of Practice, of conduct: to define Practice is no easy matter. I would not say that Mr. Schiller, in particular, has not moments in which he gives coloring to the claims of the critics that knowledge is relegated to a mere utilitarian device. But how unnecessary this is appears from the scope of his own definition: "The purposive character of mental character must influence and pervade also our most remotely cognitive activities."

(3) And the sapient remark of almost all the critics that theory is itself a form of action, that knowing too is a mode of practice, instead of standing as a charge or accusation, only repeats one of the most cherished convictions of pragmatism. The only difference is that pragmatism in holding to knowledge, to intellectual operations as a mode of activity, does not believe in the reality of an activity which is confined merely to mirroring, to re-presenting, a preëxisting reality. It believes that activity really effects, really counts, really constructs; and that in so doing, it actually modifies Reality, entering into its own inherent evolution. And this by its inherent and primary, not by a derived and accidental law.

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PSYCHOLOGICAL LITERATURE.

ÆSTHETICS.

Die Geschmackvolle als Besonderheit des Schönen. C. M. GIESSELER, *Zeitschr. für Psychologie*, XXXIV., 81-110.

The author of this paper attempts to distinguish the tasteful from other categories of the beautiful, to show its relation to sensual taste, and to find for it a general characterization.

The distinction of the tasteful from other forms of the beautiful is three-fold. First, it deals only with elements that are pleasing, while the beautiful in general may include elements that are not in themselves pleasing. Poetry, painting, plastic art and music, for example, may deal with the ugly, the sad, or the bad, and yet be beautiful. The tasteful, however, deals only with artificial objects, and not with the beauties and forces of nature; hence it must be distinguished from the sensuously beautiful on this side, as from art proper on the other. Second, in the other types of the beautiful a single group of elements predominates, everything else being sunk in them. In the tasteful there is no such concentration, but a large number of elements work equally in producing the result. Prominence of parts is a desideratum in the tasteful, and we find various schemes of modifying form, or diversifying color, or adding ornaments, to emphasize various details of the object. The added ornaments are for the purpose of bringing in new elements to mix with those naturally in the object, and thus enrich the complex. Third, in other categories of the beautiful actual emotions are roused, the depth to which the individual is absorbed in them depending on the form of the art; in architecture it is least, *i. e.*, the emotional element is most restricted. In the tasteful the emotional is altogether absent, or rather is restricted to feeling tone, under which the esthetic sympathy with the cognized elements occurs.

The obvious relations between the tasteful and sensual taste are likewise three-fold. First, there is an analogy between the stimuli of taste sensations and the tasteful object, which is most marked in regard to color combinations, these being the 'kernel' of the tasteful. We have the tastelessness of plain colors corresponding to the flatness of unseasoned food; essential relationships of likeness in color schemes

corresponding to gravy with meat dishes and sweet sauce with sweet dishes; contrasts and sequence effects in colors as in taste stimuli. Second, there is an analogy in the availability of foods and tasteful objects: taste is pleasingly stimulated ordinarily by substances which have a certain food value and which are soluble, and similarly esthetic taste depends on the object having a certain spiritual food value through its associations, and on its separability into its elements through discrimination. Third, there is an associative relation between taste sensations and the esthetically tasteful. Garnishing of victuals rouses appetite and heightens enjoyment; fresh lawns, through association with salads, rouse salivary ideas. Tasteful metal dishes are associated with metallic taste which we get from copper, steel and iron directly, and which gold and silver rouse by association through the touch and temperature sensations in the mouth.

The fundamental characteristic of the tasteful is that it depends on an idealized touch feeling. This accounts for the peculiarities of quantity and quality of elements and intensity of esthetic sympathy mentioned above, and for the application of the name, since the interior of the mouth is the seat of the finest touch discrimination, and taste sensations are always connected with these tactual stimulations. The definition in which the author sums up the principle of taste is as follows: 'The esthetic sympathy in the tasteful consists in a fantastic handling of the corresponding substratum in the light of the ideal feeling tone excited by it.'

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PHILOSOPHY.

Scottish Philosophy in its National Development. HENRY LAURIE.

Glasgow, James Maclehose and Sons, 1902. Pp. 337.

Professor Laurie was justified in thinking that a concise statement of the course of philosophy in Scotland would be acceptable to many readers. Monographs upon individual Scottish thinkers — Hutcheson, Hume, Adam Smith, Reid, Hamilton — are not lacking. Scottish philosophy as a whole was treated by the late Dr. McCosh with zeal and thoroughness. There is room, however, for a brief presentation, from a present day point of view, of the contribution of Scotland to philosophic thought. Of the fifty or more names included in Dr. McCosh's plan, less than a third are retained in this volume, and unimportant details are neglected. Professor Laurie has produced a readable and interesting book, in which narrative, exposition and criticism

are judiciously combined. A significant addition is made to Dr. McCosh's list in the chapter on Ferrier, whose speculative independence and ingenuity prefigures the change which the national tradition has undergone during recent years.

The reason for a separate chapter on 'Æsthetic Theories' is not quite apparent. The discussion of recent developments of thought is meager. This is doubtless because of the restraint which one feels in speaking of contemporaries; yet it would seem possible to furnish an account of the work of Bain, Fraser, Stirling, the Cairds, etc., without danger of injustice or indelicacy. If any general criticism were to be made, it would perhaps be that the treatment lacks perspective and incisiveness; the reader is furnished with a series of sketches rather than with a historic evolution such as the title seems to promise. Professor Pringle Pattison's *Scottish Philosophy* may be advantageously used as complementary to this volume.

Descartes, Spinoza and the New Philosophy. JAMES IVERACH, D.D. The World's Epoch-Makers Series. New York, Charles Scribner's Sons, 1904. Pp. 242.

This is a small book upon a large subject. Within the compass of a dozen short chapters, Professor Iverach undertakes to expound, in their relation to ancient and to mediæval thought, and to modern problems, the systems both of Descartes and of Spinoza. One cannot fail to agree with the author's opinion that 'each of the great thinkers treated in the book might have fitly claimed as large a space as that allotted to the two.'

Professor Iverach writes with animation and clearness, and enables the reader to perceive the reasons for the extraordinary influence of Descartes upon subsequent philosophy. The profound questions which the Cartesian speculation raised, and bequeathed to the future for settlement, are defined with discrimination. The latter part of the volume is less successful. The treatment of Spinoza is so hurried as to be distinctly unsatisfactory. Instead of attempting to trace the development of thought in the *De Intellectus Emendatione* and the *Cogitatio Metaphysica*, it would have been better to devote the limited space to the *Ethics* alone.

EDWARD H. GRIFFIN.

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GENIUS.

Le Moderne Teorie del Genio. R. NAZZARI. Pp. viii + 170.
Rome, 1904.

Part I. refutes the alleged epileptoid degeneration of the poet Leopardi. Part II., Chapter I, is a further refutation of the views of the Lombrosians. It has already appeared as a magazine article and is a highly succesful attempt to rescue great men from the Lombrosian madhouse.

In the latest edition of his *Man of Genius* Lombroso sticks to his first principle that 'genius is due to a cortical irritation of an epileptoid nature, which transforms itself into a psychic epilepsy (p. 256). He defines epilepsy as the effect of a cortical scarification originating from a localized irritation upon a degenerative basis. This definition is safe because so figurative, but Lombroso lays himself open to attack by asserting that recent investigations show that the epileptic attack *with consciousness* is like that which is often noted in genius at the moment of creative activity. It is hard to see how the Lombrosians reconcile attacks even of *petit mal* with the development of the higher faculties, yet Venturi presents the suggestive theory that epilepsy may be a sort of mental reserve force, in which the attack acts as a safety valve. This does not identify epilepsy with genius but makes it favorable to the formation and expression of the products of genius.

In his historic examples Lombroso is weak. Thus, reasoning from an obscure passage in Plutarch he makes Julius Cæsar set out for the conquest of Gaul because thereby he could escape the epileptic malady which became aggravated by idleness. And Dante is made an epileptic because of the frequent references to his falling senseless to the ground in his poems. But beside these inaccuracies and erroneous interpretations there are logical errors. Genius and folly are transformed into genius and epilepsy, therefore, if genius and insanity are cause and effect any fool has traces of immortality. Such absurdities arise because Lombroso exaggerates the abnormalities of his cases and because he fails to distinguish between degeneration of body and of mind. He has not sufficiently considered the biological principles of Darwin and Spencer, viz., that degeneration of certain organs does not necessarily imply the involution of the entire organism, but only its modification. There are here two possibilities: degeneration in correlation with genius may render it unadapted to environment, but the harmony of the total organism is not disturbed in its vital elements because of the abnormal development of neural tissues of higher

functional worth, nor because of the consequent atrophy of the other inferior tissues. In either case the phenomenon of genius, considered in itself, cannot be regarded as absolutely degenerative.

Nisbet is now criticised as the most authoritative of the foreign followers of Lombroso. He errs in putting upon the word madness such non-psychiatric meanings as nerve-disease, nerve-disorder, unsoundness. He too is illogical: if the ascendants of a great man die prematurely it is a sign of degeneration in the family; if they are distinguished for longevity it points 'to a more lingering form of nerve-disorder.' Stretched on such a bed of Procrustes the patients cry in vain for mercy. Like Lombroso, Nisbet makes fanciful historical deductions. Emerson denied the existence of the neurotic in Shakespeare, but here the English dramatist and his family are alleged to have all sorts of organic and psychic deficiencies. It is further said that inspiration, which is the essential quality among writers and artists, is nothing but an automatic activity of the brain cells, a phase of which morbid condition finds higher expression in idiocy. This theory of the insanity of genius is immediately undermined by the introduction of rational restraints, for inhibitive representations preclude the automatic nervous activity previously identified with inspiration.

It is in Germany, concludes Nazzari, that one is relieved to find a sensible reaction against the doctrines of Lombroso. Nordau himself is now rebelling against the doctrines of the master, while others are attacking the problem not theoretically but concretely. Thus Möbius in his study *Ueber das Pathologische bei Goethe* gives first a sketch of the historical environment of his subject, then a summary of his ascendants and descendants, and concludes that the man of genius is an evolutionary product. The vigor of genius, compared with that of the ordinary man, has a tinge of mania (einen maniakalischen Anstrich) which is the clinical expression of hyperphasia of certain parts of the brain, yet this pathological factor exists only up to a certain point and does not interfere with the marvelous productions of genius. This rather vague statement is improved upon by Flechsig, who repudiates the idea of the affinity between genius and insanity, by observing that as soon as artists become insane they lose their creative power, the great capacity for attention in one case being in contrast with the extreme exhaustion in the other. What are the anatomical and histological differences between the normal brain and that of the genius cannot be defined. Discarding the presupposition that genius is always united to a particular structure of a special organization of the

brain, Flechsig concludes that the brain of the genius can be distinguished not only by a degree of greater excitability, but is also more richly and finely organized and has special functional worth when precisely centered under the cranial vertex.

Chapter 2 propounds and discusses the various modern theories of genius. In answering the question, What is genius, Nazzari leans to an objective standard; the best criterion is excellence of production, not mere exceptionality (Renda), for this might be a mark of idiocy. The genius is abnormal relatively to the ordinary man, but not of necessity is he abnormal pathologically (Lombroso). Again, genius is not mere synthetic apprehension of truth (Emerson, Bovia), for originality is also a proper mark. Geniuses may be divided into three classes: artistic, scientific, pragmatic (Joly), but here the problem of invention as a factor of human progress is different from that of the inventor as a man (Baldwin). Why does the genius as contrasted with the madman or the criminal awake admiration, have social capacity, stand as representative of an epoch? It is not because he is a mere *sport* or a variation showing lack of adaptation to environment (Nisbet). Is the genius born or made? Does he reform society because it has formed him? (Spencer.) Finding heredity fortuitous some have recourse to panpsychism. Nor is environment a mere negative influence; it is not an obstacle, but a coefficient, a kind of natural selection to suffocate the inferior. Again, as to heredity, the more complex the organism, the more difficult the integral transmission to descendants. Special talents, mental potencies, tend to be attenuated in the offspring in favor of the typical character. There is no inheritance of cerebro-anatomical structure, but only vague tendencies and predispositions, which perhaps have their base in a certain functional orientation of the nerve cells. The public evaluation of genius is objective and social, the criteria of cerebral development are dubious. Yet the development of the higher centers of judgment and will are most important, otherwise all the madmen presented by Nisbet and Lombroso, who were highly endowed with imagination, should have become geniuses. So too should women, in whom predominate imagination and feeling, but their celebrity is measurable more in relation to sex than absolute worth. Co-education in America has shown the inability of women to rise to original conception and the work of synthesis.

Considering the ease and the rapidity of the achievements, it is erroneous to speak of the brain exhaustion of genius, to make epilepsy equivalent to inspiration, to identify nervous with vital force (Nordau). The organism is not a static, but a dynamic unity. Degeneration is

related to genius as sickness to health; a morbid state may even indicate progression, an orientation of psycho-physical energies toward a more complete harmony, a sign of disintegration preparatory to a higher evolution. The pathological factor may act as an excitant in the case of precocity, as a dissolvent in the progeny of genius. The characteristics of the act of inspiration are impulsiveness, intermittence and unconsciousness, but the mechanical, subconscious characteristics are here no more mysterious than in the normal psychology of association, attention and other primitive phenomena. The irresistibility of inspiration is superficially like the mental explosiveness of the madman and the epileptic, but in them inhibition and self-consciousness are lacking. Not in the mattoid and the paranoic are manifest the laws of psychic resultants (Wundt). Spontaneity, the highest type of genius, is not an infinite capacity for taking pains, but an attitude of finding new combinations: the idea is here not a fixed idea, but a principle of unity in movement. Degenerates may have in common with genius extraordinary mobility and elasticity, they lack the saving sense — good sense. Conversely, certain manifestations of genius are incomprehensible without the reaction of a vast social sympathy; the misunderstood genius is one who has not reached the psychological *optimum*. In the evolution of genius heredity is represented by tradition, rational selection by the critical spirit, spontaneous variations by inventiveness, which last has three factors — intelligence, capacity for work and zeal. The zeal of the genius, the interest in his work, is neither egoistic nor altruistic but disinterested, and it is this absolute disinterestedness which raises the genius to the plane of the hero. (We note some curious misprints on pages 161 and 162 in quotations from Professor Baldwin's works.)

I. WOODBRIDGE RILEY.

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PLAY.

The Psychology of Football. G. T. W. PATRICK. Amer. Journal of Psychol., 1903, XIV., 104-117.

What is the motive which prompts thousands of men and women to watch, under unfavorable circumstances, a college game of football? is the question Professor Patrick puts in this interesting article. He says it is not due to college rivalry, for other contests such as debates and oratorical contests do not bring together as many hundred. It is not a 'new fad,' for it was played in England during the thirteenth century and the interest in the game has increased since that time.

The Schiller-Spencer 'surplus nervous energy' theory and the Groos 'practice and preparation' theory of play are inadequate for explaining this 'peculiar fascination.' He adopts the 'reversion' theory. This fascination is but an echo from the remote brute-man stage of the race. The ancient life of personal combat is mirrored in all plays. This 'peculiar fascination' is but the persistence of deep-rooted race habits.

Football is more sport than tennis or baseball and such games, because it reverts back to activities more primitive. There is a more complete relapse into latent habits and therefore a more perfect rest of the higher brain centers. It is not a return to savagery. There is a momentary return to the serious manners of ages past in order that in the serious affairs of to-day these manners may be more completely left behind.

EDWIN L. HOLTON.

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ANIMAL PSYCHOLOGY.

The Sense of Hearing in Fishes. G. H. PARKER. American Naturalist, 1903, XXXVII, 185-204.

The writer mentions the fact that the earlier scientists believed that fishes could hear, but that Kreidl and Lee, after various experiments, decided that fishes do not hear. He then tells of his own experiments with three kinds of fishes: normal ones, fishes which had had the nerves to their ears cut, and fishes whose skin had been made insensitive by cutting the fifth and seventh nerves, the lateral line nerves and the spinal cord. An aquarium was used which had one end replaced by a deal sounding board with a bass viol string of a vibration rate of forty per second stretched on it so that the vibrations were transmitted to the water. The fishes used in each experiment were confined in a glass cage suspended in the middle, the end of the cage towards the sounding board being open except for a wire netting. One hundred experiments were made on each kind of fish, and it was found that the normal fishes responded ninety-six times, the earless fishes eighteen, and the fishes whose skin had been made insensitive ninety-four times, although they had undergone a more severe surgical operation than the others. Fearing that the bass viol string caused some disturbance in the water, the author substituted an electric tuning fork, which did not jar the aquarium. Making the experiments as before, he found that the earless ones never responded, and that the others generally did. From this he concludes that the killifish (*Fundulus heteroclitus*) can

hear, although the same experiments made on the smooth dogfish (*Mustelus canis*) did not give any evidence of hearing.

He calls attention to the probable development of the ear from the lateral line organs, and of the lateral line organs from the skin, and concludes from some other experiments made with fishes whose lateral line organs had been rendered inoperative, that the skin is stimulated by the movement of the water in surface waves and currents, the lateral line organs by a slight inaudible trembling of the whole mass of water, and the ears by molecular vibrations conducted by the water.

He mentions a paper by Tullberg, who says that the ear in fishes is not an organ of equilibration, because fishes whose ears have been disconnected soon learn again to keep their equilibrium. Parker thinks that this is due to the experience of the fishes in judging their position by the eye. He agrees with Tullberg, however, in believing that the labyrinth is in some way connected with the reactions of a fish to a current of water.

MAX MEYER.

UNIVERSITY OF MISSOURI.

NEUROLOGICAL.

A Study of the Conductivity of the Nervous System. Prof. YUJIRO MOTORA, University of Tokyo, Japan. Amer. Journal of Psychol., Vol. XIV., pp. 329-350.

Many years ago scientists tried to identify the nervous impulse with electricity. But experimental study has shown points of serious disagreement. The next theory was that nervous conduction is the result of some chemical change peculiar to nerve fibers. But the details of this chemical action are not known. The author believes that the field is thus open to propose an hydraulic theory.

He gives an account of five experiments. The apparatus used consists of rubber tubes of different lengths, diameters and elasticities, filled with water, together with such other accessories as are necessary to transmit and register the disturbance of the fluid in the tube. The experiments are carefully done, and although he takes fully into account that the analogies which he finds between nervous conduction and his results, are not conclusive proof, he feels that his hydraulic theory is as serviceable as the chemical or any other theory now given.

The author's expression is: "The hydraulic explanation supposes that nervous conduction is a transmission of a water wave in a protoplasmic tube and that the protoplasmic tube not only helps the trans-

mission by its own elasticity but is excitable at any point by means of a stimulus directly applied to it. The wave is, of course, equally transmitted in both directions. Moreover, this theory does not necessarily require a continuity of the path of conduction." For he has shown by experiment that mere contact of tubes or presence of a watery medium between two tubes is enough to transmit the stimulus. He says further, "If the water wave is to explain nervous conduction, it must be supplemented by the contraction of protoplasm, which forms the tube, to account for excitability."

The phenomena of attention and inhibition he very conveniently explains under the supposition of a protoplasmic tube.

CLAUDE E. PRICE.

INDIANA UNIVERSITY.

ABNORMAL AND PATHOLOGICAL.

Retroactive Amnesia: Illustrative Cases and Tentative Explanation. W. H. BURNHAM. American Journal of Psychology, 1903, Commemorative Number, 118-132.

The author opens his paper by defining the classes of amnesia: retrograde and retroactive. The former of the two refers to cases where 'memory is obliterated for a relatively long period preceding the immediate cause of the amnesia.' The latter, usually the result of a shock, 'extends for only a short period, a few minutes or a few hours immediately preceding the incident.'

Then follows a discussion of dissociation as met with in every day life: those frequent occurrences where one loses a name or an idea out of a chain of thought which otherwise remains quite clear. Simple dissociation of this sort is, of course, attributable to some inhibition in the associative continuity. If the inhibitory process can be removed, if the right motive for associating the forgotten factors can be supplied, then the entire sequence of ideas is reproducible.

A case of dissociation verging on the pathological is cited which has to do with a person walking along in a familiar neighborhood absorbed in thought. He suddenly arouses himself to find that he does not recognize his surroundings. The accustomed marks of familiarity, a church and certain houses, do not seem to possess their adjunct of recognition. At length a car comes along and he reads the sign which supplies a verbal idea which is recognized. He boards the car and gets safely away. This points to visual amnesia only. On another occasion the same person was set right by making verbal inquiry. The aural image supplied by the answer proved sufficient to reassociate his thought.

The author does not furnish us here the detailed discussion we might wish for. It is quite thinkable that a person of strong aural type, immersed in a process of thought which makes scant use of visual factors, might suddenly be aroused therefrom to a set of visual presentations which, for lack of aural coördination, fail to bring recognition with them. That first moment of strangeness as he fixes his gaze, perhaps, on some really unfamiliar object — unfamiliar because never before carefully attended to — is doubtless of immense suggestive importance and might be sufficient to direct the attention on to other unfamiliar points, thus inhibiting for some time the appreciation of that totality of visual factors which would bring recognition.

Another case showing the development of a 'secondary consciousness' is then cited, together with an account of the process of re-associating the two 'personalities' by means of hypnotism.

The author concludes that 'the one distinguishing characteristic of cases of dissociation is that ideas forgotten are potentially related to consciousness, directly, perhaps, to a secondary or subliminal consciousness, indirectly to the dominant consciousness.' This can mean nothing more than the now generally accepted opinion that memory refers to the peculiar state of an organism after it has been stimulated. 'Ideas forgotten' in this sense means merely that the adequate motive for bringing about a re-innervation of the particular tract needed is not present. Memory is never conscious, but simply a latent state of the organism. The reproductions or ideas which result from re-stimulation of the nervous tracts introduce consciousness. Without such a re-stimulation—*i. e.*, usually, the presentation of a motive which starts an innervation of the tract and results in a reproduction of the ideas wished for—it seems useless to speak of such a very indefinite thing as 'secondary or subliminal consciousness' in this connection. Dissociation does not mean a loss of memory in the true sense of forgetfulness, a fading away of the impressions on the organism, but rather an amnesia due to the lack of an adequate motive for reproduction.

Retrograde amnesia is next considered. Under this class the author refers cases where the 'ideas of a certain modality (as in aphasia) or all those relating to a considerable period of the patient's life are obliterated, and for a relatively long period, at least, cannot be revived by psychological methods.' Two cases are cited: one of amnesia brought on by epilepsy and extending over a period of 260 days preceding the epileptic paroxysm; the other referring to an amnesia brought on by excessive mental work and extending over the

shorter period of about a month. No discussion as to causes is appended, but it is understood that these cases have to do with pathological conditions. The discussion of retroactive amnesia is more full. In this class the amnesias, as stated, are slight with a retroactive character and usually attend a shock of some sort. Ribot is quoted as saying in regard to such cases, 'it seems that in order that a recollection may organize and fix itself, a certain time is necessary which in consequence of the cerebral excitement does not suffice'; an illustrative case is noted in which an amnesia of three hours' duration resulted from the shock of being thrown from a bicycle. The time included the period of insensibility following the accident and about ten minutes immediately preceding it.

Ribot's remark furnishes the suggestion for an explanation of this phenomenon. The 'fixing of an impression depends upon a physiological process,' and it 'takes time to become fixed so that it can be reproduced after a long interval.' The process is not merely one of 'making a permanent impression upon the nerve cells, but also a process of association, of organization of the new impressions with old ones.' This process is continually going on until the shock comes and arrests it. The result is loss of memory for the period of insensibility, and also for such things as happened immediately preceding the shock, since they were not sufficiently organized to be permanent. "Great fatigue, excitement, unconsciousness and narcosis arrest in varying degrees this process of association."

A study of the amnesias attending epilepsy seems to confirm this result. These amnesias may be simple dissociations or they may be of retrograde and retroactive character. The memories of the time of the paroxysm, when reproduced, are reported as dreamlike, indefinite and incomplete; while those of periods a long time preceding, whenever recalled, are vivid, clear and definite. Still it is possible that some impressions be attended to very intensively during the paroxysm and so be capable of a vivid reproduction.

The author's 'tentative explanation' for the facts described is, on the whole, both clear and convincing, and one which will doubtless be accepted. Yet it is by no means unique except in its application to abnormal instances. The necessity of a period for 'organization' in order that the memory have permanence has been frequently demonstrated in recent experiments. In particular Lewy¹ has pointed out this fact, and Müller and Pilzecker² have made a complete demon-

¹ Lewy, 'Experimentelle Untersuchungen über das Gedächtnis,' *Zeitschrift für Psychologie*, Vol. VIII., 1895, pp. 248, 283.

² Müller und Pilzecker, 'Experimentelle Beiträge zur Lehre vom Gedächtnis,' *Zeitschrift für Psychologie*, Erg. Bd. I., 1900, 31.

stration of it with respect to the advantages for normal retention obtained by allowing a period of relaxation to follow every act of concentrated study. They also call attention to the presence of a 'rückwirkende Hemmung' in all mental processes. Furthermore Ebbinghaus¹ gives a careful discussion of these results in his *Psychologie* and draws from them the inevitable conclusions with regard to the evils of 'cramming.'

ROBERT MORRIS OGDEN.

UNIVERSITY OF MISSOURI.

Dépersonnalisation et possession chez un psychasthénique. F. RAYMOND and P. JANET. *Journal de Psychologie normale et pathologique*, Jan.-Feb., 1904.

A great number of maladies of personality have been described with accuracy, but though any two of them may be identical in appearance, their meaning is quite different according to the circumstances which governed them and the conditions under which they present themselves. Thus the case first cited might be provisionally described as a crisis of somnambulism. Gh——, a young man of twenty-nine, was found mimicking the actions of a young girl who, he claimed, had 'eclipsed' him; every action, gesture and bodily movement for certain intervals during eighteen months appeared as a sort of imitation of impressions he had received from watching those of the opposite sex.

The other case is that of a young woman subject to hysteria. Thus, attacked while near a cage of lions, she later developed a curious delirium, imitating the actions of lions in every respect, and even pretending to devour the photographs of children. During the crisis amnesia and anæsthesia were complete, and the malady was not recollected except in hypnotic sleep. This case here differs with the first. With Gh—— there was no anæsthesia either during the crisis or afterward, and so little loss of memory that he could give a full account of what passed during the metamorphosis. Indeed once he recollected having seen the head of a young girl in the mirror in place of his own, but generally the change would cease when he was interrupted. The metamorphosis was not an idea which developed completely and automatically like a suggestion or an hysterical dream; it was an idea which the subject always found in himself and developed of himself. The acts which he performed were almost voluntary; in brief, the singular change of a man into a woman was an obsession and not a true hallucination.

¹ Ebbinghaus, *Grundzüge der Psychologie*, Vol. I., 1902, pp. 651-3.

The psychological analysis of this case shows that the subject was an hereditary psychasthenic; his father died of general paralysis, his mother was neuropathic, a brother at times had a neural trouble resembling melancholia. Gh—— acted strangely when young, was savage and not amenable to control. He ran away at seventeen, and on returning from an expedition to South America lost all his activity and aptitude for useful work. He thought of all sorts of schemes without taking to one. He wrote: "Everything seems to pass at a great distance from me. * * * I am reached only by broken phrases and detached words. * * * I am several thoughts at once, everything passes through my head as in a cinematograph."

Unwillingness to work and act took a special form of social aboulia; his lack of social adaptation led him to wish to live in a desert island. Like Rousseau, the most illustrious of psychasthenics, he had the same complaints against society and the same cult of nature. His lowering of mental level was soon shown by its chief symptom, timidity, and the accompanying desire to associate only with persons of a lower class. Moreover, on his return to Paris he claimed to feel like a stranger, in fact practically expatriated. With this avoidance of persons of his own age and class is connected a second general symptom, the wish for direction, help and excitement. Like those timid souls who affect a hatred of society and a love of nature, he was in fact tormented with a fond desire for tenderness and affection. All this, it is claimed, led Gh—— to seek the society of women and yet actually to avoid their near presence. But he found the other sex, like society itself, too complex, hence, it is concluded, he brought about in himself a feminine metamorphosis and was thus affected with a feeling of losing himself, in fine, a complete depersonalization.

Meanwhile one is curious to hear more about the cure of this case of obsession in a psychasthenic, this feminized Frankenstein who described himself with the subtlety of Henry James.

I. WOODBRIDGE RILEY.

UNIVERSITY OF NEW BRUNSWICK.

La Sensation du 'déjà vu.' J. GRASSET. *Journal de Psychologie*, Jan.-Feb., 1904.

Grasset begins with a very complete description of the sensation of the 'already seen,' under which head he includes the 'already heard' and the 'already experienced.'

Two elements are equally essential to the phenomenon: 1. The *recognition* of an image, emotion or psychic state which one is conscious he has never experienced before. 2. Ignorance of the origin

of the first impression, which has been formerly acquired by the brain of the subject, and with which the present impression appears identical. The writer states the problem thus: Can a person unconsciously acquire psychic knowledge which he will be able to use later in different conscious intellectual operations (such as comparison or reasoning) without ever recalling the time or circumstances of the acquisition of this knowledge? This question is answered in the affirmative.

Instead of dividing the brain into three levels, Grasset divides it into two, following Pierre Janet. The superior centers (which he calls O) are conscious, and the inferior centers (*les polygonaux*) are unconscious or subconscious. These two levels work together inextricably under normal conditions, but in certain pathological, extra-physiological or even physiological conditions, they act independently. In this latter case, the inferior centers may acquire impressions, unknown to the superior centers. Later, the higher centers may discover these impressions and use them without knowing when or how they were acquired. This unconscious formation of concepts in the disconnected lower centers might be produced in either of two ways: (1) The lower centers have memory, and the concepts may be caused from outside stimuli; (2) The lower centers have imagination, and the concepts may be formed in the centers themselves without any outside cause.

As a case of *outer unconscious acquisition* Grasset cites the fact that during absence of mind one can acquire impressions which may be used later; and that in hypnosis a subject is given ideas of whose origin he remains in ignorance. *Inner unconscious acquisition* is brought about by the imagination of *les polygonaux* or lower centers; this imagination is displayed in the stories told by somnambulists and mediums. All these impressions of unconscious origin have as a common characteristic that the subject is ignorant of their entrance or production in his brain. They have a second characteristic, which is variable: (1) The impression thus acquired may remain entirely subconscious, then it is only found in another state of disunion of the brain levels, such as sleep or hypnosis. In this case, if the superior centers discover the impression, *it is not recognized*. (2) The impression, though subconscious in the origin, may penetrate into the general memory, and remain there latent, just as memories of conscious origin do. In this case, when any circumstance awakens the memory of this impression, the superior centers recognize it, but remain in ignorance of its origin. Then the subject experiences the astonishment and all the discomforts of the '*déjà vu*.' It is also claimed that the phenome-

non of the 'déjà vu' is not of common occurrence; to realize it, the psychic centers of the subject must have a particular disposition, not morbid, but special.

A letter from Paul Bourget is given, in which he minutely describes his experience of the 'already heard' and 'experienced.' He had always attributed his habit of 'fausse reconnaissance,' to which he had been subject since childhood, to a simple nervous trouble, until Grasset's theory of the *O* and *les polygonaux* had given a psychological explanation. Bourget says further, that his mental discomfort caused by the characteristic 'anguish' of the 'already seen' became less as his mental powers matured. Grasset remarks that if we admit his theory Bourget's term 'fausse reconnaissance' is not correct, for the recognition is *real*, only the subject is ignorant of how or when he got the idea he recognizes.

Grasset criticizes some other theories concerning this phenomenon. The dream theory of Lapié and Méré and the idea of Thibault are most in accord with his own, indeed, they form part of his own.

He deduces a method of treatment for persons who have the 'already seen' habit. The subject must be taught to correct the impression of the 'déjà vu,' as Bourget and Fernard Goegh have done. This treatment will not answer when the phenomenon goes beyond the psychological domain; in the case of somnambulists and mediums attention must be paid to the real nervous disease of which their habit is a manifestation.

To sum up, the 'already seen' is the reviving of an idea of subconscious origin, in the general or conscious memory.

The weak point in this clever explanation of an interesting phenomenon appears to be in attributing imagination and memory to the inferior or subconscious brain centers, if these include the lowest centers of vital activity. Furthermore, the whole article rests on an explanation which is too figurative.

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Note sur une communication typtologique. TH. FLOURNOY. *Journal de Psychologie normale et psychologique*, Jan.-Feb., 1904.

The author of *From India to the Planet Mars* here divides spiritualistic communications into three groups. The larger is of little scientific interest, consisting of simple scrawls or unpublished spellings, extremely tiresome to the impartial observer. Beside these twice told tales, these weak dilutions of hackneyed ideas, there is the second group of messages, the alleged veridical revelations attesting

supernormal powers (telepathy, clairvoyance, spirit intervention, etc.). There remains a third group which appears to have something in it in spite of manifest absurdities. For the psychologist an attentive examination of their contents and the circumstances of their production may lead to the discovery of obscure processes and laws of our nature of which they may be an index.

In the communication here presented a certain M. 'Bertin' received an imperfect message concerning the death of a cousin confined for twenty years in a distant lunatic asylum. The unfortunate inmate was being supported by his own fortune, a share of which would eventually become the possession of M. 'Bertin.' It was not unnatural that the legatee, under the circumstances, should at times wish for the death of his cousin. But, after the message, it was found that the demented man was still living.

Professor Flournoy interprets this communication as the manifestation of a dream of the subliminal consciousness, which had been created by a repressed desire in the direction noted above. The desire disguised itself in the simple idea of death: 'He is dead,' was all that the table could be got to say, and this message under the fiction of a spirit manifestation was but the accomplishment of a wish long suppressed as regards the normal consciousness. There is no need here of calling in the aid of telepathy, for by reason of a special automatograph it was discovered that M. 'Bertin' possessed an inherent tendency toward mediumship and that his unconscious muscular movements, acting through the medium of the séance, caused the table to deliver the mysterious communication. This explanation, it is asserted, agrees with the theory of Freud, that dreams are disguised realizations of repressed desires. Yet this theory does not cover all phenomena of this nature, for the writer cites one case where the fear of a certain event caused the dream of that particular event. In conclusion, says Professor Flournoy, it is probable that all our forms of emotion are capable of playing the same rôle and of figuring as the effective coefficient of these ideas which, submerged by the ordinary personality, become in the subconscious a germ of dreams and automatic phenomena.

JOHN MACNAUGHTON.

UNIVERSITY OF NEW BRUNSWICK.

An Attempt at Analysis of the Neurotic Constitution. ADOLPH MEYER, M.D. Amer. Journal of Psychol., Vol. XIV., July-October, 1903; pp. 90-103.

Attempts at classification of the constitution are appearing in the form especially of two types of study: (1) That of individual psy-

chology, (2) types of functional efficiency or insufficiency. Paulhan in his *Les Caractères*, classifies types according to (1) the predominance of one special form of activity, *e. g.*, the inhibitory, reflective, etc.; (2) the definite qualities of tendencies of mind, *e. g.*, breadth of personality, etc.; (3) the predominance or absence of some tendencies, *e. g.*, social tendencies.

Dr. Meyer starts from the truism that 'a large number of those who become insane, are individuals in whom a turn to the worse could be anticipated.' The author reviews the various stages of development. Constitutional defects from infancy, as idiocy and imbecility, are very frequent and manifold. In the child also often occur imbecility and peculiarities. Puberty and adolescence are the decisive period for the formation of the make-up and for the cropping out of many defects. He contrasts the one-sidedly conscientious youth with the one who is distractible and without cohesive plans. He then attempts to discriminate certain types of constitution:

1. The psychasthenic. Includes obsessions, impulsions, manias, phobias, scruples, states of anxiety, etc.

2. The neurasthenic. "Reserved for the cases combining the symptoms of great exhaustibility and irritability, depending largely on the mental attitude of lack of repose and of ready recoverability, frequent head-pressure, palpitation and uneasiness of heart, gastric disorders, phosphaturia and oxaluria, and in men especially, often abnormality of sexual responsiveness."

3. Hypochondriasis. "Usually built on a feeling of ill-health which leads to self-observation and explanations."

4. The hysterical. Dr. Meyer is 'inclined to refer to hysteria all the mental and physical disorders which are produced from the effects of an emotion or idea which may work unconsciously to the patient.'

5. The epileptic. This 'manifests itself largely before or after the convulsions in signs which might be called part of the fit.' "In the intervals there is a certain irritability with occasional violent out-breaks regardless of consequences, or peculiar unwarranted sulkiness or periodic dipsomania. Later there is an increasing defect in mental capacity."

6. Certain types already akin to definite and mental derangements: (a) "The unresistive (responding easily to fever, to intoxication)."
- (b) the maniacal-depressive type and the constitutionally depressed, 'distinguished from the neurasthenic by the more direct feeling of insufficiency, not secondary to exhaustibility, and more likely to lead to suicide, and by the occurrence of periods of elation.'
- (c) The

paranoiac type, 'continually ready to see a meaning in things; suspicious, * * * with growing inclination to isolation.' (d) The deterioration type. "A deterioration, more and more marked by indifference in the emotional life and ambitions, and a peculiar fragmentary type of attention, with all the transitions to the apathetic state of terminal dementia."

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The State of Death. An Instance of Internal Adaptation.

JAMES H. LEUBA. *American Journal of Psychol.*, July-October, 1903, Commemorative Number, pp. 133-145.

The article discusses the doctrine of transformed personality, or internal adaptation, called by the Christian Mystics 'The State of Death.' In this state the soul is passive, is not moved by external forces, either good or evil, but is led inwardly, — is repose in God. It is the self-surrender doctrine of Christianity ideally carried out. "I live; yet not I, but Christ liveth in me." Psychologically, it is the gospel of relaxation applied to the moral life.

The soul comes to its mystical death through the disappearance of natural desires and impulses, not by fighting directly the natural man, 'for the lower desires seem to feed on the resistance offered them,' but by complete self-surrender into the hands of the Creator. This quietus to the natural man is not inertness and does not prevent the expression of God's will. While 'it induces internal peace, it gives a clearer perception of the Divine Will and a readier performance of it, since its antagonists have left the way clear.' "The significance of this ethical tendency is that it replaces individual by universal motives * * * it makes for action from universalized motives." The ideal is majestic: "A little creature comes to life with a pugnacious and even ferocious instinct of self-preservation and narrow self-increase at the expense of every one and every thing, entering upon a battle to the death with his original self to transcend it, and ultimately, on the ruins of his initial nature, in an amazing act of self-renunciation, making the General Will his own and thus becoming the moral equal of God."

The doctrine is significant as a factor in human development, for human progress is only a question of 'inner adaptation' through which the individual will becomes the Universal Will. "One may foresee the day when the triumph of the Universal Will in every human breast will have solved many of the difficulties now darkening the social horizon." While pleasure and happiness accompany the state,

it by no means follows that they are ends to be sought. "There is no bargaining with hedonic values."

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The Status of the Subconscious. JOSEPH JASTROW. Amer. Journal of Psychol., Commemorative Number, July-October, 1903, p. 79.

In this paper Professor Jastrow sets forth in a suggestive way two allied views. On the one hand, he urges that hypotheses formulated to explain abnormal psychic phenomena 'should be broad enough to include both the normal and the abnormal phases of mental action' (p. 88). This sound doctrine is based on the fact that "intermediate between these extreme examples of the abnormal and the commonplace incidents of the life of the subconscious, are many forms of manifestation forming a bridge from the one to the other. Dreaming," Dr. Jastrow adds, with great perfect justice, "is in itself a sufficiently versatile process to manifest them all." The study, from this point of view, of the abnormal, 'in no wise,' according to Dr. Jastrow, sanctions 'the hypothesis of an independent subconscious organization' (p. 86).

None the less, Dr. Jastrow teaches, 'subconscious activities' do constitute a part of the material of psychology. For this view he argues, *first*, by pointing out that there is no break in the continuity of the intensity-series of physical stimuli, although the low intensities are not perceptible whereas the higher intensities are perceived; *second*, by emphasizing (p. 85) the presence of 'marginal' as well as 'focal elements of consciousness.' The writer of this notice misses, in Jastrow's discussion, a definite distinction between consciousness and subconsciousness. In particular he does not make clear the relation between (1) that form of subconsciousness which is presupposed by the continuity of the physical intensities and (2) that form of subconsciousness which is involved in 'marginal' consciousness. 'The subconscious' in the latter sense seems to be nothing more nor less than 'the unattended-to'; whereas 'the subconscious' in the former sense may surely be a physiological process — at least such an account of it is not disproved. In the fuller treatment of the whole subject, promised by Professor Jastrow, one may look for a discussion of this point.

M. W. CALKINS.

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NORMAL ILLUSIONS.

Normal Illusions in Representative Geometrical Forms. MABEL CLARE WILLIAMS. Univ. of Iowa Stud. in Psych., 1902, III., 38-139.

This article is a coping stone to the investigations on normal illusions latterly conducted at Iowa. It distinguishes and measures the effects of the visual illusions of length, of the vertical, of cylinder length, area and volume; all or some of which frequently coöperate to produce the mental misjudgment, though counteracted by the Müller-Lyer effect in certain forms. The research is based on ten fundamental forms of lustreless black tin, some of which appear in combined forms; on outline forms on black cardboard; and on familiar extra-laboratory objects. The author studied different methods (selection, production, primary position of regard, sidewise and downward regard); different distances; different dimensions of lines and squares; different classes of observers (the two sexes, youths, adults); different conditions, grades of intelligence, naïve and practice estimations, etc. The matter is arranged chronologically in eleven series, not logically under a minimum of captions. In the present case there seem good reasons for adopting this plan: the results are amenable to genetic interpretation; they can be employed for mutual corroboration, and the tabular records allow of a higher degree of completeness. A final exhaustive table of summaries is reproduced, and, in general, the tables are so complete that they may be used by other investigators. Numerous summaries are introduced with good effect.

Some of the important conclusions arrived at by the author are as follows: area, volume, cylinder length and 'length' illusions (sometimes merely associational) exist independently of, and often in greater intensity than, the well-known illusion of the vertical, and are usually in the nature of overestimations; the illusion of the vertical is strongest for the line; lines (or areas) occurring in a series of lines (or areas) are underestimated; the verticality of an area appears higher than that of a line; the horizontal direction of cubes and plates appears relatively bigger than the vertical, with respect to compared lines and plates; the illusions persist in merely representative objects, affect objects of different kinds, forms, sizes, complexity and remoteness, and are undimmed by practice.

In the final table the results are in terms of the horizontal line; the isolated-line criterion seems preferable to the plate, used in the early part to evaluate the cylinder length illusion: it represents the minimum of sensation stuff, with some element common to all forms;

and it embodies the highest simplicity of illusion motive, viz., only the illusion of the vertical with the maximum of illusion effect.

Dr. Williams inclines toward a physiological theory in explanation, but does not indicate stages and factors or otherwise elaborate it.

The suggestion occurs that the volume illusion here discovered may furnish one motive by virtue of which planospectives appear enlarged when seen perspectively in stereoscopic projection. The monograph is careful and exhaustive, and the author has succeeded in unearthing new illusions of sight.

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ASSOCIATION.

L'Association médiate. H. PIÉRON. *Revue Philosophique*, 1903, XXVIII., pp. 142-149.

M. Piéron calls attention to the fact that all experimental investigators, save Scripture, deny the existence of mediate association, whereas Aschaffenburg, Féré and Claparède, on the ground of introspection or of statistical observation, admit its occurrence. He proceeds to comment upon the explanations offered of mediate association: Hamilton's illustration by the row of balls is a mere analogy, and Wundt's appeal to indistinct consciousness is a mere transposition of the problem. Piéron believes that both difficulties, that of establishing and that of explaining mediate association, are due to the inadequacy of the ordinary view of association as 'a unilinear chain of terms,' and to the effort to explain it by the mechanical 'law of contiguity.' As a matter of fact, he insists, (p. 145) association is merely 'a particular case of the general law of states of consciousness, and this is a law of synthetic affinity.' The law governing the occurrence of particular associations is that of their interest for the self. In mediate associations, Piéron believes, the suppressed terms are hidden in the subconscious depths of spirit (*les dessous subconscients de l'esprit*), and call up ideas which appear in consciousness because they have for the self an interest superior to that of the evoking ideas. The reason why the experimenters have failed in their efforts to excite mediate associations is then simply this: the merely contiguous images which they seek to arouse have little significance for the self, and are not evoked by the subconscious ideas.

In all this, there seems to the present writer to be little of importance. The view of unilinear association, which Piéron rightly opposes, is not held by psychologists to-day; the principle of contiguity,

as at present interpreted, has reference not to accidentally contiguous objects, but to contiguous — that is, continuous — states of consciousness; and the law of interest is recognized by everybody as determining particular cases of association. Piéron's conception of the mediately associated images as aroused by subconscious ideas, must be supplemented by a far sharper definition of subconsciousness if it is to have positive value.

M. W. CALKINS.

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The Proof and Measurement of Association between Two Things.

C. SPEARMAN. Amer. Journal of Psychology, XV., 72-101, January, 1904.

The article consists of a description and a discussion of the comparative value of divers methods of measuring and representing the correlation of any two properties, *e. g.*, the efficiency of instruction by writing and by word of mouth, or two different mental abilities, or others. Its general tendency is the same as that of Thorndike's Educational Psychology, of which it may be regarded as a supplement, going within its scope farther into detail. The author shows that psychological measurements made without knowledge and use of scientific methods of calculating the correlation of different abilities are often either entirely lost labor which does not benefit any one, or yield results of such slight accuracy as not nearly to compensate for the amount of labor expended. The discussion of the methods is confined to the needs of practical workers, and all theoretical mathematical demonstrations of the formulæ whose use is recommended are omitted. For more detailed exemplification the author refers to a further publication on 'General Intelligence' which is to appear subsequently. The first part of the article describes the methods of computing correlations, the second part the methods of correcting systematic deviations which cannot be eliminated by a mere prolongation of the series, but only by variation of the method of obtaining the data. Finally, the number of cases desirable for an experiment is discussed and shown to be often quite small if the proper method of calculation is selected.

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TIME.

A Theory of Time-Perception. W. P. MONTAGUE. Am. Jour. of Psychology, XV., 1-14.

In this paper a theory of the relation of subjective change to objective change based on the James doctrine of the relation of sub-

jective and objective in consciousness is put forth as an explanation of the 'specious present,' of the estimation of the rate of temporal sequence, and of recognition.

Perceptual time is assumed to be the change occurring in the objective aspect of consciousness, *i. e.*, the incoming content, and is measured by the simultaneous change occurring in the subjective aspect, or apperceiving content. The objective change, ΔO , during any period is assumed to be greater than the subjective change, ΔS , during the same period; hence the apparent length of the interval, measured by $\Delta O/\Delta S$, will approach the finite value $do/ds > 1$ as Δt becomes infinitely small. Hence at any point in the metaphysical time series there will appear to be present a finite quantity of perceptual time; *i. e.*, there will be a 'specious present.'

The alternate expansion and contraction of the specious present, measured by the fluctuating values of do/ds , give to consciousness its rhythmic character, and 'objects or events which occupy the expanding specious present are felt as enduring, while those which fill the contracting specious present are felt as passing or succeeding.' The rate, measured by d_2o/ds_2 , of the change in value of the specious present, determines the apparent rapidity of the passage of time; hence frequent distractions, which cause the specious present to be more rapidly 'built and destroyed,' increase the apparent rapidity.

If ΔS is assumed to be always less than ΔO , it will follow that in general the change in the apperceiving mass will be inversely proportional to its size; hence the more states there are held in consciousness the greater the value of do/ds , and consequently the farther back the date of the state of earliest origin. In the case of an event which has lapsed from consciousness and afterwards recurred, there is the revival, in schematic form, of the intervening occurrences, which furnishes a large apperception mass, and pushes the recalled event far back in the system of dates. Moreover, the event is measured not only against this large apperception mass, but also against the smaller mass of states which have not yet lapsed from their first appearance in consciousness; and it is this duality of measurement which occasions the conscious 'againness' of the remembered event. When the 'schematic' filling between the present and previous occurrences of the state is too vague to serve as a definite apperception mass, there is merely the feeling of 'familiarity,' instead of memory.

In spite of the dependence of the statement of this theory of time perception upon a rather artificial view of consciousness, it brings out and together in definite form certain points towards which psychology

has been tending, so that it may safely be said to mark a new stage in the analysis of time. The conception of time as change, of the specious present as the relation of old content to new, and of recognition as the resultant of a two-fold specious present, put certain difficult and tedious portions of the road finally behind us.

It cannot be said however, that the mathematical solution is final, even apart from the identification of the subject with a portion of the objective contents. ΔS is less than ΔO only if we consider merely the change in the apperceiving mass caused directly by the incoming content, and not necessarily then, since an incoming content with a small change factor may cause a large change in the apperceiving mass. In fact the assumption holds true only if no change whatsoever occurs in the apperceiving mass except in so far as it may 'absorb' change from the new factor; just as if the old content were so many quarts of clear water and the new a gill of ink, in which case the resultant hue of the mixture would be lighter than that of the ink. Perhaps Dr. Montague does not intend this part of his theory to be taken in this highly artificial way, but it seems to lend itself to no other interpretation.

Furthermore, the mathematical ratio does not after all provide for duration. For the specious present so derived is only a mathematical ratio, and it is impossible to speak of 'objects or events occupying it.' The events can 'occupy' only one term of the ratio, namely, ΔO ; and as ΔO becomes infinitesimal, the portion of the event also becomes infinitesimal; so that the apparent duration in any specious present could not be the duration of any finite event, however small, but only of an infinitesimal part of event.

Ueber die zeitlichen Eigenschaften der Sinneswahrnehmung.

ROBERT MÜLLER. Vierteljahrschr. f. wiss. Philos. u. Soziol., XXVII., 39-56.

In this article the author concerns himself with the grounds of the analysis of perception. He states with much detail the fact that any perception whatever necessitates the activity of some part of the central nervous system, which, together with the peripheral organ and neural connections is denominated the 'sense substance.' He insists on the distinction between the perception-expression which has reference to the experiencing 'subject' (*relative*), and that which has no such reference (*positive*), physical method being based on the latter, and 'subjective' method on the former.

The distinction between physical and psychical, the author says,

is just that between positive and relative expression, and having insisted on the invariable nexus of psychical and physiological, it is plain to him that psychology can be nothing but physiology from the point of view of 'subjective' method. Any thing else which attempts to pass as psychology is really the result of confusion of an 'impossible method with content' and rests on 'divers mythical poetical concepts.'

The author frankly distrusts metaphysics, so that the crude metaphysical confusions on which he founds his doctrine need not surprise us. He attempts to take a concept derived by means of the metaphysical distinction between positive and relative, and substitute it for the concept of psychical experience from which it was derived. Fortunately psychology has passed the stage in which it is in danger of falling into such pits.

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HEARING.

Beitrag zur Resonanztheorie der Tonempfindungen. S. EXNER and J. POLLAK. *Zeitschrift f. Psychol. u. Physiol. d. Sinn.*, 1903, XXXII., 305-332.

The authors begin their article with the statement that the resonance theory of hearing has ceased to be the generally accepted theory, but that their own interest in this theory justifies their further investigation of some partially known phenomena of hearing. Their intention is to produce by various means more or less frequent changes of phase in a vibration of constant pitch and to observe the sensations resulting therefrom. The change of phase is produced in three different ways. (1) By means of rotation of an electromagnetic tuning fork the tone of which was observed through a long tube. (2) By means of a telephone whose circuit was conducted through a rotating commutator. (3) By attaching two resonators to a tuning fork in such a manner as to produce resonance of opposite phase and observing the tones through a long tube and rotary double valve alternately connecting with each of the resonators. Similar experiments on tones of alternating phase had been made by other investigators previously. The authors arrive at the following result. (1) Alternation of phase produces a sensation similar to beats. (2) The intensity of this sensation is less than that of a sensation produced by a vibration of unalterable phase. (3) If the alternation of phase occurs very frequently, the intensity of the tone becomes considerably weakened. (4) If the alternation of phase occurs after each ten (or less) vibrations,

the tone may become so weakened as to become inaudible among the accompanying noises.

Of this result the authors say that it agrees with the resonance theory, but that its agreement with any other theory of hearing is yet to be found. This treatment of the matter seems to the reviewer as little impartial as a similar recent statement of Hensen, who concluded that there must be resonators in the ear since he had proved a rise in intensity in the beginning of a sensation of tone. A similar rise in brightness has been found in the beginning of a visual sensation; but no one has drawn the conclusion that there must be resonators in the eye. The reviewer has tried to discover any disagreement of the interesting results of Exner and Pollak with other theories; *e. g.*, the theory of hearing developed by himself. But he has not found any. Should therefore this experimental investigation be called a contribution to the resonance theory of hearing?

The Expression of Emotions in Music. A. GEHRING. Philos. Review, 1903, XII., 412-429.

The author gives a brief exposition of the different theories concerning 'expression' in music, without saying anything that is new to the reader familiar with the literature of the subject. The extreme formalists deny the possibility of expressing anything through music, regarding the whole æsthetic effect as caused by form; the extreme expressionists, on the contrary, regard the expression as the chief source of the æsthetic effect of music, attributing to form a subordinate place. The author points out that the possibility of expression is limited (to a rather imperfect imitation of the sounds of nature), but that 'expression' is an important factor in musical æsthetics if we mean by it that music 'impresses' us with emotions, the general nature of which is common to all mankind, the particular elements of which depend, however, not so much on the music as on the subjective conditions of the hearer.

Ueber die Unterschiedsempfindlichkeit für gleichzeitige Töne. K. L. SCHÄFER and A. GUTTMANN. Zeitschrift f. Psychol. u. Physiol. d. Sinn., 1903, XXXII., 87-97.

The authors determined the difference of vibration rate of two simultaneous tones heard by the same ear, which enables the hearer to distinguish the two tones. Four classes of judgments were recorded: beginning impurity, distinct impurity, beginning duality, distinct

duality. The tones were produced partly by tuning forks, partly by reeds, but for the most part by means of Stern's tone variator. The result was in general that the discrimination of simultaneous tones follows the same laws as the discrimination of successive tones, *i. e.*, it is nearly constant in the middle region, but becomes more difficult in the extreme regions of auditory sensation. Absolutely, however, the discrimination of simultaneous tones was found to be much more difficult than that of successive tones, at least ten vibrations being necessary for certainty of distinction.

MAX MEYER.

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CONTRAST.

Der Simultane Farben- und Helligkeitskontrast, mit besonderer Berücksichtigung des sog. Florkontrast. JOHANNES KÖHLER.
Archiv f. d. gesamte Psychologie, II., 423.

This research, made in the Leipzig laboratory, has for its outcome a confirmation of Wundt's present views on the subject of contrast, namely, that psychological and physiological factors coöperate in the production of the contrast effect. The two chief problems investigated were those principally involved in the *Florkontrast* seen in Meyer's experiment: the effect of eliminating contours and that of diminishing the saturation of the inducing color.

Preliminary experiments were made with paper painted in colored stripes of various degrees of saturation, the intermediate stripes being painted gray of corresponding brightness. Convex lenses were used to diminish the sharpness of the boundary lines. The general results of these observations were that lessened sharpness of contour increases the intensity of the contrast effect; that weakly saturated colors produce intenser contrast effects than strongly saturated ones, and that the inducing power of the 'exciting' colors, red to green, is less than that of the 'depressing' ones, green to violet. The following observation is interesting as bearing on the influence of psychic factors: Suppose a gray stripe on a colored background, tinted all over by contrast with the complementary color. If two black lines be drawn on this gray stripe parallel to its borders and about 2 cm. inside of them, the contrast effect will not appear between the lines. If the lines be inclined somewhat, the contrast color will follow their edges exactly. What would seem a less ambiguous indication of a psychological factor, since the black lines might disturb the physiological conditions, is the fact that if a negative after-image of moderate intensity be projected on a gray field where there has been drawn a polygon of considerably

greater area, the contrast color surrounding the after-image will spread itself to fill out exactly the space enclosed by the polygon.

Quantitative experiments were made by the following methods: For brightness contrast, rotating black and white disks were used, the observer varying the brightness of another disk by means of a Marbe rotation apparatus until it looked equal to the brightness induced by contrast. A similar procedure was followed with transmitted light and episkotisters. For color contrast, pigments washed on by the experimenter and gelatine disks were employed. In one set of experiments the reacting field was a gray made up of black and white sectors, with inner and outer rings of the inducing color. The black and white sectors could be moved so that the inducing color showed through, and the intensity of the contrast effect was measured by the amount of this background needed to restore the neutrality of the gray. In another set the inducing color lay towards the outside only, and a comparison disk of gray was used. The gray and that of the reacting field were made by mixing the inducing color with its complementary. The observer was required to make the comparison disk like the reacting gray by adding more of the complementary to the inducing color. As before, spectacles with convex lens were used to eliminate contours.

The results showed, first, that the effect of diminishing the sharpness of contours is always to increase the intensity of the contrast. Secondly, although the preliminary experiments gave stronger contrasts with less saturated colors, the general tendency betrayed in the quantitative experiments was for the contrast effect to increase with the saturation of the inducing color. This is the old contradiction between Meyer's experiment and the quantitative work of Kirschmann and Ebbinghaus. However, when the inducing color lay on both sides of the reacting gray, the increase of contrast effect with saturation was not a constant but a gradually diminishing proportion; that is, the weakly saturated colors gave a relatively great contrast effect, the highly saturated colors a relatively small effect. A parallel fact appears from the brightness experiments, where the effect of slight differences in brightness between inducing and reacting fields was relatively great.

From these results the author concludes the presence of psychological influences along with the physiological ones. The increase of contrast with the saturation of the inducing color is due to the fact that contrast is a physiological process. Our estimate of the intensity of the contrast effect is, however, like every estimate of intensity, affected by the psychic law of relativity. The saturation of the con-

trast color is measured to a certain extent in terms of the saturation of the inducing color, especially where the reacting field is completely surrounded as in Meyer's experiment. Hence, when the inducing color is only slightly saturated the contrast effect looks to us stronger, though based on a weaker physiological process; when the inducing color is saturated, the contrast effect is underestimated by comparison. This conclusion is borne out by the fact that in the quantitative experiments, when the inducing color lay only on the outside of the reacting surface and a comparison disk was used, the contrast effect increased steadily with the saturation.

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DISCUSSION.

REACTION-TIME AND VARIABILITY: A CRITICISM.

In the May number of the *PSYCHOLOGICAL REVIEW* William R. Wright published a paper on 'The Relation between the Vaso-Motor Waves and Reaction Times,' in which he presented reaction-time results which indicate certain important relations between the vaso-motor wave and the time of reaction. The author gives in his report of experiments only the averages of his reaction-time series: in no case is variability mentioned. In view of the obvious importance of the variableness of reaction-time in our interpretation of the significance of such results as are offered in this paper, it is surprising that the author should not have given, at least, the mean variability of each series.

I have recently called attention to the necessity for the determination of variability and probable errors in all reaction-time work,¹ and I refer to the matter again in this connection only because reports are continually appearing whose value is greatly diminished by the neglect of this matter. It is needless to say that a difference in reaction-times, which under certain conditions may be significant, under slightly different conditions may justify no conclusion beyond that of variability. In other words, unless our results show differences which exceed the variability or probable error of the average reaction-times we are not justified in basing conclusions upon such differences. It is true that the results of the paper in question are so constant in their indication of a certain relationship that the author may have thought

¹ Yerkes, Robert M.; 'Variability of Reaction-Time,' *PSYCHOLOGICAL BULLETIN*, Vol. I., pp., 137-146, 1904.

it useless to bother with other statistical data than the average reaction-times; but even granting this, there can be no doubt that the meaning of the results and their value for future investigators would have been made clearer by the determination of some statistical measure of their variableness.

ROBERT M. YERKES.

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CORRECTION.

The review of Professor Royce's article on pp. 320-324 of the August BULLETIN was written by Miss Angie L. Kellogg, of Vassar College, and should have been so signed. We regret the error.

BOOKS RECEIVED FROM AUGUST 7 TO SEPTEMBER 7.

- The Decline of Land-owning Farmers in England.* HENRY CHARLES TAYLOR, Ph.D. Bull. of the Univ. of Wisconsin. Madison, Wis., 1904. Pp. 66.
- Condorcet, Guide de la Revolution française.* FRANCK ALENGRY. Paris, Giard et Brière, 1904. Pp. 889.
- Interrogative Thought and the Means of its Expression.* EDWARD T. OWEN, Ph.D. From Trans. of the Wisc. Acad. of Sciences, Arts and Letters, Vol. XIV.
- Kants Revolutionsprinzip (Kopernikanisches Prinzip).* ERNST MARCUS. Herford, W. Menckhoff, 1902. Pp. xii + 181.
- A Treatise on Cosmology.* HERBERT NICHOLS. Vol. I., *Introduction*. Cambridge, Mass., The Author, 1904. Pp. 454.
- Wissenschaft und Weltanschauung.* MAX WERWORN. Leipzig, Barth, 1904. Pp. 48.
- Einführung in die Psychologie.* ALEX. PFÄNDER. Leipzig, Barth, 1904. Pp. vii + 423. M. 6.
- Evolution of Theology in the Greek Philosophers.* ED. CAIRD. 2 vols. Glasgow, Maclehose, 1904. Vol. i, pp. xvii + 372. Vol. ii, xi + 377.
- Unterrichtspraxis für das Gesamtgebiet des ersten Schuljahrs.* L. F. GÜBELBECKER. Wiesbaden, Nemnich, 1904. Pp. ix + 459.

Proceedings of the Aristotelian Society. New Series, Vol. IV. London, Williams & Norgate, 1904. 10/6. Pp. 170.

Technique de psychologie expérimentale. TOULOUSE, N. VASCHIDE, H. PIÉRON. Paris, Doin, 1904. Bibl. de Psych. Expér. Pp. 330.

La contagion mentale. A. VIGOUROUX et R. TUQUELIER. Paris, Doin, 1905. Bibl. de Psych. Expér. Pp. 258.

Das Kind in Haus, Schule und Welt. L. F. GÖBELBECKER. 2d ed. Wiesbaden, Nemnich, 1904. Pp. 144. M. 1.75.

Juicio critico sobre la accion pauliana en el Derecho Romano. O. RODRIGUEZ, B. Maracaibo, Rubio, 1901. Pp. 469.

The Widow's Mite and other Psychological Phenomena. I. K. FUNK. New York, Funk & Wagnalls, 1904. Pp. xiv + 538. \$2 net.

NOTES AND NEWS.

CH. SIGWART, emeritus professor since 1903, and long professor of philosophy, in the University of Tübingen, died on August 6.

IN the list of speakers and chairmen at the St. Louis Congress of Arts and Science, published in our last number, the names belonging to the Section of Metaphysics were erroneously credited to the Department of Philosophy. The chairman for this department is Professor Robert P. Bowne (Boston University), and the speakers are Professors George T. Ladd (Yale University) and George H. Howison (University of California).

THE Second International Congress of Philosophy was held at Geneva, September 4 to 8. Professor Millioud, of the University of Lausanne, was president of the Section on General Philosophy and Psychology, with M. Kozlowski, privat-docent at the University of Geneva, as vice-president.

THE following items are gathered from the press:

REV. J. D. STROOPS has accepted a call to the chair of philosophy at Grinnell College, Iowa.

J. BURT MINER, Ph. D. (Columbia), has been appointed instructor in philosophy in the University of Iowa.

BURTIS BURR BREESE, Ph. D. (Columbia), now of the University of Tennessee, has been appointed professor of psychology at the University of Cincinnati.

CONTENTS OF THE MAGAZINES.

ARCHIV FÜR DIE GESAMTE PSYCHOLOGIE, III., 1. Intervall und Arbeit. Experimentelle Untersuchungen über den Einfluss des durch akustische Reize begrenzten Intervalls auf den zeitlichen und formalen Verlauf körperlicher Arbeitsverrichtung: *Wilhelm Specht*. Experimentelle Untersuchungen über die Hausaufgaben des Schulkindes. Ein Beitrag zur experimentellen Pädagogik: *Friedrich Schmidt*. Miscellany.

BRITISH JOURNAL OF PSYCHOLOGY, I., 2. The Taste-names of Primitive Peoples: *Charles S. Myers*. Immediate Memory in School Children: *W. H. Winch*. Notes on a Case of Successful Operation for Congenital Cataract in an Adult: *R. Latta*. The Variation of the Intensity of Visual Sensation with the Duration of the Stimulus: *W. McDougall*. Proceedings of the Psychological Society.

INTERNATIONAL JOURNAL OF ETHICS, XIV., 4. Moral Instruction in Schools: *Herbert M. Thompson*. Has the Universe an Intelligent Background and Purpose? *James H. Hyslop*. The Government Prison Settlement at Waiotapu, New Zealand: *Constance A. Barnicoat*. The Moral Training of the Young in China: *Chester Holcombe*. The Practical Reason in Aristotle: *F. Melian Starwell*. Student Honor: A Study in Cheating: *Earl Barnes*. An Examination of the Rationalistic Attitude: *Gustav Spiller*. The Heart of Mr. Spencer's Ethics: *Franklin H. Giddings*. Miscellany.

INVESTIGATIONS OF THE DEPARTMENTS OF PSYCHOLOGY AND EDUCATION OF THE UNIVERSITY OF COLORADO, II., 1. The Scope and Efficiency of the Normal Schools of the United States: *Frank H. Clark*. Co-education and the Raw Material of the School: *Melanchthon F. Libby*. Factors in the Learning Process: *Joseph H. Bair*.

JOURNAL DE PSYCHOLOGIE NORMALE ET PATHOLOGIQUE, I., 2. Les Zones de Head et leur importance en psychiatrie: *Pick*. Idées de grandeur précoces dans le délire de persécution chronique: *F. L. Arnaud*. Mœurs et régimes: *Houssay*. Considérations générales sur la structure et le fonctionnement du système nerveux (I.): *Durante*. Notes et Discussions. A propos des communications typtologiques: *de Lutzenburger*. Un cas d'agnoscie: *Lépine*. Miscellany.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, I., 9. A Suggestion toward a Reinterpretation of Introspection: *W. B. Pillsbury*. Recognition and Recall: *Robert Macdougall*. Definitions of Intensity: *W. H. Sheldon*. Meeting of

Experimental Psychologists at Cornell University: *C. H. Judd*. Miscellany. I., 10. A Naturalistic Theory of the Reference of Thought to Reality: *C. A. Strong*. A Study of Intensive Facts: *W. H. Sheldon*. Discussion. Professor Perry's Reference to Ward's Naturalism and Agnosticism: *J. E. Creighton*. Societies. Fourth Annual Meeting of the Western Philosophical Association: *A. O. L.* Miscellany. I., 11. Fundamental Concepts and Methodology of Dynamic Realism: *C. L. Herrick*. Herbert Spencer as a Philosopher: *Warner Fite*. Discussion. Two Recent Views of the Problem of Realism: *W. P. Montague*. Miscellany. I., 12. Of Neururgic and Noetic Correspondences: *Henry Rutgers Marshall*. Dimensional Equations and the Principle of the Conservation of Energy: *C. Edward Magnusson*. Discussion. Dr. Montague's Theory of Time-Perception: *Edwin B. Holt*. Accommodation and Convergence—A Protest: *J. W. Baird*. A Note in Reply to Doctor Perry: *James Ward*. Societies. The New York Academy of Sciences. Section of Anthropology and Psychology: *James E. Lough*. Miscellany. I., 13. Utilitarian Epistemology: *G. A. Tawney*. The Need of a Logic of Conduct: *Henry W. Stuart*. Discussion. Professor Ward's Philosophy of Science: *Ralph Barton Perry*. Miscellany.

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THE
PSYCHOLOGICAL BULLETIN

THE RELATIONS OF PSYCHOLOGY AND
PHILOLOGY.¹

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Professor Wundt in his *Völkerpsychologie* has accomplished a third of the program which is marked out in his discussion of this discipline, in the fourth volume of the *Studien*, and second part of the second volume of the *Logik*.

Wundt presupposes a *Volksseele*, whose reality is assured in the same fashion as that in which we assure ourselves of the reality of the individual mind. In a word, we find phenomena of experience whose relations and organization depend not upon individual mind but upon the social constructs given in the environment of the community to which we belong. "The mental products which arise through the common life of the members of a community, are not less elements of reality than the psychical processes within a single consciousness. They are of course nothing that could occur outside of individual mind. But as it is not the psychical elements in their isolated condition but their combinations and the products that spring from them which we call an individual mind, so the *Volksseele*, in empirical sense, does not consist of a bare sum of the units of individual experience, whose contents make up its content. In the case of the *Volksseele* as well, there result from the union of these units peculiar psychical and psycho-physical processes, which either could not arise at all in the consciousness of an individual

¹This number has been prepared under the editorial care of Professor J. H. Tufts.

or at least not in the completeness with which they develop through the interaction of individuals.”¹ The implication of this is not that the *Volksseele* is a construction which arises as a result of scientific investigation and generalization, but that it has the same sort of existence in our thought as the individual mind, in so far as we think the peculiar processes for the presentation of which such a concept is necessary.

There are two characteristics of language, myth, and custom which distinguished them as a psychological field from the phenomena of individual consciousness. These are their independence of the life period of the individual, and the evolution which characterizes them and which extends as a process through generations. In so far then as we speak of language as developing from generation to generation, and still conceive of it as an expression of native impulse, gradually built up by assimilations, and complications, and fusions, and associations, and controlled by apperceptive processes, in other words describe it as a psychological phenomenon, we are recognizing what Wundt insists upon. We are postulating an empirical community-mind within which such processes take place whose boundaries are not those of the individuals who make up the group, but those of the community.

The point of view which Wundt criticizes, and which has been the customary one of the philologist whose psychology has been of the Herbartian School, looks upon language in so far as it is phenomenon of community-life as belonging to the domain of the historical and objective comparative sciences. Psychology has jurisdiction only in so far as speech is regarded as the act of the individual *qua* individual. A comparative physiology which explained and defined language-changes as sounds, and a comparative grammar which presented these changes and explained them as forms of speech, would be the sciences of language. Psychology would be an applied science which would give extensive assistance both from the point of view of sound — physiological psychology — and from the point of view of forms — the explanation of changes of meaning, of inflections, etc. But the changes which an individual psychology could

¹ *Völkerpsychy.*, Vol. I., pp. 9 and 10.

give would be confined to the consciousness of the individual. The explanations would account only for the change as an experience of the individual. In so far as this experience becomes a fact of physical science as sound, or of philological science as speech, it would be subject to universal laws transcending the existence of the individual. In this sense language would not belong to the field of psychology, but psychology would be brought in to account for particular forms and incidental changes, while the laws of language would be those that followed the uniformities of change in words and speech viewed as the subjects of an objective science. In a similar manner one could present a psychological picture of the occurrence of a crime, while a statistical science would simply deal with it as an objective fact, or a sociological inquiry would deal with the general conditions under which it took place, perhaps making use of the psychological treatment for clues and comprehension, but translating all into terms of the objective science before the subject matter was in form for the treatment of sociology. But the best illustration is from history. Psychological interpretation is an essential part of an historical presentation, but history aims to identify and present the reality of an event or series of events. They are presented as events, not as psychological laws. Psychological laws come in to aid in the full understanding of the event, but not as the subject matter which history presents. From these events various laws may conceivably be generalized, but these laws would not be psychological laws. From such a point of view it has been the custom, and to a large degree remains the custom, to regard language. It is an objective fact like the events of history, and the laws of language are objective laws in the same sense that the generalizations of history are conceived of as objective laws. A consistent Herbartian, such as the philologist Paul, recognizes no psychological phenomenon which is not one of an individual soul. Language is not an affair of the individual soul, and its laws are frequently generalizations which would not have the slightest meaning if read into terms of the experience of the individual soul. The mechanism of the individual soul may be that which is responsible for the changes and the growth and

development of language, but the product lies outside of the experience of the souls whose mechanisms are responsible for it.

The same questions arise with reference to myth and custom. Myth represents the ideas of a people or group of peoples, when these ideas are the expression of the impulses of the community and when they are the carriers of the emotional content of the community life. Custom (*Sitte*) is community-direction of conduct, the impulse under the control of tradition and public opinion. Out of the first spring religion and art and out of the other arise the institutions of law and government. As contents of idea and emotion and voluntary control they are subject matter for psychology. But the contents they represent far transcend the limits of the individual experience. Indeed they are so vast and overwhelming in their force and mass that they receive the individual only as the ocean receives the drop of water, though the ocean is nothing but drops of water.

Lazarus and Steinthal in the opening pages of the *Zeitschrift für Völkerpsychologie und Sprachwissenschaft*, though Herbartians, abandoned the consistent position of Paul and maintained that psychology deals not with the *Seele* but with the *Geist*; that while the *Seele* is a metaphysical entity the *Geist* is only the actual presentation of experience, and may be considered apart from a metaphysical doctrine of the soul. Such a presentation, as we have already seen, makes the basis for the empirical self and makes as possible a social self—the *Volksseele*. But while their position in this regard is identical with that of Wundt, their program of a Folkpsychology is radically different. If they abandoned an Herbartian *Seele* they did not give up the Herbartian *Vorstellungsmechanik*. This mechanism allows only for the play of ideas, acting and reacting upon each other, exactly as physics conceives of its elements interacting among themselves. In either of these systems there is no place for a change of content in the elements themselves. The ultimate objects remain the same, and in so far as psychology deals with these and reduces all mental processes and contents to these ideas and their interplay there can be no such thing as a development revealed by psychological analysis. For an evolution Herbartianism has no account, except in so far as this

arises through the interaction of the environment and the masses of ideas. It must be something external to the ideas themselves. In particular such an evolution as language cannot exist as a psychological datum. In the same manner we may say that a physics that dealt only with molecules would necessarily reduce the structures which arise in an evolutionary process back to these molecules. For such a physics evolution would not exist. Its business would be to analyze all objects, which might be presented to it, into elements which have presumably remained unchanged through the whole process of so-called development.

It is evident that in so far as Lazarus and Steinthal are consistent in the application of their doctrine, they could never present such growths as language, myth, and custom as psychological contents, but would be confined in their psychological treatment of them to analyzing out the psychological elements and determining the psychological laws which had contributed to their appearance. Wundt, on the other hand, recognizing that the changes which take place in subjective experience are qualitative, that no one state can ever be reduced to antecedent elements, is in a position to recognize development as a psychological phenomenon and therefore may conceivably present language in all its changes as a psychological datum.

The differences between the Herbartian treatment of a language and Wundt's is, however, not confined to the nature of the subject-matter itself. The distinction is that with which we are familiar under the terms intellectualistic and voluntaristic. It is the advantage of this latter type of psychology that it is able to start with an act in the form of an impulse. The striking illustration of this advantage is to be found in the theories of the origin of language. From the standpoint of an associational psychology—one that recognizes only ideas and their connections, or at least depends upon these for the psychological analysis of the contents of consciousness—language is almost unavoidably conceived of as an invention. While the more modern psychologist would not be guilty of the absurd theories *d* of the origin of language, of religion, or of government which belong to the rationalism of the eighteenth century, a thorough-

going associational psychology, whether Herbartian or English, can give no account of language processes which in principle differs from these. For typical associations lie between contents of consciousness which have been analyzed out of objects and have become symbolic. The sensuous content and its meaning have been separated from each other and in so far the content is arbitrary. Our theories of association are perhaps more readily illustrated by a Volapük than by a natural language. Wundt, on the other hand, is able to refer the beginning of language to the primitive impulse to expression. The sound is at first but a gesture (*Lautgeberde*). Articulation, as a muscular process, is explained in the same way that movements of the face, of the hands, of the whole body are accounted for under the influence of emotional tension. Instead, therefore, of having to assume unknown or exceptional conditions as the antecedents of the origin of speech, we can find the conditions present in our own movements, in the first activities of children, in the gesture languages of primitive peoples or the deaf-mutes.

The advantage of this point of view is further evident in the recognition that the elements with which psychology deals are not objects — psychological atoms — but events. Among these events can be placed states which are predominantly affective, or motor in their character, and the intellectual content recognized as a development. As an illustration of the advantage of the voluntaristic attitude, Wundt's discussion of what the psychical processes are out of which the external activities in gesture language arise, and of the relation between the universal psychological laws and the individual motives that influence the expression, may be profitably presented. "The foundation on which the answer to the question must be built, and from which the psychological analysis must start, is the origin of all signs in natural gesture-language, in movements of expression. This fundamental law leads necessarily to the assumption that the primary cause of a natural gesture is not the motive of conveying an idea, but is that of the expression of an emotional activity. The gesture is first of all and originally an affective expression. However necessary it is for a language of gesture that it should raise itself above this stage, it remains true that it

would never have arisen without the original emotional impulse. Only secondarily, in so far as every affective state contains ideas charged with emotion, does the gesture become an expression of an idea. In the further psychical effects which are connected with this subsidiary phase of the expression of emotion lies the cause for the entire further development into a gesture language. It is, above all, as conveyor of ideas that the expressive movement of one calls out the like affective states in others, because only through the passage of consonant ideas from the one to the other can the actual agreement of their emotions take place. Expressions of feeling are able to give and recreate only the like fundamental direction of emotional change. The affective state itself as well as its reappearance in others gains a definite content only through the content of ideas and the movements in which these announce themselves to the outer world. Another effect of the expression of ideas goes hand in hand with the more exact reproduction of the affective state. In so far as this has given a further substratum to the reproduction of the emotional experience that has arisen in another, it arouses further ideas, that are related to those conveyed through the gestures, reinforce them, or, on the other hand, if they arouse contradictory emotions, enter into opposition to them. At this point the gesture of the other is not a mere reflex of the movement of the first; on the contrary, out of the sympathetic movement has grown an *answering* movement. If at first the boundaries between these flow into each other, gradually they must distinguish themselves more and more as the movement of ideas in individual consciousness becomes more active. If the answer was at first little more than a reproduction of the same ideal content, in the further course the reproduction of that which is perceived retreats behind the newly aroused ideas. In this fashion finally the individual emotional state, under the influence of the backward and forward interchange of gestures, has passed into a common affective experience. As, through this pronounced emphasis on the contents of ideas, the affective elements and thus the emotions themselves are moderated, the common emotional experience with the backward and forward interchange of gestures passes

into a common thought process, taking place through the exchange of gesture expression."¹

Such a conception of the beginning of gesture language passes over easily to that of the beginning of spoken language, through the recognition that articulate sounds are in their beginning but sound-gestures and take the same place in the act of emotional expression that is taken by the gesture. Perhaps there is no better illustration of the importance of psychology to the comprehension of language than such a natural and simple presentation of the beginning of the interchange of ideas through the simple sympathetic interaction of gesture expression within a common emotional situation. There could be no better illustration of the advantage of beginning one's psychological analysis with the act in its primitive form of the impulse, instead of being forced to build it up out of intellectual elements.

The illustration is also of importance in throwing light on the difference of attitude of Wundt and Delbrück. Delbrück has published under the title of *Grundfragen der Sprachforschung*, a criticism of Wundt's two-volume work. The criticism is on the whole sympathetic. When an eminent philologist treats with so much consideration a psychologist who has written a considerable treatise on the philologist's own subject from the psychologist's point of view, it is evident that to some degree it must be true that language is the field of psychology. But in just this point Delbrück is not in full agreement with the psychologist. He epitomizes the two, Wundt's voluntaristic, and the Herbartian intellectualistic psychology, and informs his fellow philologists that they will find that in the main one system works practically as well as the other. He recognizes the decided advantages to which reference has been made above of the more modern psychology, recognizes in fact several points in which it is able to attack problems which the older type of psychology could not undertake. But to a large degree he insists that either theory works as well as the other. Wundt has not been willing to let this attitude of Delbrück go unchallenged, and in a brochure entitled *Sprachgeschichte der Sprachpsychologie* has replied to this and other positions of his critic. He is

¹ *Völkerpsychologie*, Vol. I., pp. 239-40.

particularly sensitive to this assumption of Delbrück's that one brand of psychology is as serviceable as the other. Even if he were willing to waive this point he insists that it is at the bottom not a question of serviceability but of truth, and that with the same measure the philologist measures withal it should be measured to him again. Would he be willing to waive the question of the truth of philological theory and consider only its serviceability for the purposes of some particular presentation? At bottom the question is that which I have tried to make evident, in the contrast between the Wundtian and Herbartian psychologies. The Herbartian psychology cannot, in so far as it is consistent in theory or mechanism, pretend to be anything more than an applied science within the field of philology. Its serviceability from this point of view is bound to be the criterion by which it is judged. The situation is a very different one when the psychologist maintains that language is the field of psychology. He is not called in in this case to render services which are determined by another and judged by another as to their success. He is within his own field, and is his own judge.

The illustration which has just been given is a good one of just this change in the relative positions of the sciences, if Wundt is correct. The question of the beginnings of language is not attacked from the standpoint of the comparative philologist. There is no generalization from the earliest forms of speech with which we are familiar, nor are there any inferences drawn from the *Ursprachen* which can be constructed out of the identities between kindred tongues. The problem is attacked as a psychological problem. Speech is an act and like any other act has its natural history which psychology can undertake to give to us from a study of its nature and its analogy to other acts. It is, in its primitive form, emotional expression, not because primitive languages are more emotional, but because gestures and cries are the external parts of emotional acts. Sympathetic reproduction of seen gestures, and the change in them which answers to the difference of conscious content they arouse are facts with which psychology deals, and out of these facts arises a theory of the origin of language which whether it is correct or not is psychological, and not philological in the ordinary sense of the word.

The philologist has not been successful enough in his efforts to reconstruct a primitive language, to care to contest with the psychologist his right to form theories within his own field. He probably feels that language in its beginnings was a very individual affair. But when it has become an inflected language, a language with a history that is written in external characters and handed down by literatures and grammarians, the assertion that it lies within the field of psychology is a different matter, and here the philologist still considers the psychologist as a serviceable assistant, not as one who may speak by his own right. The question reduces itself very largely to this: How far can the distinction between philology as a historical science and Folkpsychology as a science of principles be carried out? With the determination of the appearance of forms, their specific outward character, and the varied influences from time to time of external influences psychology has nothing to do. But the moment that language is presented as mental process, and one attempts to explain its changes through its use, through the interchange of expression ideal and emotional, through the structure of the sentence, in other words through the outward form of the judgment, the investigation has become a psychological affair, the material with which the philologist deals is psychological material. But even this statement is not unambiguous. As the language exists in the consciousness of the individual it must of course be recognized as psychological material, but the great phenomena of language are not those that appear in the consciousness of individuals. As already indicated they exist for us in the comparison of different languages or dialects, in shifts that lie far beyond the conscious discrimination of those that are subject to them, etc. If these are psychological phenomena they are such in a different sense from that of individual psychology. They must be the phenomena of the Folk-mind. The legitimacy of this conception has already been discussed, the question now is as to serviceability and the effects of its use in the study of language.

The equivocal relation between philosophy and philology is not a new situation. A century ago the place now taken by psychology was usurped by metaphysics. It was the logical

relations and the metaphysical assumptions based upon these logical relations which were felt to underlie the theory of language. The offspring of this marriage between the two disciplines were not promising, and the connection between the sciences has been severed. The substitution of psychology for metaphysics and logic has been a gradual one. The philologists have not consciously elected to have recourse to psychology. They have found themselves within its borders. Their psychology has been frequently, and unfortunately continues still largely to be, of the popular kind—of the kind which assumes that because a change has taken place and brought with it a different use, this use was determined upon by conscious agents, especially when the change seems to have advantages connected with it. Finally, the Herbartians have become through Steinthal and Paul conscious of the dependence of philology upon psychology and have attempted to set out what these relations are. But the work of the great comparative philologists of recent years has been fundamentally psychological, and is becoming increasingly so. The importance of Wundt's work is that he has thought the thing through consistently and has attempted to define and lay out this territory which has become psychological even without the intentions of the investigators themselves.

On the other hand he is called upon to justify his pretensions by his own success in dealing with the problems. I think there can be no question that he has succeeded in locating the question of the origin of language within the field of psychology. As further evidence of this, may be presented the discussion of the relation of the beginnings of language to song and work. Bücher¹ has brought back song to the rhythms of work as its origin. Jespersen maintains that man is a singing animal by nature and connects the primitive outbursts of song with emotional states of love and joy.² The question is at bottom one of the most primitive rhythms in human consciousness, and when Delbrück, who follows Jespersen, while Wundt follows Bücher, says³ that it is not improbable that in the end the ultimate

¹ *Arbeit und Rhythmus.*

² Jespersen, *Progress in Language.*

³ *Grundfragen d. Sprachforschung*, p. 92.

ground for rhythm is to be sought in the varying compass of our consciousness and in the fluctuations of our attention, it is evident that this problem is unquestionably a psychological one.

If we turn now to changes of sounds in words (*Lautwandel*), we find ourselves in the field of acknowledged psychological processes — those of association. It is true that certain scientists have tried to account for these changes through differences of climate and physical environment, acting directly or indirectly on the organs of speech. The complete impossibility of determining any physiological or anatomical differences answering to differences of articulation and pronunciation has led to the abandonment of these explanations and left philologists with causes which in the end must be considered as psychological. This is evident in the substitution for a theory of inheritance of organs and processes, of a theory of 'training' (*Einübungstheorie*), in accordance with which each generation fails adequately to reproduce what it hears and thus introduces unceasing change. This is, however, much too general a theory to answer to the many specific changes that have to be accounted for. Grimm's law for the changes of mutes is an excellent illustration of an orderly procedure in sound-change which remains without any satisfactory explanation. Wundt here has attempted one, based on the assumption that speech has become increasingly more rapid during the periods within which these changes have taken place, and upon investigations of an experimental nature as to the effects of increased tempo in speech. He is of the opinion that the greater rapidity in speaking is an adequate explanation. Unfortunately the philologists not only dispute the adequacy of the hypothesis, but also his facts.¹ But while this hypothesis is presumably untenable, its rejection does not render the problem any the less psychological. If the question is ever answered it will be by the psycho-physical psychologist. Wundt's failure in this case simply emphasizes this.

The treatment of changes by assimilations and dissimilations, whether in letters immediately in contact or at a distance from each other, is confessedly due to the predominance in conscious-

¹ Delbrück, *Grundfragen*, 102 ff.

ness of a sound which merges with another and leads to the changes in question. *E. g.*, the change from *adsimilare* to *assimilare*, *supmus* to *summus*, turtle from *turtur*, purple from *purpur*. In the analogical changes we find influences extending from one word or group of words to another. *E. g.*, the introduction of *t* into the original word egoism after the fashion of despotism, etc., the change of Ger. *sturben* to *starben* after the analogy *starb*. The treatment of all these phenomena belongs to the psychology of fusion, assimilation and association. It is worth while to refer in passing to the advantage to the doctrine of composite words which has accrued through Wundt's carrying the process back to the organization of ideas that lie behind the words.

It would occupy too much space to extend this catalogue through the theory of inflection and the syntax that goes with it. The more complex and specific the expression of relations becomes in the forms of words and their structure in sentences, the more evident becomes the essentially psychological character of the material with which the philologist is dealing.

The most interesting consideration arising out of the two brochures to which I have referred, Delbrück's criticism and Wundt's reply, is to be found in the difference of attitude of the two scientists. We may mention first of all a freedom in dealing with other tongues beside the Indo-European and Semitic groups on the part of the psychologist which is evidently surprising and somewhat displeasing to the philologist. Delbrück withholds himself from criticism, affirming that his own department lies within the Indo-European field. He does, however, suggest that until our knowledge of the languages of other and especially primitive peoples is fuller, especially with reference to their history, deductions drawn from them must be received with scepticism. It is impossible for the reviewer to enter into the question of fact. What is of interest is that Wundt feels himself to have a point of view which justifies him in using material which the philologist who is unquestionably linguistically better prepared than the psychologist is unwilling to use. Wundt shows that he has at least the courage of his convictions. Just as in the question of the origin of language the psychologi-

cal treatment enables the philologist to dispense with a reconstruction based on historical remains and inferences drawn from these, so psychological equipment should enable the philologist to make valuable use of tongues whose history may be out of the reach of science. One of the principal uses which Wundt makes of the extra-Indo-European and Semitic tongues is in the discussion of the development of the sentence. We find among these the attributive sentence, which to his mind comes before the predicative sentence. He connects this naturally with the phenomena of parataxis in the classical groups and the evidence that a paratactical construction has preceded the hypotactical. The psychological interest in the question gathers around the development of the logically organized sentence out of one that is based upon simple processes of association. It should be added that Wundt uses logical here in the psychological sense, that it answers to apperceptive or to the consciousness of relations which comes with the constructive, *i. e.*, apperceptive process. It is a psychological interpretation of the history of the copula and the form of sentence that depends upon it. Without discussing then Wundt's technical competence in this particular philological field, there can be no doubt that psychological competence on the part of a philologist would put at his disposal material which lack of historical data leaves largely barren at present. We have already referred to the psycho-physical hypothesis suggested by Wundt as an explanation for Grimm's law, and have pointed out that its present presumable insufficiency does not detract from its interest as an indication of the essentially psychological nature of this philological question.

Connected with the question of the origin of language is the theory of roots. Older doctrine in philology maintained that there were three periods in the history of language; a period of roots, of agglutinated roots, and a resulting period of inflection, which was not only the last but the most perfect. Of course a language of roots cannot be found, but it was assumed that in the Chinese we had a language which is made up simply of roots stuck together. If we could get so near to the original root period it was but a short leap to that primitive

situation. Later investigation of the Chinese has shown that it is in all probability a development out of an inflected language, that it answers in the theory of language development more nearly to the English in its wearing away of inflections, or rather that the same process of attrition and consequent reconstruction which distinguishes the English, not only from the classical tongues but also from the German, has been carried much farther in the Chinese (v. Jespersen, *Progress in Language*). Furthermore, comparative study of the roots themselves in highly inflected tongues has shown that they are not the original elements, at least in a large number of cases, that the term root must be taken as the element which is left behind when the inflected endings are abstracted and on the logical side as that part of the word of the Indo-European original speech which those who spoke it felt as the center of meaning (*Bedeutungscentrum*).¹ This assumption of what may be called a functional root is still in favor with the philologists. Delbrück still assumes that roots are original elements which can even be conceived of as existing in their naked form in a primitive language. That is, he wishes to regard it not simply as a functional and hence psychological entity, but also as a historical entity. Delbrück attempts such a historical reconstruction, following Jespersen's conception of the primitive speech as a continuum of sound, in which the unit was as yet an undifferentiated sentence, not a word. He sees no reason why the differentiation of the parts of this continuum may not have been roots rather than inflected words. To this Wundt opposes the facts of daily life, the unquestioned appearance of new words which have no preceding history as roots. He opposes furthermore the psychological fact that "the elements of words are in the nature of the case only elements of given word-ideas (*Wortvorstellungen*); the question how the word has arisen remains untouched by them."²

Wundt's definition of the sentence is as follows: "A sentence is the spoken expression for the voluntary organization (*Gliederung*) of an entire idea (*Gesammtvorstellung*) by its parts placed

¹ *Grundfragen*, p. 120.

² *Völkerpsy.*, Vol. I., p. 559.

in their logical relations.”¹ It should be noted that Wundt uses the word logical in its psychological sense, *i. e.*, in the sense of the actual relations subjectively felt in the expression; and that he recognizes two sets of psychical forces at work in the formation of the sentence, the primary associations which in some sense provide the material, and the apperceptive process which is responsible for the organization of the entire idea. These two sets working over against each other are responsible for the determination of the different parts of the sentence, for the original appearance of the words as parts of the sentence, and for the selection of words in developed language. Delbrück is pleased with this conception of the sentence in general, but opposes to it the instances of the vocative and the interjections. These, not to consider the imperative, present expressions in language which are not articulated and which yet must be conceived of from the point of view of expressions (*Aeusserungen*) and are not therefore to be genetically distinguished from sentences. The reply is simple enough, that the bare emotional outcry — or the interjection — is not a sentence nor an expression which can be classed as a sentence; that on the other hand where the vocative or the so-called interjection carries a meaning with it there is always an articulation of ideas though there be but a single word outwardly expressed. I have instanced this because it shows that even in the less crucial questions the psychological attitude gives a freedom which the philologist profits by, or may profit by.

Delbrück in closing his criticism undertakes to commend Wundt's psychology to his fellow philologists, by assuring them that it offers a mechanism which is not essentially different from that of the Herbartians, at least in respect to background of the unconscious and the structure of the ideas; Wundt's substitution of the psychical disposition for the interrelated masses of ideas which are pushing themselves above the threshold of consciousness in the Herbartian psychology, for practical purposes, seems to be but the calling of the same thing by another name. Whether the idea lies in the background of consciousness or is below the threshold makes no essential difference in the application.

¹ *Ibid.*, V. II., p. 240.

This does not of course hold for the Wundtian conception of association. This confines association to the connection of ideas as a whole and excludes the processes of assimilation, complication, and fusion. Just these latter processes are those that are most in evidence in the formation of words and their changes, and the proper conception of them tends to correct the tendency to give an unwarranted influence to conscious intention in word changes. But the schemata of apprehension — the anticipation of the sentence-form that is given by a single word, the recognition of a relation and what it involves in the mood of a verb or the case of a noun — these phenomena of perception can perhaps be as readily managed from the one point of view as the other. Perhaps this fact is an indication that the psychological treatment of this structural side of consciousness has not reached a final form. The sharp distinction that Wundt, and not he alone among psychologists, is forced to make between this presented structural material and the apperceptive or attentive processes is by no means an ultimate presentation. In a word, we have here two methods of presentation, a structural treatment, that of the associative and allied processes, which is most readily stated in terms of the nervous system; and a functional statement, that of attention and apperception, which is not dependent upon the nervous system for its presentation. The two treatments are not of a piece, and it is but fair to assume that further development of psychology in the direction of a more consistent presentation, will be of peculiar value within this field of Folkpsychology.

THE PROVINCE OF SOCIAL PSYCHOLOGY.¹

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University of Chicago.

There is at present a tendency to agree that there is no social mind and no social psychology apart from individual mind and individual psychology; at the same time individual mind cannot be understood apart from the social environment, and society cannot be understood apart from the operation of individual mind, and there is growing up a social psychology, whose study is individual mental processes in so far as they are conditioned by society and social processes in so far as they are conditioned by states of consciousness. If instead of claiming for social psychology a separate class of phenomena we regard it as an extension of individual psychology to the phenomena of collective life, we have an important set of problems not included in the programs of other sciences.

Among these problems are the following: (1) An examination of the crises or incidents, like famine, pestilence, defeat in battle, dreams, swooning, intoxication, birth, puberty, death, theft, assault, magical practice, etc., which have changed the direction of attention and modified the habits of the group and individual; and the manner in which these crises are connected with the development of morality, religion, custom, myth, invention, and art on the one hand, and with the medicine-man, the priest, lawgiver, judge, physician, artist, philosopher, teacher, and investigator on the other. (2) The influence of the great men in breaking up old habits in the group and establishing new ones. (3) The influence of contact with outsiders in modifying the states of consciousness of a group, and the rate at which a lower race may receive suggestion from a higher without being disorganized. (4) The psychology of social organization, as seen in connection with the maternal system, the

¹ Abstract of a paper read before the Congress of Arts and Science at St. Louis, September 23, 1904.

blood-feud, blood-brotherhood, tribal marks, totemism, initiatory ceremonies, tabu, fetishism, secret societies, crime and punishment, etc. (5) The degree to which the parallelism in development found between all races argues a mental life of the same general ground pattern. (6) A comparison of memory, sense-perception, power of attention, inhibition, abstraction, logical faculty, and temperament in different races, classes and epochs, with a view to determining what differences exist, and to what degree they are innate on the one hand, or due to the habitual direction of the attention and consequent practice on the other. (7) The influence of temperament as compared with cognition in determining the directions of the attention among different races, classes and sexes, and in furnishing the stimulations promoting social change. (8) A comparison of the educational systems of the lower and higher stages of culture, with reference to determining the extent to which the consciousness of a group and the group peculiarities on the mental side are organic, and to what extent they are bound up with the nature of knowledge and tradition transmitted. (9) Have there been epochs of culture in the white race characterized by stages of mental development, and does the child pass in a recapitulatory way through stages of mental development corresponding with these culture-epochs, or does the child recapitulate the brain of the race only in the sense that the accumulated knowledge and standpoint of the race are so presented to him, and with such urgency and system, that habits are broken up and reformed rapidly, and the mind is transformed in no biological sense, but only in the sense that the attention and the content of the mind are made correspondent with the world as it is at present?

Social psychology must coöperate with psychology and anthropology in settling these and similar questions, and in determining the principles underlying mental growth in the race and in the individual before the science of education can make any sure progress, and before the eastern question, the negro question and questions of crime and social reform can be safely approached.

PSYCHOLOGICAL LITERATURE.

SOCIAL PSYCHOLOGY.

Die Gesellschaft. ERNST VICTOR ZENKER. I. Bd., Natürliche Entwicklungsgeschichte der Gesellschaft, 1899. II. Bd., Die sociologische Theorie, 1903. Berlin, G. Reimer. M. 8. Pp. 232, 134.

A sane and well-constructed work, aiming rather to give what may fairly be called the results of sociological investigation than to advance original theories. The first volume considers, in its two parts, social and political evolution respectively. In tracing the progress from the 'primitive horde' emphasis is laid upon the division by ages as the first which would naturally arise. Military and industrial necessities, as well as sex affinities, would favor such a division, and the distinction found in many languages between older and younger brothers and sisters, as well as certain facts in the marriage systems of the Australians, may be the survivals of this.

In the further development of clan and family organization it is held that the family in the proper sense did not grow out of the primitive sex-relations which obtained in the clan and where kinship through the mother was the rule; it had an independent origin from the possession of the woman by the man, whether by capture or by purchase. This has an important psychological implication. For the question suggested here as to the relative priority of feelings and habits is one that may be raised in many connections. Was the family with its growing fidelity due to conjugal affection, or conversely was conjugal affection the product of a family life instituted from other springs? I have elsewhere maintained that in the case of the æsthetic feelings, the feeling is rather the effect than the cause of artistic activity. Zenker maintains a similar position concerning family affection. "No more with men than with animals was it love for wife and child which led man to maintain a lasting house-community; the fact is rather that the family was nothing but a labor community on a basis of personal lordship, and that its first recognized purpose was to procure children." The pastoral life was especially favorable for it. The first effect was unfavorable for the status of woman. The victory of the patriarchy and the family "was a victory of force and power over the original equality, of the man over the woman. * * *

But here, as always in human life, barbarity generated the tenderest feelings. * * * While in the earlier stages of evolution the relation between man and wife had been as a rule loose, and easily separable, whereas in the absence of power over the children by the man and in the consequent absence of interest for them, no education with the essential authority had been possible. With the establishment of the patriarchal family the union of man and wife became more lasting, the interest of the father for his posterity was awakened, even though under brutal influences and in forms revolting to us; and it was these advantages which won the final victory for the father-family in the struggle against the maternal system" (I., 112-124). The author probably does not give sufficient weight to the material and arguments of Westermarck, nor does he indicate exactly how much of the change in sentiment is to be ascribed to physical and how much to social heredity. But the problem suggested is, in my judgment, one of the most interesting in social psychology. This, as indicated, is the problem of the relation of the various sentiments and emotions to the habits — or, speaking from the social standpoint, to the customs and institutions — with which they are connected. Mr. Irving King, in a paper not yet published, has begun such an investigation of the religious sentiments.

Another psychological question raised in any sketch of the evolution of society is that of the ultimate social force or forces. Is it, or are they, material or psychical; and if psychical, then are they intellectual, or affective, or impulsive? An aspect of the question emerges when we consider how far any institution is due to its supposed utility, and how far to a more unconscious and spontaneous activity. Zenker's attitude here is singularly free from the fallacy of supposing that the utility which can be perceived by the student of to-day was present in the minds of the originators. In general the author makes the impulses the fundamental fact. "Society rests on instincts which determine man to society, and which have been partly transmitted from a human time, and partly acquired and then handed down in human society. The movements of the social mass take place instinctively and not from a voluntarily sought consensus, and rational arguments (II., 71)." The primary social instincts are love to one's kind (*Gleichenliebe*), sympathy, and the imitative impulse. The first-named is distinguished by the author from Gidding's 'consciousness of kind.' "For in the word 'consciousness' there is a certain danger of regarding the impulse in question as the result of cognition. In the word *Gleichenliebe* is implied only that 'like seeks like'" (II., 58). The

author's own position on this point, however, seems to have undergone a development, for in his first volume he speaks of the 'consciousness of the likeness of kind' (*Bewusstsein der Artgleichheit*). He points out that normal sex relations occur only between members of the same species. Similar physical constitutions combined with the same environment give rise to similar reactions in sensations, feelings, judgments. Conscious sympathy is the joint product of local ties plus objective likeness; *i. e.*, if the 'nearest' are the 'like,' and if from earliest infancy one lives only in the environment of his like, a degree of sympathy will be formed which will 'flash up into a consciousness of sympathy.' This develops simultaneously with a consciousness of antipathy toward other groups or individuals who are 'different,' or 'strange.' In the second volume more explicit emphasis is placed on what I should regard as the more important psychological factor, *viz.*, habitual association. The group of children growing up about a mother have their senses habituated to a special kind of sensations and experience these as normal, while every deviation appears striking, disturbing, disagreeable. Other color, other hair, other speech — these form too great a barrier to intercourse. In the second volume there is also a distinction made between the *Gleichenliebe* and sympathy. The latter, grounded in the physiological process by which an idea of another's pain may become an actual pain-sensation, is not limited to members of the same species, although it is naturally stronger where the physiological conditions are alike.

The foregoing account of the undoubted fact that 'like seeks like' seems good so far as it goes. Namely, the sex-relation and the processes of birth and nutrition give an environment of 'kind' which then acts by the common law of familiarity. The effect is not produced through an intellectual comparison, and a subsequent recognition of likeness, but is impulsive. There are, however, certain biological and certain psychological factors in addition to those named, which I think should be included. Among the former there is a possibility at least of a genuine instinct, selected naturally as advantageous to the species. Such instinctive tendencies to keep with the herd would certainly be of advantage among gregarious animals. Connected with this may also be a certain instinctive reaction of the sense-organs, particularly smell. As the odor emanating from the female in the rutting period has its peculiar stimulus for the male of the species, so it may well be that a certain part of the attractiveness of the species for the sense of smell and touch may be instinctive, and not the result of familiarity. The psychological factor which is not brought out in

the foregoing, is the more distinctly volitional solidarity brought about by common labor or action toward common ends, both military and industrial.

If these factors are included with those named by Zenker, we should have a scheme something as follows : Man's 'Social Nature' consists of :

A. An instinctive part, transmitted by physical heredity, including (a) tendencies to seek the kind, (b) the physiological basis for 'organic sympathy,' (c) the physiological basis for ideomotor action or suggestibility, which may or may not work out along lines of 'imitation.'

B. A psychological part, which may be further subdivided into (a) a relatively impulsive, irrational, or at least non-rational, emotional attitude or habit; and (b) a relatively conscious, voluntary attitude, determined more by rational reflection. (a) would include the effects of environment both physical and social upon the young, having as subdivisions the effects of association and suggestion respectively. It would also include certain of the effects of common labor, defense and offense, while other constituents of the effects of these activities would fall under (b).

The function of the rational is very briefly treated by Zenker (II., 72-80). In opposition to those who regard the social process as mechanical, and those who regard it as solely the realization of a definite end or purpose, it is maintained that the process from the beginning has its conscious factors, which manifest themselves early in language and the making of tools, and that progress is possible only through ideas. On the other hand, there may be society with no conscious purpose.

Under 'Social Forces' are considered the opposing views of the school which attributes all to environment, and the school which attributes all to race. The author denies that race is a sufficiently objective fact to be considered as a social force. What is effective in race reduces itself to the social impulses and the inherited dispositions which find their place as integrant but not as exclusive factors in social development. The factors which influence the evolution of societies may be classed under three groups; A. Productive forces, or the environment in the broadest sense. B. Social impulses. C. Ideas. But only B can be called in the strict sense 'social forces.' A are outside of the social, C are rather of individual character [this last statement certainly needs further analysis]. A and C act on society or on each other only through the medium of B.

J. H. TUFTS.

The Theory of Business Enterprise. THORSTEIN VEBLEN, Assistant Professor of Political Economy in the University of Chicago. New York, Charles Scribner's Sons. 1904. Pp. vii + 400.

Those who read and enjoyed Professor Veblen's extremely acute, subtle and brilliant *Theory of the Leisure Class* will bring a keen appetite to the analysis of current business processes and psychology which is given in the present volume. Nor will they be disappointed. There is the same cool, scientific dissection of current processes, standards and ideals, which, by its very attitude of unimpassioned, relentless laying bare of sources and springs of action, is more effective than the most passionate sarcasm or invective. There is the same ability to coin a phrase, or use a word in a new application, which shall carry a whole chapter within itself, and become, in the reader's mind, a perpetual challenge to a principle, institution or whole series of conventions. There is the same combination of wealth of concrete material with psychological analysis and philosophical method; the same exploration of economic, social and cultural fields with a given principle. Finally, there is, I venture to think, a similar tendency to simplify the complex springs of human action more than is warranted by an impartial interpretation of the facts. The former volume has not as yet received the attention from psychologists which it deserves, and the title of the present volume would not suggest the large amount of social psychology which it contains. This psychology appears first in the account of business itself, its aims, its assumptions, its prosperity or depression; secondly, in the account of the industrial processes; and thirdly, in tracing the respective influence of these two forms of occupation upon the minds of those who follow them, and upon the broader cultural spheres, economic, political, educational, domestic and religious.

The psychological aspect of the book is not limited to details. It is shown in the effort to state business processes in the terms and shapes in which they are actually conceived by business men. Money, for example, is not for modern business the 'medium of exchange,' as is usually held by those who speak of business traffic 'as a means of obtaining goods suitable for consumption, the end of all purchase and sale being consumable goods, not money values. This latter "may be true in some profound philosophical sense, looking at the process of economic life as a whole, and taking it in its rationalized bearing as a collective endeavor to purvey goods and services for the needs of collective humanity. Such is the view of this matter given by the rationalistic, normalizing speculations of the eighteenth-century

philosophers; and such is, in substance, the view spoken for, in substance, by those economists who still consistently remain at the standpoint of the eighteenth century. The contention need neither be defended nor refuted here, since it does not seriously touch the facts of modern business. Within the range of business transactions this ulterior end does not necessarily come into view, at least not as a motive that guides the transactions from day to day. The matter is not so conceived in business transactions, it does not so appear on the face of the negotiable instruments, it is not by this manner that the money unit enters into the ruling habits of thought of business men" (p. 83).

Again, in current economic theory the business man himself is spoken of as an 'entrepreneur,' and "his function is held to be the coördinating of industrial processes with a view to economics of production and heightened serviceability. The soundness of this view need not be questioned. It has a great sentimental value, and is useful in many ways." Business men, especially the less successful, are to some extent influenced by ideals of serviceability or instincts for workmanship; 'excessive sensitiveness' may interfere with certain kinds of business; the business strategist may be so infected with human infirmity as not to exact the last concession from his rivals which a ruthless business strategy might entitle him to; but 'the motive of business is pecuniary gain,' motives of this kind (serviceability, workmanship) detract from business efficiency, and the captains of the first class are relatively exempt from these unbusiness-like scruples (pp. 41-43).

One of the most interesting phases of the part assigned by the author to psychological processes in business is found in Chapter VII. in the explanation proposed for the periods of business depression. Current theories usually explain these in terms of the producing or consuming process. But as, under present conditions, it is business which directs industry and not *vice versa*, the cause for depression should be sought in business itself. This cause is found by the author in the constantly progressive efficiency of the industrial process which necessarily tends to cheaper productions and lower prices. Now the business man regards money as a stable unit, and hence a constant lowering of prices, with the attendant re-rating and reduction of his capital, appears to him as a loss in value, an impoverishment, even if it carries no reduced command over material goods. A business man's rating and consequently his self-respect is based rather on the pecuniary magnitude of his holdings than on the mechanical service-

ability of his establishment or his output. "The explanation here offered of depression makes it a malady of the affections. The discrepancy which discourages business men is a discrepancy between that nominal capitalization which they have set their hearts upon through habituation in the immediate past and that actual capitalizable value of their property which its current earning capacity will warrant. But where the preconceptions of the business men engaged have, as commonly happen, in great part been fixed and legalized in the form of interest-bearing securities, this malady of the affections becomes extremely difficult to remedy, even though it be true that these legalized affections, preconceptions, or what not, center upon the metaphysical stability of the money unit."

Similar psychological rendering is given to ethical and legal conceptions. 'Principles' are defined as 'habits of thought' and 'business' principles accordingly mean habits of thought suitable to the work of business traffic, corollaries under the main principle of ownership. This principle of ownership or property is a 'habit of thought,' recent as compared with some; 'those who are inclined to give it a more substantial character than that of a habit' are characterized as 'those who still adhere to the doctrine of natural rights with something of the eighteenth century naïveté' (Ch. IV.). Parenthetically it may be observed that Professor Veblen never suggests that there can possibly be any other (*e. g.*, social welfare) basis for the 'right' of property, and it must be admitted that his exhibition of the almost absolute lack of any relation between the pecuniary returns of the more highly organized and successful business operations on the one hand, and any serviceability to the public on the other, would seem to offer small ground for such a basis of rights as applied to these particular fortunes, although the utility of admitting the institution would not necessarily be disproved thereby. So 'snobbery' in psychological terms is 'used without disrespect to denote the element of strain involved, in the quest of gentility on the part of persons whose accustomed social standing is less high or less authentic than their aspirations.'

Coming to the direct doctrine of the book, we have, as already suggested, analyses of the business, and of the industrial or machine process, and a statement of their respective tendencies of influence. Business is the director of the machine process, and the two have radically different effects upon those engaged in them. The machine process with its standardization of goods, tools, work and units of every sort makes the mechanic 'do his work as a factor in a mechanical process whose movement controls his motions.' "The machine is not

his to do with as his fancy may suggest. His place is to take thought of the machine and its work in terms given him by the process that is going forward." "If he fails of the precise measure by more or less, the exigencies of the process check the aberration and drive home the absolute need of conformity. There results a standardization of the workman's intellectual life in terms of mechanical process." "But mechanical efficiency is a matter of precisely adjusted cause and effect. The discipline of the machine inculcates therefore a tendency to think in these terms and these only. As the machine is impersonal, immoral, and knows no ethical or spiritual principles, its tendency is to train those whom it controls into insensibility toward all such concepts. Hence the tendency of the artisans in the distinctly machine occupations to adopt socialism with its ignoring of the conventions of property, family (here the headship of the male, now exhibited chiefly in his 'pecuniary discretion' over the family funds, is 'in jeopardy'), religion, and politics.

Business, on the other hand, as it is concerned with the institution (habit of thought) of ownership or property has a conventional basis. The logic of pecuniary thinking is a working out of the implications of this postulate of ownership. The argument is an argument *de jure*, not *de facto*. [But does not this apply rather to the legal justifications of business, than to the actual processes of discovering means for attaining wealth?] The spiritual attitude given by this training in reasoning *de jure*, is necessarily conservative. The reasoning assumes the validity of the conventionally established postulates. Business classes, therefore, like those engaged in occupations where the thinking moves on a plane of still older conventions — soldiers, politicians, the clergy, and men of fashion — are conservative.

We have, therefore, the following interesting problem: the whole industrial system, on the manipulation of which business depends for its continued existence, fosters a habit of mind which tends to destroy the fundamental postulate of business, viz., the conventions of which property is chief. Business cannot do without the machine process; but neither could survive in company with this process if the full logical results of the process should work out.

A typical expression of this antithesis is found in the legal conflicts between workmen and employers. Decisions of the higher courts more uniformly favor the employers than do the verdicts of jurors. The higher courts decide more strictly in accord with the law, which in turn embodies the common sense of the past, in this case, of the eighteenth century; 'whereas the sympathies of the vul-

gar, as they appear in jury decisions, are largely the outcome of those modern experiences that are at increasing variance with the foundations of the common law' (p. 281).

Trade-unionism is a sort of half-way house in certain respects. It is at variance with the natural-rights foundation of the common law. It 'denies individual freedom of contract to the workman, as well as free discretion to the employer to carry on his business as may suit his own ends'; on the other hand, it does not usually oppose overtly the institution of property. Nevertheless, as the workmen's exigencies are entirely extra-legal (since the law does not recognize any such facts as a standard of livelihood or comfort), so 'the revision of the scheme aimed at by trade-union action runs, not in terms of natural liberty, individual property rights, individual discretion, but in terms of standardized livelihood and mechanical necessity; it is formulated, not in terms of business expediency, but in terms of industrial technological standard units and standard relations.'

The query arises in connection with the above, as to whether the attitude of socialism, or the less extreme position of trade-unionism, is so solely mechanical and matter-of-fact. Is there not a certain demand for fairness, and at the same time a consideration of the general welfare? Is there not a feeling of solidarity, fostered by the organization of machine industry, which is as truly a factor in the workman's attitude as is the materialism induced by the technique of the machine process? The unions, at least, have shown no lack of 'ideals,' although it may be granted that their ideals are not those of 'natural rights.' Indeed, what is the higher standard of livelihood, comfort and intelligence which the unions seek but idealism? The machine is doubtless opposed to conventions and aristocracies, but by increasing the social interaction through the massing of skilled workmen it sets up a new social force which is as favorable to democratic and social ideals as the older isolation (still continued in rural occupations) was to individualism. The psychologist who was looking for analogies might in truth find them in plenty between the unions and the primitive kinship or patriotic groups. There is a similar 'loyalty,' a similar regard for rights of fellow-members and disregard of claims of outsiders, a similar justification of force.

While the insufficient attention given to the social forces leaves a sense of undue simplicity and abstractness in the book viewed as a complete psychology of the business and industrial process, it must be regarded as a highly important contribution to social psychology. The theory of business enterprise is getting before the general public in

various interesting forms, but to the scientifically inclined none of them can compare in interest with Professor Veblen's analysis.

J. H. T.

Ethik als Kulturphilosophie. PAUL BERGEMANN. Leipzig, Hofmann, 1904. Pp. 639.

Chapter I. is the part of this work which is of interest here, as it deals with the evolution of ethical facts. The first section of the chapter treats the primitive conditions of early society, the 'matriarchate' [an unfortunate term; it is generally recognized to-day that while kinship was in early times reckoned through the mother, the power was always in the hands of the men of the clan], and the rise and differentiation of morality in relation to law and custom. Section 2 treats the development of ethical facts in patriarchal society.

The author recognizes frankly the differences in detail which exist in ethical judgments and announces that he proposes to examine German ethics only. He nevertheless draws largely on the studies of other races for the supposed prehistoric German Society. His method is on the one hand to start with certain virtues (*e. g.*, courage, hospitality and sex-purity, mentioned by Tacitus) and to seek the causes for their emergence; and on the other hand to reason deductively from the conditions of clan and of patriarchal society what virtues might be expected to be generated. The difficulty which confronts the ethical student is that there are still many points as to primitive society which are not sufficiently settled to admit of such use as the author makes. This is notably true of the sex and family relations. We are on firmer ground when we consider the effects of primitive solidarity on sympathetic behavior and feelings. Work, warfare, and political conditions are also causes of special virtues which are well outlined. The cause of the differentiation of law from custom was primarily the regulation of possession. The clear separation of law with its sphere of customs especially condemned was a step toward the differentiation of the ethical, which is in essence a separation of the more internal from the more external.

The patriarchal society had of course an especially strong effect on sex and family virtues. The good effects are obvious and often dwelt upon. The evil effects are given by Bergemann a fuller statement than is usual. Not only the extreme results of the subjection of women, as found in polygamy, concubinage, and similar degrading relations, but the virtues most highly esteemed even in modern society show the effect of the patriarchal regime. The sphere of woman's excellence is still regarded as determined by what may be called

‘Hörigkeit.’ Her virtues as celebrated by poets are those of one who ‘belongs,’ or of an ‘adherent.’ Her legal rights are in many respects on the same basis. The new virtues of rulers which result in the patriarchal time prove to be the cardinal virtues of Plato.

J. H. T.

Philosophie des Sciences Sociales. I. Objet des Sciences Sociales.

RENÉ WORMS. Paris, Giard & Brière. 1903. Pp. 230.

The present volume contains little psychological material, as it is largely occupied with general questions of method and aim. The purpose of the book is to give as objective a statement as possible to the positions thus far gained. Part II. on the content, life and evolution of society has some points of interest to the psychologist. The essence of social facts is held to be, not imitation as with Tarde nor constraint as with Durkheim and Coste, but mutual understanding and coöperating or concurrent action (*concours, entente*), the mutual interaction of several thoughts or several activities. For although both imitation and constraint play a part, neither covers all social phenomena. Similarly in discussing the correlation of social facts, the theories which ascribe exclusive dominance to economic conditions on the one hand or to intellectual attitudes on the other are rejected as applying to but a part of the fact. Instead the author inclines to the view that the distinctions — physical, economic, moral, intellectual and the like — are but subjective. The real facts can not be exhaustively comprised under any one of these categories, but rather have all these various aspects. This seems to be in accord with present psychological tendencies.

J. H. T.

The Essential Kaffir. DUDLEY KIDD. New York, The Macmillan Co. 1904. Pp. 435.

This is a book not primarily designed for the scientist. The author has mingled his own observations with accounts taken from other sources in such a way that it is seldom possible to know what the evidence is for a particular statement. The illustrations, however, which number one hundred, are from photographs by the author, and form a very valuable feature of the book.

An interesting point for social psychology is the relation of magic to society. There are ‘witches’ who are regarded as criminals, and there are ‘witch doctors’ who are regarded as useful and indispensable members of the tribe. The difference lies in the use for which the magic is used. The chief or diviner may use magic to counteract the magic used against his tribe or some member of it; or “duly recog-

nized persons are allowed to improve the crops or the weather, or to drive off locusts and birds and other pests by magical practices. It is thus seen to be legitimate to use magic for the benefit of the tribe or for common interests; it is wicked to use it for private or personal ends. Only chiefs or duly initiated diviners have any right to use magical practices; any of the common people supposed to have made use of magic run a tremendous risk of being put to death, for they are not doctors, but sorcerers." The 'authorized' diviners claim to be in touch with the ancestral spirits. Whether the witches regard themselves — or are regarded — as having to do with a special set of spirits, or whether they rely wholly on the principles of sympathetic magic, is not stated. In any case, some interesting comparisons are suggested with the attitude toward magic among the early Hebrews. With them, as with the Kaffirs, there was a sort of divination used by the priests or rulers which was authorized; it was regarded as a method of learning the will of the national god. On the other hand, 'witchcraft' had as one of its forms consulting the dead. Ancestral spirits had come under the ban. Among the Malays certain spirits were regarded as belonging to the sphere of magic.

An interesting feature of the Kaffir is the peculiarly strong development of his 'social self' (in James' use of the term). All chiefs keep a Court Praiser whose business it is to go in front of the chief and sing his praises. After a man has died it is as important to praise him as to supply food. To praise such an ancestral spirit is to call over his 'praise-names.' "The Kaffirs seems to think that ancestral spirits slowly vanish, much like the Snark. As soon as people forget the great things they did and their praise-giving names they practically cease to exist. Their life after death is vaguely dependent on the memory of the living." * * * "The moment a man's praise-giving titles are forgotten it becomes impossible to worship him in any full sense, for wherewith shall the people praise him?" The converse consequences are also drawn by the people. If the sacrifice of the ox with the accompanying praise does not obtain favorable results the people say, "When have we ceased to kill cattle for you and when have we ever refused to praise you by your praise-names? Why, then, do you treat us so shabbily? If you do not behave better we shall utterly forget your names, and then what will you do when there is no one to praise you? * * * We shall utterly disown you. We shall tell the people that as for us we have no ancestral spirits, and this will be to your shame." But such a dreadful penalty as this works both ways. As the Hebrew felt humiliated that any could say

"Where is now their god?" so the Kaffir finds his own self shrivel in the thought that no ancestral spirits heed his prayers. "As for us, we have no Amatongo, and we may as well perish." The social factor in religion, so forcibly presented by Robertson Smith, is evidently the most prominent object of the Kaffir religion.

The treatment accorded marriage and the sex-relations is very discreet. The author seems more concerned to prove that the Kaffir sexuality is mostly what a European would call immorality, than to point out scientifically just what aspects of sex-relations are controlled by custom or by the group, and what are left to individual caprice or passion. Polygamy, concubinage, promiscuous relations at certain specific seasons, doubtless belong to a lower grade of morality than European theory authorizes, but if the emotional and intentional aspects are more important for the total situation than the mere physical facts it is necessary to be wary of reading into the situation the emotional and intentional attitudes of a more developed stage. If these were present the situation might well be intolerable; but if, on the contrary, religious and patriotic sanctions attend a general line of conduct they certainly transform the physiological facts. The early Hebrew documents afford numerous illustrations of acts which for us are very difficult psychologically. There are evidences, scattered through Mr. Kidd's book, of social control, *e. g.*, the *hlonipa* or restrictions upon seeing or talking with the relatives by marriage; the restrictions upon marriage between relatives, or those bearing the same name; the regulations as to divorce and the cattle-payment; but they are not massed so as to bring out the psychology of the relation. In discussing the merits of cattle-marriage, however, the author points out how the custom of buying the wife enhances the value of woman, not only in the eyes of her father who receives and of the husband who gives the cattle, but also in the eyes of the woman herself. To be worth a great herd of cattle is as much an evidence of dignity and esteem as for an American heiress to marry a title. "The women would view with alarm any proposal to abolish the plan (of purchasing wives by cattle), and they pour scorn and contempt on a woman who has not been duly bought by cattle; they call such women old cats, for the cat is the only animal they consider unworthy of being sold."

The book is written in a very entertaining style and with its fine illustrations certainly gives a vivid picture of the Kaffir.

J. H. T.

The Psychology of Race Prejudice. W. I. THOMAS. American Journal of Sociology, 1903, IX., pp. 593-611.

The basis of race-prejudice is biological. The final step in animal growth from the primitive tropic reception or rejection of stimuli vitally good or bad through the later adaptation of sense-organs for more complex discriminations, is the appearance of judgment (attention memory, and comparison) designed to estimate stimuli by reference to past cases, and of emotions, which are the felt organic changes accompanying the choice or rejection of agreeable or disagreeable stimuli, and which reinforce action following decision. Where there arise fixed recurrent situations with fixed stimuli, good or bad, fixed correspondent mental attitudes, or instincts, develop, as predilection and prejudice; and by force of suggestion characteristic signs of the object, as a voice, odor, or color, may come to evolve the same reaction as the object itself. 'Unaccommodated man' is hostile and suspicious by reason of his predacious struggle for food. His alliance, however, with wife, children, blood-brother, domestic animals, clan, tribe, and nation makes part of his environment part of his intimate 'self.' A tribal 'self' of predilections grows up opposed to the 'not-self' or outside world of prejudices, with an instinctive organic sense of tribal solidarity essential to group preservation, localized in predilection or prejudice towards characteristic aspects or signs. In this growth several factors emerge. Prenatal organic association of mother and offspring in mammalian intra-uterine reproduction, social association during lactation and a long infancy essential to a complex type, develop intense maternal interest as the subjective condition necessary to insure the care of the immature child. The male is infected with this interest indirectly through association with and regard for the mother. The bias toward the child extends and attaches peculiar value to the characteristic marks of its personality, features, toys, dress, etc., and attention and memory become obsessed by them to the exclusion or disparagement of contrasted ones. In courtship, the peculiarities of one sex excite peculiar organic responses in the other. Characteristic traits or behavior, conspicuous or well displayed, win recognition and triumph as marks of maleness or of femaleness, are biologically selected, and are singled out for emphasis and made to carry a whole fund of sex suggestion. Witness fashion in dress and cosmetics, as the use of fat and charcoal by negresses, of rice-powder by whites, of lacing, bustles, etc. And the prevailing tribal type-characteristics are chosen for admiration, as fatness in women by the Hottentot, slenderness by the Egyptian, while opposed characteristics

of other tribes are disparaged. Again, in coöperative alliance for hunting and defence, attention is fixed on characteristic natural or artificial signs, and, through usage, attaches emotional values to them, as in scarification, tatooing, mutilation, totemic marks, flags, the rite of blood brotherhood — concrete sensuous symbols aiding an unpracticed power of abstraction and representing the group's associational part. In the opposition of 'self' and 'not-self' in the feud, any mark of either group in dress, features, speech, grows hateful to the other. Finally, it is normal to feel easy, neutral, relaxed in the presence of the usual; but anything unknown or strange becomes sinister and hostile by reason of its disturbing set habit and provoking strained attention and high excitement. By the law of interest, then, the tribe fixes on external signs of unlikeness in another group, features, dress, speech, 'scanty beard,' 'hirsuteness,' color, shape of forehead, nose, or eye, height, or facial line, exaggerates them, and holds them up to scorn, while, on the other hand, it makes more prominent and admirable its own characteristic traits, as the breeder does with animals in breeding and the female with herself in fashions. In connection with these signs are seen the concrete expressions of prejudice, as numerous examples bear out.

Race-prejudice is, accordingly, superficial, attached to external aspects of strange people. But, originating before deliberative thought, instinctive, immediate, persistent, it is not open to conscious or legal control. Nevertheless, by association or a slight change of stimulus, like fashions, it is easily dissipated or converted to its opposite. Witness Livingstone's and Stanley's temporary preference of the dark skin and the negro's lofty 'whiteness' toward his African brother. The northerner feels true prejudice toward the unfamiliar skin. The southerner by long association with blacks, from the cradle even, has lost skin — or race-prejudice proper, but caste-feeling, contempt of the higher group for the inferior, has reinforced marks of superiority and inferiority, whiteness and blackness, as aids in manipulating the lower by its suggestive effect on each, and here prejudice is more ineradicable. But race-prejudice will never disappear as long as mankind is diverse. Instinctive, unreasonable, not open to legislation, it will slowly diminish with increased intercommunication, common interests and standards, similar education, equal access to knowledge, mental and social parity. Races will come to stand to each other as specialized occupations in business or science do to-day, where the individual's ability to get results gives him a status independent of, quite overshadowing indeed, the superficial marks of personality.

The Sociology of Conflict. GEORG SIMMEL. Translated by A. W. Small. American Journal of Sociology, IX., 490-525, 672-689.

Conflict is a positive factor in socialization, not merely a disintegrating factor. It is coördinate with unity and harmony. Indeed, each of these two kinds of factors, the conflicting or diverging factors, and the unifying or converging factors; the struggle principle and the unifying principle, arrives at its complete sociological significance only in coöperation with the other. Every actual unification in society contains, along with factors which make for harmony between the elements, others which primarily make against harmony. Social unity or organization is the result of both categories of reactions.

Various illustrations of this thesis are given. An individual achieves the unity of his personality not in such fashion that its contents invariably harmonize according to logical or material, religious or ethical standards, but rather as contradiction and strife not merely precede that unity, but are operative in it at every moment of life. Further, if we had not the power and right to oppose tyranny and obstinacy, we couldn't endure relations with people who betray such characteristics. Opposition affords us a subjective satisfaction, without which the relationship, *i. e.*, the social structure, would break down. Without this aversion and incipient opposition, life in a great city would have no thinkable form.

These hostile relationships do not of themselves produce a social structure, but only in correlation with unifying energies. Whenever an historical unification and organization has come about, the process has contained various distinguishable forms of relationship, each one of which sociology isolates and abstracts from the manifoldness of actual existence. It is the nature of the human mind not to be bound to other minds by a single thread.

The whole phenomenon of hostility may be in part accounted for by a certain formal impulse of hostility — an instinct of antipathy. This appears in that natural enmity between man and man, in the pleasure in the misfortune of others, the spirit of contradiction, the ease with which hostility can be suggested. Hostility is thus a primary impulse of the subject, which of itself seeks an adequate object; not a mere reaction in the subject, caused by the presence of a stimulus. Of course, for the total phenomenon of hostility, not only this impulse is needed, but also appropriate objects.

In order that conflict may be most intense, there must be present some unifying elements. This is shown in various cases. In the war

game there must be agreement to struggle, and the struggle occurs under reciprocal recognition of norms and rules. Likewise in legal struggles. Where both parties pursue one and the same object, as truth in scientific controversies, the struggle becomes more intense. The consciousness of being the representative of superindividual claims lends to the struggle a radicalness. This is further shown in the social struggles since Marx, which have centered more and more around the objective organization of the productive system, and less and less around mere personal embitterments. Thus, in these cases, the struggle is intensified because it is carried on under reciprocally recognized norms, or because it relates to objective interests recognized on both sides as superindividual—in other words, because the conflict factors are united in some degree with unifying factors.

The same thing is also true in a more marked way, where there is a previous community between the parties to the conflict. There are two types of previous community. (1) Community of Qualities, where the law is that an enmity must excite consciousness the more deeply and energetically, the greater the similarity between the parties among whom it originates. Under this head come family quarrels, etc. The deepest hatred grows out of terminated love. The most deeply rooted friendships may come easier to a conflict, because each party is confident that no shock could shatter the relationship; while a friendship rooted in inferior depths of feeling may run a course much more harmonious. Again, the hatred of apostates and heretics illustrates this law. Indeed, that a difference of convictions should run into hatred and struggle, occurs as a rule only in case of essential and original equality of the parties. (2) Community through subsumption under one and the same social interdependence. When conflict takes place after such an interdependence, a new motive appears, social hatred, *i. e.*, hatred toward a member of a group, not from personal motives, but because he threatens the existence of the group.

Finally, jealousy shows us the case where the erection of antagonism above unity reaches its most radical form. For, in jealousy, the subject feels that he has a claim to a person, or to some relationship with a person, which is unjustly withheld from him by a third person. And the tension of antagonism between the jealous person, and the person on whose account the jealousy is aroused toward a third person, becomes the stronger, the more unlimited the unity is from which it proceeds, and the more passionately its conquest is sought.

Parallel with these influences which struggle exercises on the

relations of the parties to each other, is the influence which it exercises on the inner structure of each party. There must be inner alterations and adaptations demanded by the exigencies of the conflict — concentration, and pulling oneself together. Only when each party is unified, can the struggle be carried to a decisive issue. Groups which find themselves in any sort of war are not tolerant of any departures from the unity which binds the group together. This is illustrated by the severity with which women condemn any violation of morality by members of their own sex, because morality is their chief means of defence against the encroachments and excesses of the opposite sex, and any slight relaxation of morality would endanger the whole structure. Thus, struggle has a solidifying effect within the whole group.

G. P. ADAMS.

UNIVERSITY OF CHICAGO.

BOOKS RECEIVED FROM SEPTEMBER 7 TO OCTOBER 7.

The Principles of Knowledge. J. E. WALTER. 2 vols. West Newton (Pa.), 1900 and 1904. Pp. 302 and 331. \$4.

The Ainu Group at the St. Louis Exposition. F. STARR. Chicago, Open Court Co., 1904. Pp. 118.

Ants and some Other Insects. A. FOREL. (Transl. by W. M. WHEELER.) Chicago, Open Court Co., 1904. Pp. 50. (Brochure.)

[English version of 'Inquiry into the Psychic Powers of these Animals, with Appendix on the Peculiarities of their Olfactory Sense.']

Proceedings of the Second Convention of the Religious Education Association, Philadelphia, 1904. Chicago, The Association, 1904. Pp. xiii + 640.

Du rôle de l'individu dans le déterminisme social. D. DRAGHICESCO. Paris, Alcan, 1904. Pp. 368. Fr. 7.50.

Science and Immortality. W. OSLER. Boston and New York, Houghton, Mifflin & Co., 1904. Pp. 54. [Ingersoll Lecture.]

L'Année Philosophique. F. PILLON. 14^e Année (1903). Paris, Alcan, 1904. Pp. 314.

Herbert Spencer. J. ROYCE and J. COLLIER. New York, Fox, Duffield & Co., 1904. Pp. 234. \$1.25 net.

Adolescence, its Psychology, etc. G. STANLEY HALL. New York, D. Appleton & Co., 1904. 2 vols. Pp. xx + 591 and 784.

An Introduction to the Theory of Mental and Social Measurements. E. L. THORNDIKE. New York, The Science Press, 1904. Pp. xii.

NOTES AND NEWS.

THE International Congress of Arts and Science met in the World's Fair Grounds at St. Louis, September 19-25, with nearly 1,000 members in attendance. The opening meeting, on the afternoon of September 19, was very largely attended. After the formal opening exercises the introductory address was delivered by the president of the Congress, Simon Newcomb, on 'The Evolution of the Scientific Investigator.'

On September 20 the seven Divisions met in the morning. G. Stanley Hall presided and gave the opening address before the Division on Mental Science, the subject being 'Conditions and Prospects of Psychology.' The twenty-four Departments met later in the same day. George T. Ladd presided in the Department of Psychology in the absence of Noah K. Davis. The addresses were, 'Fundamental Conceptions and Methods in Psychology' by J. McK. Cattell, and 'The Progress of Psychology in the Last Century,' by J. Mark Baldwin (read in his absence by R. B. Perry).

The Section meetings occupied the four succeeding days. The following is reported by Wm. Harper Davis, secretary for the department of psychology. The Section on General Psychology met with Josiah Royce in the chair. Addresses were made by Harald Höffding on 'The Relations of General Psychology,' and by James Ward on 'Present Problems in General Psychology.' The general discussion which followed was participated in by W. T. Harris, Mary W. Calkins, A. T. Ormond, and the previous speakers in reply. In the Section on Experimental Psychology Edward A. Pace presided; the speakers were Robert MacDougall on 'The Relations of Experimental Psychology,' and E. B. Titchener on 'Present Problems in Experimental Psychology.' The papers were discussed by A. T. Ormond, the Chairman, and the principal speakers in reply. The Section on Comparative and Genetic Psychology was presided over by Edmund C. Sanford, who gave an introductory address. The speakers were C. Lloyd Morgan on 'The Relations of Comparative and Genetic Psychology,' and Mary W. Calkins on 'Present Problems in Comparative and Genetic Psychology.' Brief papers were then presented

by the late C. L. Herrick (read by C. Judson Herrick) on "The 'Dynamic' or 'Functional' Method in Comparative and Genetic Psychology," John B. Watson on 'The Importance of Combining Neurological with Psychological Methods in Comparative Work,' and Wm. Harper Davis on 'Certain Methodological Considerations Suggested by the Principal Addresses.' The general discussion was participated in by Henry Rutgers Marshall, Harald Höffding, and C. Lloyd Morgan in reply. Edward C. Cowles presided in the Section on Abnormal Psychology, in the absence of M. A. Starr. Pierre Janet spoke on 'Les problèmes actuels de la psychologie pathologique et les oscillations du niveau mentale,' and Morton Prince on 'Some Problems of the Unconscious.' There followed a general discussion by Messrs. Höffding, Marshall, Janet, and the secretary of the meeting, Adolf Meyer. (We are indebted to Dr. Meyer for the report of this Section.)

The entire proceedings of the Congress are to be printed, and should form a valuable contribution to the literature on the present state of scientific research.

WE have received a special number of the *Revue de Métaphysique et de Morale*, under date of May 1904, devoted to the commemoration of the death of Kant. It is a most fitting volume of 340 pages, with contributions from the pens of many of the most distinguished writers of the continent, of which the most psychological are those by Eucken on 'The Soul,' Basch on 'The Imagination,' and Cantoni on 'Space,' in the Kantian system. We congratulate the *Revue* on this fine tribute to the great philosopher.

It is proposed by the Johns Hopkins University Department of Philosophy and Psychology to hold on October 28 an informal commemoration of the anniversary of the death of John Locke. Short addresses will be delivered on various aspects of the work and influence of the philosopher.

It is with very great regret that we record the death, at Socorro, New Mexico, on September 15, of Dr. C. L. Herrick, editor of the *Journal of Comparative Neurology and Psychology*, and a valued contributor to this REVIEW.

DR. J. W. BAIRD, Ph.D. (Cornell), has been appointed assistant in experimental psychology in the Johns Hopkins University. Professor Stratton has entered upon his duties as professor in the same department in that institution.

DR. H. W. STEWART, of the University of Iowa, is to take the work at Lake Forest University of Professor Walter Smith, who is on leave of absence for the year.

DR. J. E. W. WALLIN, Ph.D (Yale), has been reappointed demonstrator in experimental psychology at Princeton University.

The following items are taken from the press:

MR. LUTHER A. WEIGLE has been appointed instructor in psychology at Yale University.

MR. WILL GRANT CHAMBERS has been called from the chair of psychology and education in State Normal School, at Moorhead, Minn., to the chair of psychology in the State Normal School of Colorado, at Greeley.

THE Second International Congress of Philosophy was opened at the University of Geneva on September 4, with 316 members in attendance.

WE welcome the appearance of the first issue (May, 1904) of the *American Journal of Religious Psychology and Education*, already announced in these pages. (Worcester, Mass., Clark Univ. Press, \$3.50 per year).

DR. ADOLF MEYER, of the New York Pathological Institute, has been appointed Professor of Psychiatry in the Cornell Medical School, New York City. He will continue to hold his former position together with the new one.

CONTENTS OF THE MAGAZINES.

PSYCHOLOGICAL REVIEW, XI., 3. The Law of Attraction in Relation to some Visual and Tactual Illusions: *Haywood J. Pearce*. The Relation between the Vaso-Motor Waves and Reaction Times: *William R. Wright*. On the Horopter: *George T. Stevens*. Shorter Contributions. The Logical and Psychological Distinction between the True and the Real: *C. L. Herrick*. The Period of Conversion: *G. A. Tawney*. The Genetic Progression of Psychic Objects: *J. Mark Baldwin*. Notes. On the Attributes of Attention: *M. W. Calkins*.

REVUE PHILOSOPHIQUE, LVII., 5. De la vérité: remarques logiques: *A. Naville*. La perception de la verticalité de la tête et du corps: *B. Bourdon*. La conception générale de l'association des idées et les données de l'expérience: *H. Piéron*. Notes et observations. De la conscience des agonisants: *Vaschide*. Miscellany.

RIVISTA FILOSOFICA, VII., 2. Dell' odierno concetto della 'Storia della Filosofia': *V. Alemanni*. Nota psicologica intorno al significato dell' Argomento di Sant' Anselmo d' Aosta: *R. Nazzari*. Psicologia della Credenza: *A. Aliotta*. La Dottrina delle due Etiche di H. Spencer (II.): *E. Juvalta*. Nota Estetica: *A. Manzari*. Miscellany.

THE PSYCHOLOGICAL BULLETIN

PROFESSOR BALDWIN ON THE PRAGMATIC UNIVERSAL.

In a very comprehensive and suggestive article on 'The Limits of Pragmatism' in the *PSYCHOLOGICAL REVIEW*, Volume XI., No. 1,¹ Professor Baldwin finds, as do many others, one of the chief 'limits' to be the inability of pragmatism to make universal judgments. He finds it "interesting to note that the word 'general' does not occur in the rather full index to the Chicago *Studies in Logical Theory*,"² which is freely cited as representative literature of pragmatism. Now if Professor Baldwin had but recalled what he must well know, that nothing is so fickle as an index, he would have turned to 'universal,' especially as he interchanges this term with 'general,' under which he would have found eight references, some of them extended with 'ffs.' And in the monograph on 'Existence, Meaning and Reality,' to which he also refers, there is space to the amount of five octavo pages given almost entirely to the discussion of universality. Indeed it is difficult to see how one could go through the 'Chicago Contributions' and emerge with an impression that this topic had been neglected.

As there is a conception of abstract universality, which is difficult to reconcile with any sort of pragmatism, so there is current, largely among its critics, a conception of pragmatism which is difficult to square with any kind of universality. So far as I have seen, the imputations of 'Atomism,' 'Nominalism,' etc., are based, not on a criticism of the fundamental conceptions of pragmatism, but on an atomistic interpretation of Professor James' pluralism. I say 'an atomistic interpretation,' for it seems to me that it does not require a second look to discover that Professor James' pluralism is not sheer atomism.

¹ The tardiness of this discussion has only the time-honored excuse — 'the press of other work.'

² Footnote, p. 53.

Everywhere there is 'inter-action,' 'stimulus and response,' 'generation' and 'growth.' The emphasis of the pluralistic character is simply a reaction against a lust for a unity so absolute that there is no room in it for any movement of differences. And here, to my mind, we touch the metaphysical nerve of the whole pragmatic movement. Pragmatism is not concerned primarily with the problem of unity and plurality, although experience is as manifestly a plurality as a unity. Its chief concern is with the problem of change, of development. It is an attempt to reach such a conception of unity, *and* differences, as shall permit of 'real' movement. It is a crusade to release Change from the limbo of Appearances, and Reality from the stocks of a changeless Unity.

Seeing that the champions of unity have almost with one voice insisted that the unity of reality involves its unchangeableness, some, who cherish convictions against such cashing of change, have apparently accepted this verdict of absolutism and said in effect, 'if the choice is between absolute unity with absolute fixity on the one hand, and absolute plurality with movement, development, on the other, we accept the latter.' But the pluralist at once restores unity by his categories of 'interaction' 'stimulus and response,' etc.; only now he has a dynamic instead of a static unity. It is quite 'possible, then, that one may be a pragmatist' and insist emphatically upon this moving unity. At all events, the attempt to throw the pragmatist's case out of court at the start on the plea of 'atomism' is certainly premature.

Returning to Professor Baldwin's 'limit,' he finds that while perfectly capable of making particular judgments, pragmatic logic is impotent when it attempts to deal with the universal (pp. 50, 52 ff.). Now to many modern logicians, including perhaps most pragmatists, it would seem that such an indictment could be drawn only on the conception of a pretty separate and independent relation between the particular and the universal. Most pragmatists, I think, would regard it impossible to have a valid logic of particular judgments apart from a logic of universals. For every judgment is a development of experience through a universal. A standpoint, therefore, which is able to construct a valid logic of the particular judgment must have in it, whether or not it has actually been brought out, a logic of the general.

In Professor Baldwin's account of the universal it seems to play, as in the statements of Professor Royce and Mr. Bradley, two quite different rôles, and the relation between them is very difficult to

discover.¹ "It is just the meaning of a general mode of thought that it stands for the particular case in the sense of organizing it with other experiences" (p. 53). On the other hand 'the general concept pretends to be valid as a vehicle of the real apprehension of the world. Now this is capable of an interpretation quite in agreement with (1); and indeed Professor Baldwin comes near giving it such a treatment on the page quoted, as will be shown below. But on the very next page we read that this world, the real apprehension of which it is the business of the universal and normative aspects of experience to give us, is one that transcends the experiences of real life. "How can practical life adequately test the validity of modes which essentially claim to transcend the experiences of real life?" Here, indeed, I am inclined to think there is nothing for the pragmatist but to humbly confess his impotence.

On the test of the universal Professor Baldwin says (p. 53): "No appeal to a concrete situation can validate an aspect of reality which is *ipso facto* a systematization of various such situations or cases. There must be, therefore, if such thinking is to have any control or positive validation, certain principles of logically apprehended reality as such. This would throw us back upon the traditional 'laws of thought,' I suppose, or some analogous self-applying criteria of sound thinking."

At the risk of appearing captious, the discussion at this point will have to run somewhat to an exposition of terms. If we take 'concrete' etymologically it should mean the unified harmonious grown-together stage of experience which does not need 'systematizing.' It is the immediate outcome or forerunner of systematization. It is only when experience ceases to be 'concrete' in this sense that organization is required. The general, therefore, is not a system 'of various concrete experiences as such.' It is only when experience is broken up and becomes material, a 'matrix,' a 'platform,' to use a term of Professor Baldwin's, for further experience, that it needs organization.

¹ As another illustration of the strange *tête-à-tête* a philosophical discussion may bring about the following is interesting: On p. 53 Professor Baldwin says: "This may be a way of saying, with many modern logicians, that only particular, not universal judgments carry the affirmation of reality: if we limit ourselves to pragmatic tests, available only in concrete experience, I see no way of avoiding such a view. But such a position it seems to me allies pragmatism with extreme nominalism." But what about the 'many modern logicians' holding this view, who are not pragmatists? (Indeed I know of no pragmatist who holds it.) And it is just the absolutists who are the chief expounders of this view. Behold then, according to our author, the pragmatist and the absolutist sitting together in the tent of nominalism!

The point can be stated in terms of the conception of 'system.' Why should various 'concrete' experiences need systematizing anyway? And in just what does the systematization consist? And how is it known when systematization is reached? Professor Baldwin says that systematization consists in 'organizing a particular case with other experience.' Here, of course, we have only exchanged terms. For we have forthwith to answer for 'organization.' Nor are we much better off in the next sentence. "It introduces organization, relationship and systematization into experience just to the dropping off those aspects which are individual." Thus, experience becomes general by being organized with other experiences, and it is organized by becoming general, that is, by 'leaving off the individual aspect.' And what, by the way, are these individual aspects? Does every experience have a certain quality that is in itself individual and a certain other that is in itself universal? But of this more below. So far, at any rate, we have made little progress in finding a criterion of organization and system. And the difficulty in starting out to systematize and organize experiences just at large is very great. None of this is intended to call in question the fact of system and organization in experience. It desires only to call for an interpretation instead of a mere assumption of them.

Nor do I see that we gain much by 'falling back upon the traditional laws of thought'—consistency, contradiction, etc. For we must at once face the question: What is the meaning of 'consistent,' or, as Professor Baldwin calls it, 'flawless' thinking, in terms simply of the process itself? Professor Baldwin does not explicitly deal with this question, but I imagine the only answer he could make is the one generally made, viz., that it is simply 'the sense of a harmonious, unified, unimpeded flow of the thought process within itself.' If so, are we not caught on the very sands of 'subjectivism' and 'atomism' from which we have been so frantically warning the pragmatist? If the test of thinking is consistency and the mark of consistency is simply the immediate sense of harmony and freedom in the process in itself, apart from any limit in further experience, and if we take this as in itself yielding truth, reflecting reality, is not this the very essence of subjective atomism? The abstract universal is thus just as subjective and atomistic as the abstract particular. Nor can we escape by an appeal to 'the essential uniformity of intelligence as such.' This is as gigantic a *petitio*—to say nothing of 'the facts in the case'—as its 'empirical' correlative 'the uniformity of nature.'

There appears, then, to be need for some further analysis of 'sys-

tem,' 'organization,' 'consistency,' 'contradiction,' etc. Roughly sketched, the pragmatist's contribution to this demand runs somewhat as follows: he points out that every experience (and the distinction between 'experience in general' and 'my experience' matters not just here) has two values; (1) it has a unique value of its own as immediate experience; (2) it has a value as the basis, the 'platform' of further experience. And it is to this latter function that the categories of organization, consistency, universality and particularity, validity, truth and error belong. Taken in its bare immediacy, experience is neither valid nor invalid, true nor false, systematic nor chaotic, consistent nor inconsistent. It is only as a means to, or as an outcome of other experience that any content takes on these characteristics. Of course the process of systematizing has its own immediate sense value. But the point is that when we get at the conditions and significance of this 'sense' we find they lie in *its relation to further experience*. Shorn of this developmental character, organization, system, validity, etc., are indeed left without any 'limits' by which to define them. They remain terms referring to immediate qualities of experience offering and requiring no credentials of any sort.

If we pass now to the process of systematization itself, Professor Baldwin says that it proceeds by 'dropping off those aspects which are individual.' Taken as it stands, this certainly has in it a suggestion of old-time 'realism.' It reads as if there were in experience something *per se* individual and something else *per se* universal. But even if this were the case, why should the 'dropping' of the individual characteristics produce system or organization? Why would not the individual aspects themselves make as good a system as the universal? Now I do not think that any one who has read Professor Baldwin's most suggestive chapter on 'Selective Thinking'¹ and his debate with Mr. Bosanquet² on it, could regard any such statements as the above as representing his 'settled views.' Just as we there are taught that a content of experience 'is not selected because it is true, *but is true because it is selected*'; so, while the point is not explicitly treated, the whole trend and tenor of 'Selective Thinking' would lead us to say that systematization is not something determined wholly in and to itself, but is a process which is relative to and has its goal in a further concrete experience.³ The doctrine of that chapter, also,

¹ PSYCHOLOGICAL REVIEW, January, 1898, and Chap. XVII. of *Development and Evolution*.

² PSYCHOLOGICAL REVIEW, Vol. X.

³ Here it must be remembered that 'concrete' is used, not as the correlative of universal, *i. e.*, not in the sense of particular, but as meaning that stage

would lead us [to say, not that certain elements of experience are 'dropped' because they are *per se* particular, and others are retained because *per se* general, but the rather that they are particular because they are dropped and general because they are retained. It is just the fact that a certain content persists as the basis, the 'platform,' the *point d'appui* of further concrete experience, that makes it general. Also since Locke's analysis of Essence it has been well understood that what is 'dropped' as particular in one situation is retained as general in another. Generality, therefore, is not a kind or quality of content, but is the relation which any content bears to the further development of experience. In short, universality does not mean an absolutely changeless possession of all intelligence. It means rather the *continuity* of experience—the fact that experience is a self-developing process.

If this be the meaning of universality, and if by 'concrete' we mean just the further experience in which both the general and the particular disappear, then what else but the 'concrete' can be the 'test' of the universal? To be sure, it cannot test it as a representation or reflection of a reality which 'transcends all real life.' But it can test it as a developmental device *inside* the process of 'real life.' It is when we lose sight of this productive, developmental, this forward-moving function of the universal, that we have nothing left but to 'fall back on the traditional laws of thought' for the test of its validity.

Now pragmatism is not an attempt to sponge these 'traditional laws of thought' from the statutes. It simply insists that in themselves they do not constitute the final test of truth. *They constitute the cues and guides of the generalizing process.* They are part of the *technique* of thinking. In terms of habit they are, as Professor Baldwin well shows, part of the machinery whereby an hypothetical selection of material for adjustment is made. Here is where the so-called 'universal judgment' appears with its technique of 'consistency,' 'contradiction,' etc. The universal judgment is an expression of the habit elements involved in *every* judgment.¹ Hence, indeed, its 'hypothetical' character. But again not 'hypothetical' *in* or 'aspect' of experience to which the universalizing and particularizing process leads and in which they, as such, disappear.

¹Here may be the place to remark that it is possible that the treatment in logics of the Universal Judgment as *kind* of judgment, apparently complete in itself, tends—despite subsequent qualifications—to nourish the notion that there must therefore be a special kind of reality corresponding to it—which, not being found of course in 'real life,' must exist in a 'transcendent' realm.

itself. As an immediate experience it is as 'categorical' and 'real' as any other. It is 'hypothetical' only with reference to further experience, only because *it is not only an immediate but at the same time a mediating experience*. And in this latter rôle, the test of its validity cannot lie merely 'within itself.'

And this suggests that the solution of the different views of the function of the universal in 'real life' is perhaps to be found in the avoidance of a confusion of the immediate and mediating values of experience. The critics of pragmatism insist that thought is just as 'good' and 'real' and 'true' an experience as any other; to all of which the pragmatist enthusiastically subscribes. Aye, the intellectually tempered pragmatist (paradoxical as this may sound to some) may go even further and say with some of his critics that instead of being merely instrumental (in any *subordinate* sense) thought may well be regarded as the *end* to which all the other aspects of experience may be considered as means.

Even so, this yields the pragmatist's whole contention, viz., *that thought is not sufficient unto itself*. It must have 'means.' It can renew and feed itself only in and through the great stream of instinctive emotional and volitional content. It too must lose its life to find it. In insisting on the 'real,' 'true,' valid-in-itself character of thought the critic is taking thought in its immediate character. But this is not thought as a logical process; and 'true,' 'real,' 'valid' are here not logical categories. It is the mediating function of thought that gives it its logical quality, and to speak here of 'truth' and 'validity' with no reference to the goal of the mediation is surely a flagrant case of Hamlet without the Prince.

Such an omission too would seem to be pretty nearly equivalent to cutting off the second part of what Prof. Baldwin in his 'Selective Thinking' gives as, 'The test of truth in the external world.'¹ 'The first test is that of assimilation to established habits.' Instead of 'test,' etc., I should prefer to say, 'step towards constructing truth,' and instead of 'assimilation to' I should prefer 'response of.' Professor Baldwin continues: 'This is the test of the general character of a new experience.' Again, instead of 'test of' I should write 'constitutes.' Second, 'there is the environmental test or test of fact.' That is, 'there is a further selection from these established habits of those which work in the specific environment.' Here, for 'selection from,' etc., I should say 'reconstruction or modification of.' At any rate it is here clearly recognized that there may be an internal technique of

¹ Section 6 of the chapter.

generalization that does not as such give truth. Thought does not become 'true,' is not 'validated,' until it is tested by its results under the specific conditions. "A truth is an item of content which is expected when issuing in a movement to work under the exactions of fact." Again: 'There is no question of truth until *both* these selective functions have been operative.'¹ Here it is certainly implied that in the first 'test' alone we get only the abstract, formal universal—the mere statement that whatever the outcome is to be, it will be some kind of a reconstruction of certain established habits.

But from the standpoint of his paper on 'The Limits of Pragmatism' Professor Baldwin might be expected to reply, "Ah, but you have been quoting from my account of 'tests of truth *in the external world*,'" whereas my point here is that there is a realm of purely universal truth as expressed in the universal judgment, which is independent of 'the test of fact' or environment." The rejoinder obviously would repeat the burden of the whole preceding discussion, the net outcome of which is that when thought is thus cut off from the rest of 'real life' and is regarded as a self-sufficient, self-perpetuating process, it becomes essentially a subjective and atomistic affair. Truth and error consist merely in an immediate sense of harmony or contradiction unchecked by any 'limits' in further experience.

As already intimated this consequence is masked under the assumption of 'the essential unity of intelligence as such.' This really is a back door resumption of the social and other 'real-life' tests and checks of thought denied in the premises. For this means that the established habits which are the basis of the universal judgment have been developed, as Professor Baldwin has long contended, in a thoroughly social matrix. Hence we can trust the sense of consistency in the responses of these habits for a working hypothesis in the world of 'real life,'—the world in which the habits grew and to which therefore they are relevant.

To this Professor Baldwin could say that he has freely admitted that in a social pragmatism (and who has ever preached any other?) 'a strain of universality and generality is imparted to knowledge in the aspect which constitutes it public to a social group.' 'But,' he adds, 'the limitation remains that such a theory would give a logic of a stage of cognitive process, that at which pragmatic tests are transferred to the social group, rather than a philosophy of the entire movement of reality.'³

¹ *Development and Evolution*, p. 251; italics mine.

² Italics mine.

³ *The Limits of Pragmatism*, p. 51.

Now, in his Logic, the pragmatist does not profess to state *all* the content of 'the entire movement of reality.' The business of logic is to discuss the part thought plays *in* reality. This, of course, cannot be done without giving a general statement of one's view of the nature of reality. Hence, any logic seems bound to this extent 'to blow itself up into the dimensions of a philosophy.'¹ However, it is true that in so far as he is thus forced to state his view of reality the pragmatist confesses that the only reality he can find in which thought is playing a discoverable part is just the world of instinctive, emotional, volitional, social, 'real life,' and this he says too without prejudice to the conviction that this world of 'real life' may have in it things not dreamed of in our philosophies. And he would insist that when thought is thus placed in such a world it can claim not a mere 'strain' of universality but all it is capable of — all it can use and verify.

And elsewhere it seems to me Professor Baldwin has regarded this sort of verification as quite sufficient, not merely as a confirmation of a theory of the 'genesis' of thought, but as logical verification, — as a criterion of truth. In his effective rejoinder to Mr. Bosanquet² he says: "Genetic theory therefore explains both under what influence we have come to hold (often wrongly) certain judgments to be true and *also by what character judgments are true.*"³ To be sure this is prefaced with such statements as, "I agree with Dr. Bosanquet in confining genetic theory to questions of genesis. * * * Personally I am not a pragmatist. * * * I think pragmatism is not able as such to explain the general or universal aspects of reality." But if it is valid as a theory of genesis and if genetic theory can explain '*just by what character judgments are true,*' it has gone beyond the question of mere genesis. It is in the thick of Logic. And if truth involves universality, and if truth must be conceived in some sort of intelligible relation to reality, it is difficult to see just what there is left to be explained or interpreted by some other *kind* of metaphysic.⁴

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¹ *Ibid.*, p. 48.

² THE PSYCHOLOGICAL REVIEW, July, 1903.

³ Italics mine.

⁴ The MSS. of this article was received October 6, 1904. — ED.

A WORD OF REJOINDER TO PROFESSOR MOORE.

The reply which Professor Moore makes above, to my original criticism, allows a word of rejoinder, both from the need of clearing up the point involved, and also from his seeming to convict me out of my own mouth. The latter sort of argument would indeed prove me inconsistent, but would not in itself do much more. I shall, however, first state again the 'limitation of pragmatism' in as objective and plain a way as I can — for I feel that Professor Moore does not meet it — and then take a paragraph to vindicate my own consistency.

1. One of the 'limits of pragmatism' pointed out in my article is, looked at in a broad way, this: A statement, judgment, concept which seems to be and is accepted as being general, or universally valid — in the sense that it allows fruitful deduction and valid argumentation — can not have this value justified or positively tested, or have anything added to its import, by an appeal to cases, that is, by any pragmatic or experimental test. Such an appeal could only show that it was not universally valid, in case it does not work in the concrete¹ situation, or *that it was valid only so long as it did not fail.*² For instance, the appeal to consequences might show that two rival concepts both held good, possibly having no difference of result, through certain stages of a research, though both could not be at once logically universal. It follows, then, either that we have no such strictly logical universals, or that they must have other means of hanging together and justifying themselves than that of their experimental results. This leads unavoidably to the query whether there are strictly logical — non-experimental, in their use and value to us as now constituted — principles, rules or whatever we may call them, apparent in the organization³ of the experiences, by which these sorts of concepts, judgments, etc., have been constituted;⁴ so that their universality is *ipso facto* just a mark of their nature.

¹ Concrete in Professor Moore's meaning, if I understand it.

² It is in this sense only that it is true that all judgment is a 'development of experience through a universal'; yet I should prefer to call this meaning 'psychically general' rather than 'logically universal.' It is in this sense also that all universals, considered as generals, are hypothetical. In terms of habit, they are preliminary general meanings.

³ I cannot follow Professor Moore's difficulties in the application of the term 'organization': what I mean is any sort of cognitive construction of data — by association, imitation, etc.

⁴ Let us say, indeed, by social intercourse.

Professor Moore denies such things; but suppose we admit them: what effect does this admission have upon our instrumental theory of the origin of knowledge? As I conceive it, no effect whatever! And it is here that I find the pragmatists 'claiming the earth.' They say that a statement of origin is *ipso facto* an account of nature and validity. This is, so far as the ground given is concerned, a fallacy from several points of view. Logically it is an illegitimate conversion: they say 'all truth has been through processes of selection,' hence, by conversion, 'processes of selection are the only tests and criteria of truth.'¹ On the contrary, the possible and, I believe, the real state of things is that while all truths have their necessary origin in processes of selection, yet once come, they, like every other genetic product, are a *new mode, a new form of reality, something added to the system of things* — as James is fond of insisting — which can be understood only by seeing what it is like and what it claims to be. So when we find a logical whole that seems to be organized by intrinsic rules, and to have certain immanent relational values, and find it pursued by the sort of interest called theoretical — itself selected, no doubt, as a useful variation — what, pray, is the objection, after all is said as to the genetic aspects of it, to giving it a fair chance to stand alone on its own broad and competent bottom? Perchance if the doors be not closed and hermetically sealed to its entrance, an entirely new mode of cosmic being may steal into our mental domicile even while we are unaware! — a mode whose motto is 'objects for objects' sake.' I see no reason that a psychology should, simply because it is genetic, be able to stay the hand of an idealism of thought.²

So I think — to turn the tables on them — the pragmatists are not radical enough; they balk at the postulate of new modes, new reve-

¹ 'Pragmatic' literature is full of this fallacy: see it, *e. g.*, in another form in Bawden's exposition of James (*Jour. of Philos.*, I., 16, p. 422): "Beliefs are really rules for action, and the *whole function* of thinking is but one step in the production of habits of action." This passage was brought to my attention by C. Ladd Franklin.

² Yet to me the logical is not the final explaining category.

The ethical was put in a similar antithesis by Huxley, only [he worked the thing the other way, finding the claim of the moral in some way inconsistent with its natural history origin. It is just this situation that instigated my theory of 'genetic modes,' which recognizes new phases of reality arising and shining at any time, and holds that the genetic conditions are not exhaustive statements of their nature and value, except to a theory which holds to a mechanical equivalence of cause and effect in such a case, and which is therefore not genetic at all, but a-genetic. On any theory of real growth a statement of conditions of origin is in no way a prophesy of all the new thing is to be like or worth.

lations in the nature and texture of reality, of a sort which do not carefully refrain from having any but hypothetical and instrumental value!

Of course they say — and here James too seems to be with the others — still these new things are proved by their working, and so alone is nature justified of her children. Again, quite true, things must work — but *ad terminum quem?* To say so much does not tell us what place this use, this function, this phase of reality has in the *tout ensemble*, the *Gesamtbild* that philosophy desiderates. Here is another illegitimate conversion: is this nature's *only* justification of her children? A parent is economically justified of his child, but is that the only justification? If we once recognize the theoretical point of view, as summing up, standing for, and organizing in short-hand, generally applicable, formulas the utilities brought up to date, why may not this be, as it proceeds through the stages of development of thought, just a really inside view of things, a private rehearsal behind the curtain suited to the contemplative eye of reason? Again, I see nothing — except illegitimate conversion — to hinder one from thinking this: the conversion, namely, from 'the thought function is instrumental to practical adjustment,' to 'therefore practical adjustment is the only end of thought.' What indeed I contend for is the 'open-door' policy; and the limitation I aim to point out applies only to a pragmatism which refuses to allow thought to conduct its business in Manchuria by its own methods and rules of work — or allows it only under a special pragmatic *visé*. This Professor James, to refer again to his fine article in the October *Mind*,¹ seems to concede in allowing Royce (and others) to 'throw his own peculiar absolute around' the pragmatic scheme; and I am only interested to say that therein he has accepted a limitation of the pragmatic method necessary by those who crave something less relative. The problem of philosophy is left open.

2. As to my personal inconsistencies, they are of little moment except as the reconciliation of the seemingly inconsistent may involve — as in this case I think it does — an attempt to reach higher ground. The passages cited from me, by Professor Moore, as allowing the pragmatic view of truth, are from my paper on 'Selective Thinking' and the subsequent discussion with Prof. Bosanquet. The general argument, in the latter discussion, is to the effect that while logic may

¹ And how it contrasts with Mr. Schiller's writing! I intentionally said little of the latter's book in any former article because of a certain æsthetic revolt which prevents my reading much of it. I am helpless before the vulgarity of such writing as Mr. Schiller's — using this adjective only after others have. I must wait until Mr. Schiller's thought is filtered by his expositors!

be allowed to have its province, dealing with wholes which have their own criteria and norms of organization, nevertheless the theory of selective thinking must account for the origin and establishment of all possible marks of such logical wholes, including these criteria and norms.¹ This I maintain in opposition to the view that there is something in the logical so far exempt from selective processes, and so far 'pure' in character, as not to allow of any experimental or instrumental method of establishment.

It is, I freely admit, a rather negative sort of task to attempt to ward off trespassers from both confines of a single plot at one and the same time; but there is more at stake in my own case than the checking of trespassers upon a given territory. In the paper on 'Selective Thinking' it is maintained that there are two tests—to keep to the old terms²—of a truth: that of the 'platform' of what is already established, the test of habit; and after that the further 'test of fact.' Prof. Moore seems to think that I am now not holding to this scheme. But in the test of habit—integration in a previously established body of knowledge—it is just in this that the logical as such gets in its criteria, making its demands of consistency, etc. Without this a new item can not get that preliminary *exequatur* which is necessary to any intelligible application of the other test, that of fact. No hypothesis, even of the most inductive sort, can be brought to the bar of fact without first meeting the demands of consistency and inherent reasonableness. And although we hold, as indeed I do, that this antecedent 'platform' has been itself constituted by gradual selections, still, once come, its rules must be taken for what they really are, even though we have to call them by the old-fashioned term 'laws of thought.'

And the issue will be sharpened when I further say, in answer to Professor Moore's charge that I desert the 'test of fact' in certain cases, *that I do!*—not desert it, indeed, but simply recognize that it is not in actual operation. The whole body of sciences of 'abstract relationships,' the deductive and mathematical sciences, dispense with such a test: they reach results which we still have to call truths and reach them just by allowing the claim of true logical universality.³ Without attempting a positive evaluation of such bodies of science, still it

¹ That is, 'genetic theory explains by what character judgments are true'—a sentence which I do not find inconsistent with the 'limit' now set up, as Professor Moore seems to.

² Although, functionally considered, some of the terms suggested by Professor Moore are no doubt better.

³ See for example Professor Keyser's formulation of the 'Axiom of Infinity' (*Hibbert Journal*, April, 1904) and the whole literature of the 'new' infinite.

will not do to cut them off with the indirect sort of toleration due to by-products of a function which is in other conditions useful.

I hold in short that something further in the way of constructive interpretation of the *entire developmental situation* is needed. And the cue should be taken just from the further progress of reflection in actually handling the dualism of thought and action. This is the positive problem before us. And in approaching it I find place for the conception of genetic modes. The test of fact operates in the practical mode, while that of the truth-system invokes the logical mode. I would fain see this recognized before we admit that development lands us in a *cul de sac* for theory, while in life we find no final opposition. And it then remains to find the still more developed psychic mode in which the claims of both are adjusted without favor. I think in the 'semblant' or play mode — broadly and richly defined, *the æsthetic* — this sort of reconciliation actually does take place as a real experience. Instead of reading-back the genetic line and finding neutrality in 'pure experience,' so protoplasmic that the distinction of conscious and non-conscious itself seems to disappear — a reading in which for other purposes one may concur — I am compelled to read the other way, up the genetic line to the fruitful top. The realest experience, the true universal, is one that not only 'secures us God, freedom, and immortality,' but also 'bakes our bread.' So much at any rate in justification of a line of thought which has the appearance of facing two ways at once. I have elsewhere attempted to justify this method from genetic considerations ('Mind and Body,' *PSYCH. REV.*, May, 1903).

I cannot here take space to notice certain interesting points of detail in Prof. Moore's article. But these I note: my expression 'transcends real life' means only having meaning not exhausted by any real situation (as the ethical rule of 'right,' or the general concept of 'horse'). — As to 'nominalism,' my sense of its pertinent application to habit theories of the 'general' as such is sharpened by a discussion of my own view on the subject (in *Mental Development*) by M. Havard of Paris, under the term 'nouveau nominalisme.' — As to 'flawless thinking,' I cannot define it without invoking just the sort of criteria we are discussing — it is 'logical,' 'consistent,' 'valid' thinking; not merely comfortable psychic process! It *is* comfortable, and it *is* social and pragmatic in origin, *but* — Ah! there's the rub of conversion again — is it more? Mr. Peirce's remarks on 'reasonableness,' apropos of pragmatism, are interesting in this connection (*Dict. of Philos.*, 'Pragmatism'). — Why need a system of ab-

stract universals — a deductive science, in short — be merely a 'subjective and atomistic affair' as Prof. Moore claims? 'Twould be so, I conceive, only to a theory that is already subjective and atomistic; not to one that has a critique of the various sorts of reality-coefficients leading up to the 'general.'

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PSYCHOLOGICAL LITERATURE.

The Groundwork of Psychology. G. F. STOUT. University Tutorial Press, 1903. Hinds & Noble. Pp. vii + 248.

‘The aim of this book is to present a general view of mental process and mental development which shall be comprehensive and yet not vague and sketchy’ (p. iii). The author has written an elementary treatise which cannot be regarded as a mere abridgement of his larger works, a treatise to be put into the hands of beginning students in high schools and colleges and into the hands of busy men and women everywhere who desire a first comprehensive view of the subject. Such a book should be above all clear, and this is one of the clearest treatments of this subject in existence. It should be rich in well-chosen illustrative facts, and with these the book fairly teems. It should be as free as possible from technical language, and the author, without sacrificing exactness of statement, is in this respect remarkably successful. The treatment is systematic and progressive: it sets forth, with a thoroughness somewhat too great for its meagre size, an in the main true view of mental life. Indeed, so much praise has been deservedly heaped upon the book that one is at a loss to know where to stop. Among other things and in addition to the advantages already mentioned the discussions are so handled as to make them when taken together an introduction to logic and the philosophy of mental process. Moreover the doctrine of the author is in close harmony with certain recent biological conceptions which seem destined to have influence upon the psychology of the future. The method of the book is both analytic and genetic, and the author’s great interest in problems of mental growth and of mental training is evident in every chapter. It is a good book for teachers. In nearly every respect it is an admirable treatise. It is inexpensively bound, the American edition having wider margins than the English one.

It would be superfluous to try in this connection to review the doctrine of the work, as that is so well known, in its main features, from the author’s other writings. It divides mental processes into cognition and interest, subdividing the former into simple apprehension and judgment and the latter into conation and feeling attitude. The selective part played by conation in the development of particular cognitions and of the mind as a whole is emphasized. A feature of the discussion is a clear and simple presentation of the part-played by

society, social intercourse and language in the consciousness of self, in the construction of our ideas of the external world and in the thought of a real world. No other elementary work known to me compares with this one in its suggestiveness on these points.

But as an elementary text-book this one leaves something to be desired. Many teachers of beginning classes, after reading it, will find themselves leaving their way back through the book and asking the question, 'why not?' At least, this is the fear of the present writer. One wishes the same conceptions, distinctions and discussions had been presented in 478 pages instead of 239, with more play of fancy to throw certain things into relief. We should offer the subject with more perspective to the view of the student. Beginning students need room to roam about without losing sight of certain important landmarks. They will never get lost in this book, but they may fail to appreciate the wide reach of the subject. Miss Calkins' *Introduction* and James' *Briefer Course*, although lacking many of the merits of this treatise, are both superior to it in this matter of style. One suspects that they would interest a boy or girl where this book might fail to do so. In the hands of a good teacher, however, this difficulty arising from brevity can be overcome.

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FEELING AND EMOTION.

Travail et Plaisir. CH. FÉRÉ. Paris, Félix Alcan. 1904. Pp. 476.

In this volume Dr. Féré presents us with the most extensive series of studies of the influences which affect the capacity for work that has so far appeared. The method used throughout was to compare the work, measured by the ergograph of Mosso, under normal conditions with that accomplished when the conditions were varied in what seems to be every possible way. The author was the subject throughout.

The investigations cover so many different facts that it will be impossible to touch upon more than the most important in the review. Many of the results have also been published separately but are scattered through journals so little likely to come under the notice of psychologists that their previous publication will not diminish the value of the present volume.

The first subject that is investigated is the influence of rhythm upon work. It was found that most work could be done with a slow rhythm but that the increased fatigue makes the slower rate less advantageous than it seems to be at first sight. Change of rhythm during work

always produced a momentary excitement that was beneficial, but when the change was to a quicker the after-effects more than overcame the initial benefit.

There are several factors which have not been recognized generally as having an effect upon work which Féré finds to be most important. Among these are the application of heat to the scalp, which the author thinks has a direct effect upon the cerebral motor centers. This he substantiates by showing that the effect upon the right medius when hot water is applied to the left parietal region is much more marked than when the application is made to the right side.

All the special senses are investigated and it seems that stimulation of any sense has either a depressing or an exciting effect according to the quality of the stimulus. The influence of colors is very complicated. It is found that red is most exciting at the beginning but loses its effect very quickly; orange and yellow have a persistent exciting effect, green is moderately exciting and its action is more marked the more it is prolonged, blue and violet have a depressing action but serve to check fatigue. The most surprising fact in connection with these results is that they should be so marked. The changes in capacity frequently amount to an increase of 100 per cent. or more.

Another series of results which it seems very hard to explain is that contact with different substances, metals or woods, has a marked influence upon the amount of work. Aluminum and silver have twice as much effect as gold. While contact with 3 sq. cm. magnesium increases the momentary capacity for work nearly forty-fold, contact with glass diminishes it 30 per cent.

The Scotchman's retort to Dr. Johnson is abundantly supported by Féré. He finds that the capacity for work is increased 30.67 per cent. by the mastication of 5 grammes of wheat, while it is increased 101.56 per cent. by the mastication of an equal quantity of oats!

The magnet, too, has a marked effect upon the capacity for work. An ordinary bar magnet suspended in the neighborhood of the arm will markedly increase the work done during a rested condition and equally decrease it during a state of fatigue. The variations are always considerable, from 20 to 100 per cent.

A long series of experiments was devoted to the influence of various nervous poisons upon work. In practically every case it was found that narcotics had a first effect in exciting to greater activity and that this was followed later by diminished activity. In every case, too, the total effect was a loss of capacity. Ether, antipyrine, coffee, alcohol, tobacco, all show the same effect in different degrees.

Féré insists that in all cases the original exciting effect is at the basis of the pleasure which is obtained from them, and that the painful after-effects are forgotten.

Among the interesting more general facts that come out in the later chapters is new proof that mental fatigue and bodily are of the same kind. While the minor relations may differ, yet complete repose furnished the only means of recovering from either.

Less convincing to the reviewer seem his conclusions that there is a relative independence between the two hemispheres. This conclusion rests upon two classes of facts — that unilateral stimulation has greater effect upon movements of the same side, and secondly, that in alternate work with the two hands there is frequently an increase in the capacity for work on one side accompanying decrease on the other.

The conditions under which ergographic work must be done are so different from time to time and the likelihood of suggestion is so great that the acceptance of any complicated interpretation, even of such definite figures as we are given here, does not follow as a matter of course until corroborated by frequent repetition and confirmed by evidence of other kinds.

The author, however, defends himself in his introduction in the statement: "The risk of giving proof that one is not infallible is not, for a sincere experimenter, a sufficient reason for suppressing observations whose publication can at least serve to incite control experiments." Accepted in this light one can be very thankful to Dr. Féré for the results of an enormous amount of painstaking labor. It is only fair to say that the reviewer has in the main selected for mention those results that seemed to him most open to question and has passed over in silence many chapters that seem little open to criticism.

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La logique des sentiments. TH. RIBOT. *Revue Philosophique*, LVII., 587-611; LVIII., 38-71. June and July, 1904.

The subject of these articles is not at all that which Urban has treated of under the title, 'Logic of the Emotions' (this REVIEW, VIII., 262), namely, the immanent process whereby emotions become generalized (cf. Elsenhans, *Ueber Verallgemeinerung der Gefühle*, noticed above, VIII., 310). By the 'logic of the sentiments' and 'affective' or 'emotional' logic, Ribot understands the processes whereby conclusions are reached in the mental life under the controlling influence of subjective interests. It is opposed to 'rational'

or 'objective' logic, that is, processes of reasoning controlled by objective experience. All logical processes are emotional in their origin; later, however, objective forms of reasoning are differentiated. But emotional logic persists because subjective needs persist which objective logic cannot satisfy. In intellectual reasoning the emotional coefficient, even if it exists, is a negligible factor; in affective reasoning it is the determinative factor, the intellectual element serving only to give fixity to the natural fluidity of the sentiment.

The constituent matter, or terms, of emotional reasoning consists of concepts or judgments of value (= values), varying according to the sentiment and will of the individual. The matter of this logic is, therefore, the subjective judgment, which the reasoner, by an illusion, converts into an objective judgment and generalizes. It has two main types, according as the point of departure is (*a*) a desire which it seeks to satisfy, or (*b*) a belief which it seeks to justify. There are besides a number of subordinate types. But in all cases the reasoning is controlled by the principle of finality. What is sought is not truth, but a practical result. And the principal methods of attaining this result are (*a*) the accumulation of terms appropriate to suggest or justify the conclusion, and (*b*) the more calculated arrangement (gradation) of the means adapted to produce conviction. In either case the method is rather one of synthesis than, as in 'rational' reasoning, of analysis. Such reasoning is not confined to words, nor is it subject to the law of contradiction.

Ribot illustrates these general views by a more special consideration and illustration of the five principal types of affective reasoning which form his provisional classification, namely, the passionate, the unconsciousness, the imaginative, the justificative and the mixed. The passionate type (passion = emotion, persistent and obsessive) is the simplest, and only differs from association of ideas in the selective character of the end. Here we have, for example, the reasoning of timidity, of certain forms of love and of jealousy. What Ribot calls unconscious reasoning is illustrated by conversions and by the transformation of one emotion into another of an apparently different kind. Numerous examples are given. The term 'unconscious reasoning,' it should be observed, is used without prejudice to the question as to the actual status of the unconscious; the phenomena are studied *as if* the activity producing them were really reducible to judgment and reasoning. Imaginative reasoning is the most complete and frequent type of emotional reasoning. It uses imaginative construction to establish truth, and it is guided and controlled by the affec-

tive state of the reasoner. Illustrations: beliefs, ideas and conclusions relative to the future life; divination as a means of ascertaining the future; magic. The reasoning of justification used to justify a belief that refuses to be disturbed is the most childish type of affective logic. A related form is the reasoning of consolation employed to comfort the afflicted. Finally, in mixed or composite reasoning we have an approach to the rational type; only here too, while rational concatenation is demanded, emotion is used as a means to action and as a process in the argument. It is the reasoning of special pleading; its type is found in eloquence and its methods of procedure in this reference have long been formulated in the text-books of rhetoric. These various forms of affective reasoning reduce in the end to two types; in the one they serve for the conservation, in the other for the expansion of the individual life. To the first type belong the passive forms of passional reasoning (*e. g.*, in timidity), and the reasonings of justification (defence against the unsettlement of belief) and of consolation (attempt at a *restitutio in integrum*). To the second belong the active forms of passional reasoning (*e. g.*, in love), the latent operations that produce conversions and emotional transformations, the imaginative attempts to divine the future, and all the various shades of persuasive pleading.

Ribot promises to discuss other points connected with this subject in a special work. Meanwhile he has given us an interesting and valuable, if not altogether novel, chapter in the psychology of belief. The facts would seem to be, in the main, already fairly familiar; the novelty of the present treatment lies in the point of view. And here it may seem that the term 'reasoning' has to be unduly extended when it is used to include not only the so-called reasoning of justification and the mixed type, but also the selective associations of the passional type and such ambiguous processes as those which subserve the work of conversion and the metamorphosis of an emotion. Boole's definition of reasoning, which Ribot quotes to justify his use of the term, namely, that it is the elimination of the middle term in a system having three terms, might be applied, unless further interpreted, to the development of a plant; while if all processes mediating a result experienced as a tendency to an end are to be called ratiocinative, ratiocination will be the prevailing method of the mental life in its entirety. But perhaps a more important criticism is that it seems impossible at the present day to make the absolute distinction which Ribot appears to make between the two sorts of logic, as though 'rational' logic dealt only with truth separated from all taint of sub-

jective interest and 'values,' and 'affective' logic, dealing with the latter, were in no degree an instrument of truth. The theory of values has not, to be sure, reached a final and generally accepted form; but it seems clear—the whole present discussion of 'pragmatism' is in evidence—that no absolute opposition can be established between descriptions and appreciations, values and truth, the subjective and objective factors in cognition, cognitions, interests and beliefs. However, it is undeniable that these distinctions, even if not absolute, have important relative value, and an attempt like the present to arrange and classify the instances in which the subjective factor is the predominantly determining factor in the production of our human convictions, is worthy of recognition.

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The Plethysmographic Evidence for the Tridimensional Theory of Feeling. H. C. STEVENS. Amer. J. of Psych., 1903, XIV., 13-20.

The purpose of this paper is to show that Wundt has not succeeded in drawing from the curves of Lehmann's Atlas any valid evidence in support of the tridimensional theory of feelings. The various curves to which Wundt appeals are referred to in detail, and Wundt's use of the introspective evidences from Lehmann's subjects is criticised, and his statements in regard to the curves are characterized as inaccurate.

The functions of a review hardly extend to the limits of a reëxamination of both positions in dispute. The present reviewer has, however, made some examination of the curves in question and he has been impressed with the difficulty of gathering either positive or negative evidence relating to this particular theory of the feelings from curves which were secured under conditions not arranged to test the specific questions raised by the theory. If Wundt is to be allowed to select certain parts of the curves, he can make good many of his contentions. If, on the other hand, he is forced to consider equally the unfavorable as well as the favorable parts, he will undoubtedly have a tangled mass of complexities to deal with. It is not unlikely that Wundt would admit this general difficulty, and it is not impossible that the writer of this article has been absorbed in the unfavorable portions of Lehmann's curves quite as much as Wundt has been in the favorable portions.

CHARLES H. JUDD.

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BELIEF AND JUDGMENT.

Psychologie de la croyance en l'immortalité. C.-J. WIJNAENDTS
FRANCKEN. *Revue Philosophique*, LVI., 272-282.

This article is a psycho-genetic study of the belief in personal immortality. This belief may be either psychologico-philosophic in character, or it may be purely religious. Three chief sources for it are pointed out: first, the passion for life; second, the power of the imagination as manifested in dreams; and third, the so-called moral motive. Of these three sources the first is by far the most important. 'The need of personal preservation,' writes the author, 'is one of our strongest instincts; it even crosses the tomb—for the desire for immortality is only one form of manifestation of the search for personal preservation.'

A comparative study of religions reveals the fact that the belief in immortality seems unable to maintain itself upon purely philosophical or ethical considerations, but requires some affective impetus as an essential condition of its existence. It is prevalent only where there exists a strong *desire* to continue one's personal existence after death. Desire and hope, however, although they form the principal source of the belief in immortality, do not constitute its sole ground. Phenomena of the nature of dreams may very readily give rise to the conception of a soul existing independently of the body and surviving bodily death.

The third motive of the belief in immortality is what the author terms the *moral* motive. As moral retribution is obviously not perfect in this life, the moral sense saves itself by taking refuge in the postulate of a future life in which the demands of justice will be satisfied. This hope of remuneration in a future life is not a purely egoistic sentiment; it is simply an application of the law of causality to the moral sphere, and is for many persons a postulate of their moral mode of conceiving the universe. To this is sometimes added another moral motive, the desire for moral perfection. We have now no longer desire for mere continued existence of almost any kind, but desire primarily for a life in which there will be possible a realization of the moral ideal.

Belief in immortality is closely allied to the belief in God, and in some cases the two seem to be mutually interdependent. This is natural, as they are both found to have arisen from the same ultimate sources.

The paper is interesting chiefly as an illustration of the increasing

tendency among psychologists to discover in the will to live the efficient cause of religious manifestations.

ELISABETH F. HUTCHIN.

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La logique et l'expérience. FÉLIX LE DANTEC. *Revue Philosophique*, Janvier, 1904.

Biology, from its deterministic and evolutionary point of view, regards the laws of thought as the hereditary résumé of ancestral experience, during thousands of years of rubbing against the external world. It is infinitely probable, thanks to natural selection, that thought is adequate to the phenomena which have met our ancestors; but we cannot attribute to it any absolute validity. This view is in opposition to such as that of Poincaré, who, in *La Science et l'Hypothèse*, speaks of the mind as of a tool of a superior sort, with laws of functioning absolute and invariable. The difference between the two views is clearly seen in relation to the group of questions associated with non-Euclidean geometry. Poincaré grants here to experience that it guides the mind to the 'most advantageous' among many 'conventions' of its free activity; but, consonant with this free activity, he holds to an inner core of principles of thought which are absolute. But he cannot justify his distinction between an empirical and an *a priori* part in geometry. In another world, our logic would be different, as would also the so-called conventions in regard to space.

The character of our sense-knowledge is to be inferred from the very principle of natural selection — it does not deceive, but it is not of the absolute essence of things; it is relative to the preservation of life. It is from experience of this sort, not from that of scientific knowledge, that the laws of thought have been built up. We have gained the so-called ideal conceptions of geometry just because of the imperfection of our means of personal observation. The surface of a lake seems a plane; the tiles of a house, forming irregular lines to close observation, appear at some distance to make perfectly straight parallels.

The article is of interest in relation to the recent English and American discussions along pragmatic lines.

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The Disjunctive Judgment. G. R. T. ROSS. *Mind*, 1903, N. S., XII., 498-501.

The disjunctive judgment in the form *A* is either *B* or *C*, is used in many cases where *B* and *C* are related, but by no means mutually

exclusive. The fact that judgments in this form are often used in science as though they were exclusive, depends upon certain material considerations rather than upon purely formal considerations. When scientific effort has gone far enough to establish two species *B* and *C* for purposes of classification, these two species are exclusive only to the extent to which the particular science has established their separateness in making up the species. If the classification is complete, minute and exhaustive, then the disjunctive form of statement has value as a statement of a complete separation among the classified facts. If, on the other hand, the classification is incomplete, then the predicate in the form either *B* or *C*, will have all of the indefiniteness of the classification and to use it as exclusive will lead to fallacies.

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On Time Judgment. BEATRICE EDGELL. Amer. Journal of Psychology, XIV., 418-438, July-October, 1903.

This paper reports some experiments performed in the Physiological Laboratory of London University during 1902-03. The questions to be answered are: (1) What 'filled' period of Time can be most accurately estimated, and (2) when two filled periods of different duration are given, is the duration of the period which is estimated as midway between them, the arithmetic or geometric mean of the two periods?

The method used was that of the 'Average error' or 'Reproduction.' The subject seated in a silent room heard a sound from a telephone receiver produced by induction currents at the rate of 50 per sec. in an adjoining room. The primary circuit could be made automatically by the kymograph contacts or by pressure on a key in the hands of the subject. A Pfeil marker inserted in the primary circuit was the means of recording the duration of the sound produced. Specimen records and curves of results are given.

The results show: (1) There is no agreement among the three subjects as to the period most favorable for estimation; but it was found that periods greater than the most favorable for each individual were *under*-estimated and those shorter were *over*-estimated. (2) The estimated mean in general, approaches more nearly the Arithmetic than the Geometric mean; but where the Geometric mean lies near the most favorable period, or the ratio between the two intervals is very small, it approaches the Geometric mean.

The author would account for the results in this way: For short intervals the attention is given up wholly to the sensation, no other sen-

sations with which to compare the estimate of duration are present in consciousness, consequently they are given more value, that is over-estimated; when the interval is long, the attention is not held at a maximum during the whole period, and the comparison with the duration of other processes gives this a relative unimportant position, so it may be underestimated.

Since these results fail to agree with Weber's Law, the author would hold that Ebbinghaus's system of measurement fails to have validity for any aspect of sensation.

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Alcuni schiarimenti intorno alla natura del conoscere, del volere, della coscienza e della percezione. F. BONATELLI. *Rivista Filosofica*, VI., Nos. 1 and 2, 1903.

A paper by James Lindsay on 'Italian Philosophy in the Nineteenth Century' with special reference to the place of Francesco Bonatelli¹ suggests to Bonatelli to restate four points of his doctrine. The first of these is the 'infinite reflexion of thought upon itself.' Every judgment is, Bonatelli holds, an affirmation. The proposition, *A* is *B*, means: 'The judgment, *A* is *B*, is true.' But this new judgment is also true, and thus is fully expressed only by the proposition: 'The judgment which affirms the truth of the judgment, *A* is *B*, is true. *Et sic in infinitum.*' But because an infinite number of explicit judgments is impossible, or at least incomputable in a finite time, it follows either that every judgment is false (an alternative which Bonatelli does not seriously consider), or that 'the judgments which affirm the truth of the first judgment are really infinite but implicit.'²

The writer of this notice finds in the statement of this problem a needless subtlety. The infinite regress which puzzles Bonatelli, to the point of explaining it by the vague contrast between explicit and implicit, is an abstractly possible, not an inevitable, regress. In other words, an affirmation allows, but does not require, to be itself affirmed. Incidentally, it may be noted that Bonatelli really recognizes two features in the judgment: a union of parts in a whole, expressed in the formula, *A* is *B*, as well as the affirmation stated in the words, It is true.

In a parallel way, Bonatelli considers, second, 'the infinite reflection of will.' As '*A* is *B*' was held to imply, 'I affirm that *A* is *B*'; so 'I will *F*' is interpreted to mean 'I will to will *F*.' The

¹ *Proceedings of the Aristotelian Society*, N. S., I, 1901.

² *Rivista*, VI., I, p. 5.

ground of this interpretation is stated in the following way: "A * * * volition will proceed either from another volition or from a principle, an activity of some sort, which is not another volition."¹ But if it proceed from anything other than another volition, it will not itself be a volition, and so to will *F* is to will to will *F*. Evidently another endless regress is here involved; and to avoid its contradiction Bonatelli concludes: "My volition of *F*, to be real, * * * contains implicitly this other volition, I will to will *F* and so on to infinity."²

Here Bonatelli seems to confuse two views of volition; the phenomenal view, which regards volition as a caused idea, with the contrasted doctrine which treats of the will as an active experience of a self. From the former point of view there is no reason why the idea, whose relation to the succeeding idea marks it out as a volition, should not depend on a principle other than volition. From the latter standpoint, it is meaningless to speak of will as dependent on anything which precedes, for it is, rather, an experience which must be defined without reference to time.³

Bonatelli's third teaching concerns nomenclature only. He urges the advantage of restricting the term consciousness (*coscienza*) so that it shall not apply to every conscious phenomenon (*fatto psichico*), but shall rather indicate the reflective consciousness expressed in a judgment. The greatest obstacle to this procedure is the ambiguity of the expression 'psychic fact,' suggested as alternative for the word 'consciousness,' in its wider sense.

Bonatelli's doctrine of perception finally turns out to be a form of 'tempered realism.' He analyzes perception into (*a*) sensation; (*b*) associated imagination; (*c*) other elements, for example, the categories of substance, quality, etc., known to intelligence only; and finally (*d*) 'the immediate and spontaneous persuasion that there exists a real, * * * independent of us.'⁴ He then assumes that corresponding to this persuasion of the reality of independent bodies, existing for themselves, there actually exist bodies independent of us. He rightly calls this doctrine a form of realism, and justly dissents from the statement of Lindsay: "Bonatelli seems to steer his way between the Scylla of a purely idealistic view and the Charybdis of a dualistic realism."⁵ But so far as the present writer sees, Bonatelli justifies this realistic

¹ *Ibid.*, p. 5.

² *Ibid.*, p. 8.

³ On this distinction, cf. Münsterberg's *Grundzüge*, Kap. II., 2, and III., and the present writer's *Introduction to Psychology*, c. XXI.

⁴ *Riv. Fil.*, VI., 2, p. 194.

⁵ Quoted, p. 196.

doctrine simply by opposing it to a caricature of idealism. If idealism were, as Bonatelli believes,¹ the doctrine that 'neither nerves nor brain exist' and that 'space, time and motion have not complete reality,' then indeed he would have reason to reject it without argument. But, as a matter of fact, idealists, from Berkeley on, have insisted that 'whatever we see, feel, hear, or in anywise conceive * * * is as real as ever,' and that 'every vegetable, star, mineral * * * is as much a real being' by idealistic principles as by any other. Bonatelli has no right to ignore this claim of the idealists in setting forth his very naïve form of realism.

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INSTINCT.

La faculté d'orientation lointaine (Sens de direction—sens du retour). Ed. CLAPARÈDE. Archives de Psychologie, II., 133-180.

In this article M. Claparède discusses the sense of direction with special regard to the sense as manifested in migrating birds when they determine the direction of places at great distances. An outline of the theories which have been offered as explanations of the phenomena and which the author discusses in detail, may be tabulated as follows:

1. Magnetism (Viguire, Caustier?).
2. Currents of atmosphere, wind, etc. (Toussenel, Ziegler?).
3. Direction of the sun or of other light (Romanes, Lubbock, Wasmann).
4. Special power (Faber; purely reflex action—Netter, Bethe).
5. Record of ways (Enregistrement des détours: Darwin, L. Morgan; *contre-pied*—Reynaud, P. Bonnier).
6. *Points de repère*, memory of topography (Wallace, Romanes, Lubbock, Forel, Fabre, Wasmann, Yung, Bouvier, Marchal, Marchand, Buttet-Reepen, Peckam, Rodenbach, Ziegler).
7. Direct perception of the destination (Hachet-Souplet; Telepathy—Duchâtel).
8. Complex phenomena depending upon intelligence (Cyon).
9. Hereditary topographic memory (Kingsley, Parker and Newton).

The first theory holds that birds when migrating judge the direction by 'perceiving' currents of terrestrial magnetism; the second, that they judge by the winds, temperature, and humidity of the atmosphere; the third, that they determine the direction with reference to

¹ *Ibid.*, p. 204.

the sun; the fourth, that they follow a sort of natural attraction purely reflex in its origin; the fifth, that they follow natural landmarks, turns and curves, each generation either learning them for themselves or by following the older birds; the sixth, somewhat similar to the preceding theory, that birds determine all directions with reference to their haunts; the seventh, that the birds see (receive telepathic impressions of) their destination even at great distances and go directly to it; the eighth, that orientation is an act of intelligence in which sensations from the semi-circular canals and from the face, and the memory of locality are very important factors; the ninth, that memory of routes is inherited no matter what the means.

The author outlines his conception of the problem as follows:

Destination	Known	{ I. Perceptible. Not perceptible	{ II. Points de repère. III. No points de repère.
	Unknown	{ IV. Perceptible. Not perceptible	{ V. Intermediaries. VI. No intermediaries.

Cases I. and IV. depend upon association (visual, motor, tactual, etc.). Case II. may be explained by memory of localities. Case V. is very closely related to Case IV., for each intermediary determines the direction of movement to the next, and so on, until the end, unknown at first, is reached. "Each step determines the direction of the one following." Cases III. and IV. are really the problems in the investigation of the phenomenon of orientation. To explain these, however, it is not necessary to accept such special hypotheses as those of magnetism, unknown force, telepathy, etc.

"There is no reason for holding an exclusive theory, for it is probable that an animal, just as we ourselves do, utilizes every possible means to find his way." That is, he judges his directions by the direction of the sun, by the topography, and perhaps in some cases is aided by the wind and especially by temperature. A bibliography is given.

Le Sens du Retour. P. BONNIER. *Revue Philosophique*, LVI., 30-50.

After a criticism and rejection of all theories which involve a new sense or mysterious means, and a statement of historical examples, the author states his theory, which he calls the 'sense of attitudes.' The sense of attitudes is the sense which 'defines to us the place of each part of ourself.' This theory does not pretend to supplant those of active touch, muscle sense, etc.; it is the '*commun dénominateur*' of all these very complex operations.'

It is common to all animals, including man. The center for this sense is the sensory center for the vestibular nerve. From this sense arises a racial memory which appears in the individual as a deferred instinct, and upon it, in coördination with all the spacial senses, all movements which relate to locomotion depend.

We should distinguish between guidance by destination and guidance from the point of departure. The sense of attitudes has relation to the latter and not to the former.

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VISION.

Ueber die Wahrnehmung des Flimmerns durch normale und durch total farbenblinde Personen. J. v. KRIES. Zeitsch. f. Psych. u. Phys. der Sinnesorgane, XXXII., 113.

In view of the fact that Schatarnikoff has shown that the rods possess a less sensibility for periodic changes of light than the cones, the author asks his colleague Uhthoff who has access to persons completely color blind to determine whether flickering upon rotating discs ceases for them with a slower rate of rotation than for normal persons. After testing a number of subjects, he decides that it does. It ceases with a light change of twenty per second. This harmonizes perfectly with his own theory of the function of the rods.

Ueber die Abhängigkeit des Reizwertes leuchtender Objecte von ihrer Flächen- bzw. Winkelgrösse. PIPER. Zeitsch. f. Psych. u. Physiol. d. Sinnesorgane, XXXII., 98.

The author investigates the differences that may arise in the perception of objects when the eye is adapted to bright light and to dark light. After giving a short history of previous experiments, he begins the investigation for the dark-adapted eye. The conclusion here is that the stimulus value of an object for the dark-adapted retinal periphery increases proportionally to the square root of the area of the retinal picture. The influence of the size of the object upon its stimulus value for the bright-adapted retinal periphery must be regarded as minimal. The sensation of brightness changes almost exclusively with changes in light intensity upon a bright-adapted retinal periphery. The value of the results here communicated for the von Kries color theory are pointed out.

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HEARING.

Die Empfindlichkeit des Ohres. H. ZWAARDEMAKER. Zeits. f. Psy., 1903, XXXIII., 401-423.

The author begins by estimating at 540,000 and 24,000 ergs respectively the amounts of energy necessary to produce the upper and lower limits of the audible scale, taken as f^1 and E^2 . For a tone midway between these two his estimate is .0138 ergs. These figures refer to the quantity of energy used per second by a tuning-fork in producing minimum perceptible sensation when the ear is 5 cm. from the source of sound and perpendicular to the plane of vibration. They do not show how much energy actually reaches the ear.

A table is given showing the amounts of energy corresponding to various notes, as calculated by Töpler and Boltzmann, Rayleigh, Wead, Zwaardemaker and Quix, and Wien. The values found by these different experimenters agree fairly well, with the exception of Wien's, which are extraordinarily low. The author attributes this to Wien's erroneous method of observation. Another table compares values for c 's and g 's from c to g^6 as found by Wien and by Zwaardemaker and Quix.

In the second part of the paper the course of the sound-waves in the ear is traced. Three transmissions of energy occur: (1) From the air to the tympanic membrane and the bones of the middle ear; (2) from the stapes to the liquid of the labyrinth; (3) from the liquid of the labyrinth to the basilar membrane. Supposing the loss each time to be the same as that in the transmission of sound-waves from a tuning-fork to the air, the energy finally reaching the hair-cells would be of the order 10^{-12} ergs. The real value probably lies between this and 10^{-8} ergs.

Weitere Untersuchungen über die Schallleitung im Schädel. Hugo FREY. Zeitsch. f. Psy., 1903, XXXIII., 355-362.

Three experiments are recorded in this article. The first two were planned to answer the question: Does the transmission of sound from one ear to the other depend on a specific action of the pyramids, or is it a phenomenon which appears whenever sound-waves are sent out from an arbitrarily chosen point on the skull? The third experiment was an attempt to find out more exactly the course of the sound-waves in the bony substance of the skull.

In all three the same general procedure was followed: a tuning-fork was screwed into a skull and then set vibrating; the sound-waves were taken up at another point on the surface of the skull by a micro-

phone, and transmitted to a telephone. The intensity of the sound was measured by the time elapsing from its beginning until it ceased to be audible.

In the first experiment the tuning-fork was screwed into the left pyramid; in the second, into the occipital bone, in a line with the mesial suture and a little below it. In both cases a number of points were tested with the microphone. It was found that a sound originating in the back of the head, as well as one originating in a pyramid, produces maximum vibration at a point diametrically opposite. The sound is weakest in the plane passed through the middle of the skull perpendicular to the direction of the stimulus. As this phenomenon appears in the most different directions, the pyramids cannot be considered essential in producing it, though the influence of their mass must not be wholly disregarded.

The third experiment bore on local conditions of vibration in the skull. Three circular openings were cut at points already tested. In one of these the microphone pencil was adjusted, within the opening, and parallel to the surface of the skull. The point of contact varied from that nearest the source of sound to that farthest from it; points between were also tested. The tuning-fork was screwed into the left pyramid.

The intensities observed for the different points of contact were almost identical with each other and with that obtained when the microphone pencil was set up very close to the opening, on the surface of the skull. This was true of each of the openings. Hence it appears that if a transverse section be made at a given point on the surface of the skull, and points of the section tested, the sound intensities thus observed will be identical with the intensity in the direction perpendicular to the surface.

MILDRED FOCHT.

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Differenztöne und Konsonanz. FELIX KRÜGER. Archiv f. d. Gesamte Psychologie, 1903, I., 205-275; II., 1-80.

The author begins with a very lucid criticism of the theories of consonance by Helmholtz, Lipps, and Stumpf, devoting much space to a discussion of the Lippsian doctrine of the 'unconscious,' but rejecting this term altogether. In a second chapter he distinguishes in a preliminary way the chief contents of the experience of consonance, its sensational characteristics, the judgments concerning these characteristics, and the accompanying feelings. He then enters into a detailed discussion of all the different ways in which difference tones

seem to him to determine, or at least to influence the experience of consonance and dissonance. He describes the somewhat vague theory of Preyer according to which consonance and dissonance depend chiefly on the difference tones of tone combinations, and undertakes to study the phenomena in question more in detail in order to find out to what extent Preyer's suggestions can be regarded as valuable. His most important observations are the following: A slightly mistuned unison is not less agreeable than an absolutely correct unison. The former may, indeed, under particular conditions of the hearer, be more pleasant than the latter. A considerably mistuned unison, however, is very unpleasant because the number of tones heard simultaneously is usually quite large, and these tones beat with each other in the most irregular manner. If we increase the objective interval further until we reach a slightly mistuned consonance, the number of subjective tones decreases because of 'overlapping' of some of the subjective tones. In passing hence to the just interval, the number of the subjective tones and the fluttering of the compound sound caused by them decreases very rapidly. This decrease observable in passing from a slightly mistuned to a just interval is the more conspicuous the higher the degree of consonance (as: octave, fifth, etc.) of the tone combination. The author therefore reaches the conclusion that consonances are distinguished from dissonances in two ways: first, by their comparative simplicity of composition, *i. e.*, the small number of subjective tones of which the total impression is made up, and second, by the clearness with which they appear to the hearer because of the small number of different tones heard when the interval is just and the comparatively slight fluttering when the interval is somewhat mistuned, since many of the difference tones in this latter case are so nearly identical in pitch that they actually overlap, filling out the empty interval between them. Dissonances, on the other hand, are always comparatively complex in their makeup of subjective tones, and unclear, irregular, fluttering in all their parts.

Concerning Stumpf's theory of tonal fusion the author has reached the conclusion that the facts above mentioned are what Stumpf has called fusion, only described in more detail than fusion was described by Stumpf. Stumpf's conclusion, however, that fusion is an obstacle to analysis he rejects as too simple. Analysis depends on quite a number of factors, of which 'fusion' is only one, and not under all circumstances the most powerful one, nor even acting under all conditions towards the same end. What is, for instance, in some ways an obstacle to analysis may at the same time be a strong motive for our endeavor to carry out an analysis.

Publications like this of Krüger are an exceedingly valuable addition to the psychology of music. What is chiefly needed is experimental observation and an application of this to the theory. The author gives us both. It is to be regretted that the third part of the article which is to enter into the more distinctly musical problems is unpublished yet. The reviewer, therefore, does not intend to criticize here the author's views, but prefers to wait until the continuation of the paper brings out the theoretical convictions of the author more definitely.

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Observation sur une musicienne. L. ARRÉAT. *Revue Philosophique*, LVI., 283.

The observations here reported were made upon a French-Russian girl who inherits musical ability from her mother. In her seventh year she composed a minor piece which is correct and has musical merit. She is of the auditory type, has absolute pitch, and visualizes scenery fairly well, but immediately translates it into music. She has visual and motor images of gestures expressive of the emotional state called up by music. Her love of music is closely associated with her religious life, and is as far as possible removed from sensuous enjoyment. She is indifferent to technique, rhythm and timbre. False notes do not annoy her, because her ear corrects them. Music seems to her to exist in an absolute manner. The instrument hampers and limits the musical idea, but is necessary to give it permanence.

The writer suggests that the development of her music may be in the direction of pure music, abstracted from all means of expression and reduced to inner audition. The point of departure, however, is necessarily a concrete emotional state, a pleasant physical excitation.

The age of the girl observed is not mentioned.

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TASTE.

Primitive Taste-Words. ALEXANDER CHAMBERLAIN. *American Journal of Psychology*, XIV., pp. 146-153.

'This brief study contains the chief facts concerning the taste-words of several Algonkian peoples and brings out the primitive confusions and associations of the various senses naturally to be expected at the stage of culture considered.' The writer affirms that the 'Algonkian' tribes are typical American Indians both physically and mentally.

Taste-words of a general signification have the meaning of 'mak-

ing trial by tasting.' A distinction is made between good and bad tastes as between good and bad smelling. Some of the Algonkian languages have words for 'tasteless' or 'insipid.' Specific taste-words are extremely elastic. The same widespread radical *siw*, *shiw*, includes the senses of 'sour,' 'acid,' 'salt,' 'sweet' (sugared), 'effect of light on the eyes,' etc. Another common radical, *wig*, *wing*, includes the significations 'good,' 'pleasant,' 'aromatic,' 'odoriferous,' 'sweet,' etc. Its primitive meaning seems to have been 'pleasant' to either taste or smell. The radical *wisak* includes the meanings of 'bitter' in our sense of the term, 'pungent,' 'pain and suffering,' the feeling of 'burning,' the 'heat' of the weather, 'harshness of voice,' 'loudness' of color, etc. Many of the Algonkian tribes were unacquainted with salt until after their contact with Europeans. In Eliot's translation of the Bible for the Massachusetts Indians, the English word 'salt' is simply transferred, except in James 3: 12 where we have the rendering '*sour* water and fresh.' The Virginian tribes who were acquainted with 'salt-licks,' used the same word for 'salt and 'sour.'

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SYNÆSTHESIA.

Are Chromæsthesias Variable? F. B. DRESSLAR. Amer. Jour. of Psych., XIV., 368-382.

This is the study of a single case of chromæsthesia, and its chief value lies in the fact that it extended over a number of years. The young lady experimented upon had developed a set of color feelings which during a period of eight years suffered no appreciable change, either in the case of names or of letters of the alphabet. It was found by experiment that the color feeling belonging to a name was suggested by the feeling of the initial letter or by some other dominant color belonging to some other letter in the name. These feelings were most pronounced when the nervous system was least fatigued and are probably due to some suggestion occurring in childhood and have become fixed by habit.

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BOOKS RECEIVED FROM OCTOBER 7 TO NOVEMBER 7.

- Les Jeux des Enfants.* F. QUEYRAT. Paris, Alcan, 1905 (for 1904). Pp. 162. 2 fr. 50.
- La Logique des Sentiments.* TH. RIBOT. Paris, Alcan, 1905 (for 1904). Pp. x + 200. 3 fr. 75.
- La Dissociazione psicologica.* A. RENDA. Turin, Bocca, 1905 (for 1904). Pp. 83. L. 2.
- Il Destino delle Dinastie.* A. RENDA. Turin, Bocca, 1904. Pp. 243. L. 4.
- History of Education.* E. L. KEMP. Philadelphia, Lippincott Co., 1904. Pp. xxiii + 384. \$1.25.
- Psychologische und erkenntnistheoretische Probleme bei Hobbes.* A. H. ABBOTT. Inaug. Diss. Würzburg, 1904. Pp. 138.
- Psychologie der niedersten Tiere.* FR. LUCAS. Vienna and Leipzig, 1905 (for 1904). Pp. viii + 276. M. 5.
- An Introduction to Psychology.* J. CLARK MURRAY. Little, Brown & Co., 1904. Pp. viii + 577.
- The Child, his Thinking, Feeling, and Doing.* A. E. TANNER. Chicago and New York, Rand, McNally and Co., 1904. Pp. 430.
- The Theory of Advertising.* W. D. SCOTT. Boston, Small Maynard & Co., 1904. Pp. xii + 240.
- Contributions to the Study of the Behavior of Lower Organisms.* H. S. JENNINGS. Washington, Carnegie Institution, 1904. Pp. 256. [One of the first fruits of the Carnegie Research Assistantships. In mechanical execution it leaves nothing to be desired.]
- Willensfreiheit und wahre Freiheit.* GUIDO TORRES. Munich, Reinhardt, 1904. Pp. 45.
- The World's Best Poetry.* Ed. by BLISS CARMEN (with a body of associate editors and special contributors). 10 vols., 5000 pp. Philadelphia, John D. Morris & Co., 1904. [A thesaurus of poetry of great value and beauty: an invaluable adjunct to education for every family in which poetry and beauty are instruments of culture.—J. M. B.]

- Etudes sur la Sélection chez l'Homme.* P. JACOBY. Paris, Alcan, 1904. 2^{me} ed. Pp. xvii + 920.
- Les Maladies du Sentiment religieux.* E. MURISIER. 2^{me} ed. Paris, Alcan, 1903. Pp. viii + 175.
- Music and Other Poems.* HENRY VAN DYKE. New York, Scribners, 1904. Pp. 116.
- Surgical Treatment of Bright's Disease.* GEORGE M. EDEBOHLS, M.D. New York, F. F. Lisecki, 1904. Pp. 327.
- Proceedings of the American Association for the Advancement of Science, Fifty-third Meeting, held at St. Louis, Mo., December, 1903-January, 1904.* Published by the Permanent Secretary, 1904. Pp. 634.
- A Discussion of the Vital Statistics of the Twelfth Census.* Dept. of Commerce and Labor, Bureau of the Census, Bull. 15. Washington, Government Printing Office, 1904. Pp. 24.

NOTES AND NEWS.

The two hundredth anniversary of the death of John Locke was celebrated at the Johns Hopkins University on Nov. 1 with appropriate exercises. Addresses were made by Professors Lloyd Morgan, Woodbridge, Sterrett, Baldwin, and Dr. Wm. Osler. A banquet was given by Dr. Osler, the menu being a reproduction of a quaint dinner order given by Locke shortly before his death. Similar exercises were held on Nov. 12, at the George Washington University at Washington.

The Locke anniversary was also officially and formally commemorated on the exact day, Oct. 28, by the British Academy. A formal address was made by Dr. Hutchinson Stirling, of Edinburgh.

THE following items are taken from the press:

MR. HENRY A. RUGER, assistant in psychology at Columbia University, has been called to the chair of psychology at Colorado College.

AT the University of Brussels, Drs. G. Dwelshawers and R. Berthelot have been promoted to full professorships of philosophy.

DR. BENNO ERDMANN, professor of philosophy at the University of Bonn, who gave one of the addresses at the St. Louis Congress, celebrated the twenty-fifth anniversary of his professorate on August 29.

G. C. FRACKER, A.M. (Iowa), professor of psychology at Coe College, has been granted leave of absence to take an assistantship in

psychology at Columbia University. Mr. Frank G. Bruner, assistant in psychology at the latter institution, is absent on leave at the St. Louis Exposition, where he has temporary charge of the Anthropometric and Psychometric Laboratories; Mr. F. L. Wells, A.B. (Columbia), has been appointed acting assistant during his absence.

DR. JAMES WARD, professor of moral philosophy and logic at Cambridge University, who gave a course of lectures at the University of California during the summer and made one of the addresses at the St. Louis Congress, has returned to England, after giving addresses at Princeton, John Hopkins, Wesleyan, Cornell, and Columbia Universities.

A DEPARTMENT of experimental psychology has been established in the Western University of Pennsylvania, under the charge of Edmund B. Huey, A.B. (Lafayette), Ph.D. (Clark). Two good-sized rooms are being fitted up for the new department, and an appropriation has been made to meet the initial needs for apparatus and books.

AT the recent Cambridge meeting of the British Association, the newly established Psychological Society held a special meeting in conjunction with the section of physiology. The section of physiology is now definitely to include in its title the two studies of physiology and experimental psychology.

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ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNES-ORGANE, XXXV., 3-4. Ueber die Ursachen der Herabsetzung der Sehleistung durch Blendung: *Alfred Borschke*. Die Wirkung der einzelnen Wiederholungen auf verschieden starke und verschieden alte Assoziationen: *Otto Lipmann*. Ueber die Tastempfindlichkeit der Körperoberfläche für punktuelle mechanische Reize (Nachtrag): *F. Kiesow*. Zur Kenntnis der Nervenendigungen in den Papillen der Zungenspitze: *F. Kiesow*. Nasales Schmecken: *H. Beyer*. Einige Bemerkungen über nasales Schmecken: *Wilibald Nagel*. Miscellany.

AMERICAN JOURNAL OF PSYCHOLOGY, XV., 3. A Preliminary Study of the Psychology of the English Sparrow: *James P. Porter*. The Soul—A Study of Past and Present Beliefs: *L. D. Arnett*. Facial Vision: A Supplementary Report, with Criticisms: *Robert MacDougall*. Experimental Studies in Mental Deficiency: Three Cases of Imbecility (Mongolian) and Six Cases of Feeble-Mindedness: *F. Kuhlmann*. Miscellany.

ARCHIV FÜR DIE GESAMTE PSYCHOLOGIE, III., 2. Die Massmethoden der experimentellen Psychologie: *Gottlieb Friedrich Lipps*. Miscellany. III., 3. Ueber klinische Ermüdungsmessungen. I. Teil: Die Messung der geistigen Ermüdung: *Wilhelm Specht*. Miscellany.

JOURNAL OF COMPARATIVE NEUROLOGY AND PSYCHOLOGY, XIV., 2. Physiological Evidence of the Fluidity of the Conducting Substance in the Pedal Nerves of the Slug—*Ariolimax columbianus*: *O. P. Jenkins* and *A. J. Carlson*. The Nervous Structures in the Palate of the Frog: the Peripheral Networks and the Nature of their Cells and Fibers: *C. W. Prentiss*. The Beginnings of Social Reaction in Man and Lower Animals: *C. L. Herrick*. Inhibition and Reinforcement of Reaction in the Frog, *Rana clamitans*: *Robert M. Yerkes*. On the Behavior and Reactions of *Limulus* in Early Stages of its Development: *Raymond Pearl*. Recent Studies on the Finer Structure of the Nerve Cell: *G. E. Coghill*. Miscellany. XIV., 3. An Enumeration of the Medullated Nerve Fibers in the Ventral Roots of the Spinal Nerves of Man: *Charles E. Ingbert*. Color Vision: *C. L. Herrick*. Miscellany. XIV., 4. The Associative Processes of the Guinea Pig. A Study of the Psychical Development of an Animal with a Nervous System well Medullated at Birth: *Jessie Allen*. Miscellany.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, I., 14. Of Simpler and More Complex Consciousness: *Henry Rutgers Marshall*. The Dynamic Concept of the Individual: *C. L. Herrick*. Discussion. A Reply to Doctor Holt: *W. P. Montague*. Miscellany. I., 15. The Field of Inattention—The Self: *Henry Rutgers Marshall*. An Experience and an Inquiry: *A. H. Pierce*. Discussion. Two Illustrations of the Methodological Value of Psychology in Metaphysic: *Simon F. MacLennan*. Miscellany. I., 16. What is Pragmatism? *H. Heath Bawden*. The Attitude of Mind Called Interest: *Lucinda Pearl Boggs*. Discussion. Image or Sensation? *Willard C. Gore*. Miscellany. I., 17. Is the Abstract Unreal? *W. H. Sheldon*. Of Conscious Efficiency: *Henry Rutgers Marshall*. Discussion. Answer to Professor Pierce: *Wilfrid Lay*. Miscellany. I., 18. Does 'Consciousness' Exist? *William James*. The Genetic Method in Psychology: *Margaret Floy Washburn*. Discussion. Minor Logic: *Christine Ladd Franklin*. Miscellany. I., 19. Of Noetic Stability; and Belief: *Henry Rutgers Marshall*. The Process of 'Reinterpretation' in the Hegelian Dialectic: *H. A. Overstreet*. Discussion. Idealism and Realism: *C. A. Strong*. Miscellany.

PHILOSOPHICAL REVIEW, XIII., 5. The Infinite New and Old: *J. A. Leighton*. On the Categories of Aristotle: *Isaac Husik*. Proceedings of the Fourth Annual Meeting of the Western Philosophical Association. Discussions. The Physical and the Psychical: *H. Heath Bawden*. Professor Bakewell on the Ego: *C. A. Strong*. Professor Strong on the Passing Thought: *Charles M. Bakewell*. Miscellany.

PSYCHOLOGICAL REVIEW, XI, 4-5. An Experimental Study of the Physiological Accompaniments of Feeling: *L. Pearl Boggs*. The Psychology of Æsthetic Reaction to Rectangular Forms: *Thomas H. Haines and Arthur Ernest Davies*. Conceptions and Misconceptions of Consciousness: *Ralph Barton Perry*. Retinal Local Signs: *Walter F. Dearborn*. Some Peculiarities of Fluctuating and of Inaudible Sounds: *Knight Dunlap*. Some Observations on Visual Imagery: *H. B. Alexander*. Incipient Pseudopia: *Charles Caverno*.

RIVISTA FILOSOFICA, VII, 3. L'Apriorità dello Spazio nella Dottrina Critica di Kant: *C. Cantoni*. L'Immoralismo di Nietzsche giudicato da A. Fouillée: *E. Sacchi*. Ancora sulla Libertà degli Studi nella Scuola Media: *A. Piazzi*. La dottrina delle due Etiche di H. Spencer (Parte III ed ultima): *E. Juvalta*. Miscellany.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNES-ORGANE, XXXV, 5. Experimentelle Untersuchung der beim Nachzeichnen von Strecken und Winkeln entstehenden Grössenfehler: *Julius Richter und Hermann Wamser*. Zur Struktur der Melodie: *Fritz Weinmann*. Erster Kongress für experimentelle Psychologie in Deutschland: *E. Dürr*. Miscellany. XXXV, 6. Zur Struktur der Melodie (Schluss): *Fritz Weinmann*. Meine Erkenntnistheorie und das bestrittene Ich: *Wilhelm Schuppe*. XXXVI, 1-2: Ueber den Einfluss der Dunkeladaptation auf die spezifische Farbenschwelle: *Loeser*. Experimentelle und kritische Beiträge zur Psychologie des Lesens bei kurzen Expositionszeiten: *Erich Becher*. Ueber die Helligkeitsverteilung im Spektrum für das helladaptierte Auge: *Max Levy*. Zur Frage nach den Schmeckflächen des hinteren kindlichen Mundraumes: *F. Kiesow*. Bemerkungen zu der Arbeit 'Ueber die Abhängigkeit der Pupillarreaktion von Ort und Ausdehnung der gereizten Netzhautfläche': *Hugo Wolff*. Erwiderung auf die vorstehenden Bemerkungen von Dr. H. Wolff: *G. Abelsdorff und H. Feilchenfeld*. Miscellany.

THE PSYCHOLOGICAL BULLETIN

THE LOGIC OF THE COLOR-ELEMENT THEORY.

In the following I wish to reopen a question long ago raised by Wundt, whether the conception of elements and compounds, or of primary and mixed colors, which underlies most of the prevailing color theories, is really appropriate to the subject-matter. Is this conception an essential factor in color-theory, or is it a foreign product which retains its place there merely through lack of criticism?

The conception is suggested, no doubt, by the phenomena of color-mixture. When we find that a combination of two disks of different hue gives a third hue it is natural to suppose that certain hues, or color-tones, may be found which, like the chemical elements, will form the components of all others and will themselves be not further decomposable. But nothing of the kind is discovered. The laws of color-mixture, as expressed in the color-triangle, show that all color-tones may be obtained from mixtures of three primaries, but, provided the three be chosen in proper relations, any color may be a primary. What kind of an element is that which may be indifferently an element or a compound? It seems to me that to drive the element-conception through the color-triangle is to accomplish its destruction. For the conception of elements and compounds calls for a one-sided relation, — the compounds must be derivable from the elements but the elements must be non-derivable; whereas the relation of the color-tones is circular, — that is to say, any color-tone chosen as primary may in turn be obtained from a mixture of others, one of which may be one of its compounds.¹ Clearly, then, on the basis of 'mixture' alone there

¹From a strictly phenomenal standpoint we seem to find the same circular relation among the chemical elements, since in practice most of the chemical elements are derived and few are found free. It would be interesting to discover in what respect, if at all, the *phenomena* of composition in chemistry differ from those in color, but if the two sets of phenomena are throughout analogous, the question mainly suggested is, On what basis are the chemical

is no justification for the element-compound conception; the facts are not, in any real sense, facts of mixture until, from another source, you have distinguished certain color-tones as unalterably elementary.

Upon what grounds, then, are the elements distinguished? In this connection two forms of theory demand consideration, namely, the red-green-violet theory of Young and Helmholtz and the blue-yellow-green-red theory of Hering and others.

The motives underlying the Young-Helmholtz selection are somewhat difficult to determine. But among them I think we may discern the following: (1) All the mixtures may be obtained from three primaries; therefore there are only three primaries. (2) A combination of primaries (according to this theory) produces gray; therefore the primaries must be so related as to produce gray. (3) But the fundamental assumption appears to be this: all the 'real' colors are included within the spectrum (*i. e.*, purples are excluded) and, since saturation is not increased, but may be diminished, by mixture, they must be chosen from the most saturated of the spectral tones. These motives explain, though they do not fully account for the selection of red, green and violet: red and violet are the most saturated of the spectral tones, and if these constitute two of the primaries, the third, if gray is to be the result of combination, must be green.

It is easily seen, first that these motives are not conclusive; secondly that they are not consistently followed out. (1) The limitation of primaries to three rests exclusively, it would seem, upon the 'law of parsimony' — that is, upon the assumption that nature, being able to mix all color-tones out of three primaries, would not uselessly employ more. This may turn out to be ultimately a justifiable assumption, but in the present state of logic it is by no means a necessary one. And with only the color-triangle before us we have as good a right to choose four primaries, or a greater number, as three. (2) The requirement that the combination of primaries must give gray rests upon a feature of the Young-Helmholtz theory now generally discredited. (3) There is no necessity for placing the primaries upon the spectrum. The spectrum is purely a physical fact. Psychologically or physiologically purple may be as real and as elementary as any other color. And the psycho-physiological process is the whole matter in question and the whole matter contemplated in the color-element theory; for in the physical spectrum there are no primary colors, but only a *continuum* of varying wave-lengths.

elements distinguished and declared to be elementary? It is to be remembered, of course, that since Mendeleeff and Lothar Meyer they have not been strictly elementary.

And, as just observed, the requirements of the theory — the ‘logic’ of the theory, to use Mrs. Franklin’s word — are not consistently maintained. Red and violet are chosen for their saturation; green, because a color in its neighborhood is needed to complete the series of mixtures and because green in particular is needed to complete gray; but the required green is of greater than spectral saturation and as such is hardly more a real color than purple. It should be noted, of course, that Helmholtz himself gives to all the primaries a greater than spectral saturation. But if we abandon the requirement of spectral saturation, why not abandon the spectral limitation altogether? Yet, if we do so, the Young-Helmholtz selection has lost its last argument; it has now no greater claims than any other set of three.

These considerations make it clear that, as Helmholtz candidly admits, the choice of primaries is largely arbitrary. And this arbitrariness, it seems to me, discredits the whole scheme of elementary and mixed colors. For how can you say that there *are* elementary colors when none of the colors will answer to this description? To construct a conjectural history of the Young-Helmholtz selection (on the basis, however, of a remark of Helmholtz), it would seem that Thomas Young, in looking for elementary colors, pitched first upon red and violet because, being the most saturated, they were the most striking, and then added green to complete the triad. But elementaries were sought for because, from the point of view of the time, no other form of explanation seemed intelligible. In a word, the element-compound conception was the only available ‘form of thought.’

The grounds upon which the four-color theory rests at its present stage of development have been made relatively clear. The three-color theory was content to assume that, if we join the ends of the spectrum by the series of purples, we have a color-circle, *i. e.*, a series of changes which occur in only one order; the four-color theory claims, on the basis of introspection, that this circular arrangement is sharply broken at four turning points (corresponding to red, yellow, green and blue), each of which introduces a totally new order of variation, and all together mark off four distinct series and convert the color-circle into a color-square. The argument for this view, first advanced by G. E. Müller, is as follows: “It is evident that we are capable of distinguishing whether a sensation which goes through a series of changes before our eyes is changing *in a constant direction* or not. * * * Now if we look through the whole circular gamut of color hues (the spectral hues completed by the lacking tones from red to blue) we find that it is not composed of a *single* series of this sort,

but of several interrupted by sharply-marked points of breaking. As we approach wave-length $\lambda 505$ on one side, the sensation is getting less and less yellow in character and more and more green (this is a variation of a constant sort), but the moment we pass that point there is a distinct change in the character of the series — its successive elements get to look *less* and *less* like green and more and more like something quite new, namely, blue.¹

I shall not attempt to deal with these observations directly. Direct denial, or qualification, is of course useless, since the denial has no greater authority than the affirmation. But there is a logical test of correctness, which may be applied even to introspection, namely, the test of consistency. The reporter of a fact has not only to stand by his observations, but to deny all that contradicts them. In the present case he has not only to affirm the existence of these turning-points, or breaking-points, on the color-circle, but he must deny that there are any relations of similarity and difference among the colors represented by them. Otherwise they would not be in the strict sense 'breaking points.'

Now it seems to me that *some* relations of similarity and difference among these so-called primaries cannot be denied, whatever they may turn out to be when studied in detail; nor can it be denied that these are similarities and differences of color-tone, or hue. To show how inevitable this feeling of relationship is I will quote a sentence from Miss Calkins' *Introduction to Psychology*. Miss Calkins, it is to be remembered, is a firm believer in the four-color theory and specially endorses the introspective argument of G. E. Müller.² This is the sentence: "The series³ 'red, yellow, green, blue' cannot therefore be described as 'red, more red,'⁴ still more red, but is rather to be described as

Red	
Yellow	different from red
Green	different from yellow
	more different from red

¹ Baldwin's *Dictionary of Philosophy and Psychology*, Vol. II., p. 785 (article on 'Vision').

² Page 465.

³ Page 43.

⁴ Of course no one would claim that yellow is redder than red and that green is still redder, but what of the opposite relation? If the series to be denied had been written 'red, *less* red, still *less* red,' or, from the other side, 'green, redder, still redder' I think the author must have hesitated and felt the necessity of something more than a flat denial.

Blue different from green
 more different from yellow
 still more different from red."¹

Miss Calkins is so certain of these relations that the table is repeated in a later chapter. But, we may ask, what is the meaning of 'different,' 'more different' and 'still more different'? Only one answer is possible: they mean nothing except as they refer to differences of *the same kind*. But of what kind? Saturation and intensity (brightness) have been expressly excluded. Evidently there is only one basis of comparison left, namely, that of color-tone, or hue; and the structure of the table makes it clear that this was the basis actually employed.²

This is mentioned merely to show how natural and inevitable is the feeling of a common color-tone quality, among even the so-called primary colors, of which the differences in hue are merely quantitative variations. Suppose you are called upon to solve the following problem: given the primaries, red, yellow, green, blue, to determine their relations of similarity and difference as regards color-tone. If they are strictly primary, or elemental, the problem is of course insoluble, — nay, it is absurd. Yet will any one declare that it is either absurd or altogether insoluble? No doubt the attempt at solution would reveal wide variations of opinion; these would be due partly to the fluidity of the popular conceptions of red, yellow, etc., partly to the difficulty of obtaining standard specimens of color, and partly also, I think, to the arbitrariness of any standards chosen; and, were all these difficulties surmounted, we should still face the difficulty of assembling the various relations of likeness under a simple and comprehensive formula. But there would be few persons without some opinion regarding the main points of resemblance. There would be few, perhaps, who

¹ How can it be said that blue differs more from red than from yellow? Blue and yellow, as contrast-colors, are commonly understood to mark extremes of difference. The last item of the table seems to indicate that it was made with the linear spectrum in mind and based upon the assumption that the greater interval upon the spectrum marks the greater difference. See note on p. 460.

² The author says (p. 43) that "the feeling of 'more' attaches itself directly to a feeling of difference, not directly to a sensational element of color." But what is a feeling of difference which is a feeling of difference of no kind whatever? Undoubtedly a feeling may be of a difference not clearly defined, but if the difference has no character whatever, the feeling, I should say, is nothing at all. As a matter of fact Miss Calkins has already to some extent defined the difference in question by making it a difference *not* of saturation and *not* of brightness. What other difference is possible except that of color-tone? And what other difference can be meant by the statement that (*e. g.*) green differs more from red than from yellow?

would not assent to the following: first, that blue and green resemble each other more closely than either resembles yellow or red; secondly, that yellow and red resemble each other more closely than either resembles blue or green. Some, indeed, might wish to qualify these statements by insisting upon a close resemblance between yellow and green, possibly even as close as that between green and blue (this may be only a matter of definition); but on the other hand, they would then admit that blue is less like yellow than green is. In any case it will be admitted that the supposed primaries stand in *some* relations of similarity and difference as regards their color-tone.

If these suggestions seem too fanciful consider the following: (1) Color-theorists as well as others distinguish blue and green as 'cold' colors from yellow and red as 'warm' colors and speak of the cold and warm ends of the spectrum. What can this mean except that each color resembles its class-mate more than it resembles those of the other class? (2) Many who have no other difficulty in distinguishing colors tend to confuse blue and green. And Grant Allen makes the ability to distinguish these colors an important point in his argument to prove that the color-sense of primitive men is equal to our own.¹ But does not the extra difficulty of making this distinction show clearly that blue and green are somewhat less different than other colors are? (3) Hering's classification of anabolic and katabolic processes corresponds to the classification into warm and cold colors.² Does not this testify to felt similarities and differences? (4) Finally, we may ask the advocates of the four-color theory, what will you do with the contrast-colors? It is commonly assumed that blue and yellow represent extremes of unlikeness. Can this description be repudiated? Would you say that the feeling of 'contrast' which every one has when these or other contrast-colors are brought together is simply an illusion? Yet, if you accept the description, does not the extreme grade of unlikeness imply intermediate grades, and in fact a complete scale of similarities and differences?³

It would seem, then, that introspection, which has been made the final court of appeal for the reality of the color-elements, clearly refuses

¹ *The Color-Sense*, Ch. XI.

² See Miss Calkins, p. 36.

³ The contrast-relation seems to imply the following scheme: arrange the supposed primaries in their proper *order* upon the color-circle (or some other closed curve), leaving their exact position for the moment unconsidered; then each bears a certain resemblance to its two neighbors and is decidedly different from the remaining color (which is at or near the contrast-point). Those who accept the other resemblances involved in the scheme may halt at blue

to sanction their elementary pretensions. This does not necessarily destroy the four-series arrangement; for it may be four series in one. Nor does it deny a certain preëminence to the so-called primaries. It does, however, deny the appearance of any totally new sensation at the turning-points. In other words, these become, not breaking-points, but merely emphatic points. Their presence can perhaps be accounted for. All recent psychology goes to show that we cannot take in a mass of things or a row of things without cutting it up into conveniently perceptible parcels; and in the absence (sometimes, in the presence) of objective marks of division subjective marks are employed. Now, in observing a series of changes so numerous as that shown on the spectrum or the color-circle, such a subdivision would be clearly inevitable. For the points of division any of the color-tones might conceivably be used; it is in fact not difficult, by concentrating the attention upon hues commonly regarded as mixed, to regard these as primaries and the 'pure' colors as mixed. But in general the preference would probably be given to red, yellow, green and blue, since these colors, as their names seem to indicate, represent earlier and more established products of color-perception than orange and purple or 'peacock' and 'olive.' Consequently, it may be said that the Müller arrangement has a certain relatively objective significance. This, however, would not make red, yellow, green and blue the components of the other colors, nor would it deny to them relations of similarity and difference among themselves. Altogether, it may be said here, as of the Young-Helmholtz theory, that the element-hypothesis is dictated, not by the nature of the subject-matter, but by the conceived necessities of scientific explanation.

Leaving the safer ground of negative criticism I venture to add something in the way of positive suggestion. At every period there are certain prevailing 'forms of thought' which furnish the criteria of scientific thinking. From, say, Newton to Darwin, these forms were exclusively mathematical; and during that period we had mind-stuff, mental atoms and compounds, psychical, social and economic 'forces.' During this period Thomas Young proposed the first really positive theory of color, and of course it was cast in the prevailing

and red; for at first glance these colors seem to be almost without relation. But try the following experiment: compare a Milton Bradley orange-red with a Milton Bradley red; how will you express the difference? Is not the red *bluer*? If the 'purity' of the specimens be questioned, then we may make the question general: as you go red-wards from yellow is it not true, introspectively as well as schematically—though vaguely, that the color-tones in becoming redder become also bluer? In a word, is not red bluer than yellow?

scientific mould. Since Darwin and Spencer a new scientific form has presented itself in the conception of evolution. Through this conception we have been enabled to give to organic phenomena an order and coherence which, under the exclusive dominance of the mathematical conceptions, had been impossible; and through this conception the study of biology reached for the first time the rank of a science. Now color-theory deals with a distinctively organic process. We should thus expect it to be a distinctively evolutionary study. As a mathematical study it has been so far a failure; the elementary processes or substances are as hypothetical to-day as ever they were. Yet, in spite of certain innovations, color-theory still retains as its most important feature its primitive mathematical hypothesis.

Mathematical statement presupposes definite constants. If the color-elements are to play their part as elements and are to serve as a basis of calculation they must be fixed and invariable. Consequently, the color-element theory presupposes a fixed and normal eye; according to Helmholtz it contains three photo-chemical substances of definite and invariable composition; according to Hering it contains three invariable processes of decomposition and recombination. And when eyes are found which plainly refuse to answer to this description the abnormalities are assumed to be also definite and invariable, — that is to say, one or more of the substances or processes is absolutely lacking. But the conception of definite normal and abnormal conditions is opposed to all biological analogies. From abnormal to normal, nature, it is clear, makes no leaps. In the organic world everything is always in a condition of evolution, and in the course of evolution there are no such catastrophic changes as the sudden appearance in the retina of a new substance or a new process. We speak of 'stages,' to be sure, but this is merely a matter of convenience. In reality the process goes continuously on; there are no stations on the road and the journey is never at an end. The normal is merely a convenient average, and the individuals to be described by it are to be found, not all abreast of the normal point, but in a considerable line both before and behind it; nor is there any absolute gap between them and the abnormal.

This, it seems to me, is what we should expect to find if color-perception were treated as an organic process. In an organic process there are no fixed conditions upon which the conception of elements can rest; and what we have to do is not to analyze colors into their elements but to trace the order followed in the development of the *process* of color-perception. In this process we should expect to find

many stages; each stage would have its own spectrum or color-circle showing the degree of differentiation and identification of color-tones so far reached; and the only constant relation would be that involved in the identification of the several stages as features of a continuous, individual process.

Recent developments in color-theory have been in the direction of the evolutionary hypothesis. The theory of Mrs. C. L. Franklin is suggested primarily by the facts of peripheral color-blindness and assumes that present peripheral conditions represent universal conditions at earlier stages of color-perception. But the theory retains the four-element feature of the Hering theory; and this, it seems to me, stands in the way of a truly evolutionary interpretation. For it leads to the assumption that the successive stages of color-perception are widely separated and sharply marked. And not only is this opposed to biological analogies but, it would seem, the order proposed in these several stages is equally opposed to psychological analogies. In Mrs. Franklin's theory color-perception develops through the addition of wholly new elements; first we have black, gray, white, then these *plus* blue and yellow, then these *plus* green and red. But psychologically it seems that development takes place through the gradual and constant differentiation and reconstruction of an earlier content. My conception of a typewriter is to-day much more definite and coherent than upon the day I first saw one, yet I cannot say that any part of the typewriter was wholly absent from my first visual picture of it. We should expect to find, therefore, not blue-yellow followed by blue-yellow *plus* green-red, but a grosser distinction, embracing possibly the whole spectrum, followed by gradually finer distinctions within the same content. It is possible, for example, that the distinction of warm and cold represents the earlier stage more truly than that of yellow and blue.¹

Whether such an order of development really exists is of course a matter for investigation — more particularly, perhaps, for investigation in the field of color-blindness both peripheral and general. The facts of color-blindness have been studied but not, I think, with a really

¹In calling the earlier distinction 'blue-yellow' we seem to commit the 'psychological fallacy' of reading into one set of conditions a distinction found only in another. It must be remembered that every experience is what it is only in distinction from others, and that the character of the experience must thus depend upon the character of those from which it is distinguished. The blue of the 'normal' person is distinguished as such not only from yellow but from green and red; the blue of the 'partially color-blind' person is distinguished as such only from yellow. Surely it cannot be in both cases the same blue.

evolutionary hypothesis in view — that is to say, not with a view to discovering a lengthened and unbroken developmental process. Until this has been done it cannot be declared that this hypothesis is conclusively false.¹

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¹The MS. of this article was received Sept. 16, 1904.—ED.

PSYCHOLOGICAL LITERATURE.

ÆSTHETICS.

Grundzüge der Allgemeinen Aesthetik. DR. STEPHAN WITASEK.
Leipzig, 1904.

In much of its detail the book before us is the ripe fruit of the various psychological studies of feeling and *Einfühlung* which Witasek has published from time to time. In its totality it is a thoroughly logical and consistent development of a standpoint in æsthetics which it is important and desirable to test to the utmost. For this reason the effort is to be heartily welcomed and its very consistency forbids any criticism except that which includes the raising of the fundamental problem involved.

The problem may be stated thus. It has been customary to speak of an æsthetics *and* of a psychology of the æsthetic consciousness. The former was conceived to deal with the meaning or implications of certain attitudes and was, therefore, a worth science; the latter, having, by a process of abstraction, turned the attitudes into states, was thought to be concerned only with the analysis of the conditions of these states. Wherefore, a difference in method was recognized which may be stated tentatively, although unsatisfactorily, in the terms of the older distinction between the teleological and causal methods. Witasek's thesis, on the other hand, is that æsthetics in general (see the title of the book) is identical with the psychology of the æsthetic states, a position by no means new of course, but one which has scarcely been so rigidly followed out before. The way of explanation in æsthetics is, therefore, strictly causal. Any given concrete modification of æsthetic experience is susceptible of explanation only as the product of the working together of certain factors isolated by psychological analysis. As a consequence all the attempts to view the æsthetic experience under unitary 'enlightening' categories, such as play, self-conscious illusion, etc., what may be called appreciative descriptions, are at best pre-scientific and have explanatory value only in so far as they can be reduced to more elementary psychological terms, a task which he attempts and which affords an interesting test of his method. These other methods suffer, he insists, from the smuggling of the worth moment into the æsthetic psychosis itself when as a

matter of fact the elementary æsthetic feeling state is not a worth feeling, worth feelings entering in to modify it only as secondary moments.

Briefly stated his argument runs as follows: In Chapter I., which is concerned with the definition of the fundamental æsthetic fact, it is pointed out that the æsthetic attribute (for instance the typical attribute, beauty) is not an attribute of objects as such, apart from the subject, but rather an attribute which arises out of certain relations of the objects to the subject's feeling attitude. These relations may be of two kinds. The object may be in causal relation to the feeling, or it may be in what he calls *Ziel-relation*, that is, the object *toward which the feeling is directed*. "The æsthetic attribute of an object is then the fact that it stands in causal or *Ziel-relation* to the æsthetic attitude of a subject." The two types of relation which condition the æsthetic feeling should be carefully noted, for we shall return to the distinction in our later criticism. Chapter II., on 'The Æsthetic State of the Subject,' seeks to differentiate the æsthetic state from other states. The important thesis here is that the æsthetic experience is feeling but not worth feeling. The fundamental æsthetic state is not a worth feeling although many modifications of the æsthetic are brought about by the inclusion of secondary worth feelings. This exclusion of æsthetic feelings from the class worth feelings rests upon the view, which he shares with Meinong, that only such feelings as have judgments or assumptions as their presuppositions are worth feelings, a view which I think cannot be maintained but which we cannot stop to criticize at this point. Æsthetic feelings are then presentation feelings. Of the æsthetic attitude, he says, to quote his own words (p. 221), 'Es steht jenseits alles Werthen wenn nicht jenseits aller Werthe.' A second differentia of æsthetic feeling completes the definition. Not all presentation feelings are æsthetic; various sensations, perception and conceptual feelings are not æsthetic. Only intuitive (*anschauliche*) presentation is æsthetic. Those feelings, then, which arise upon intuitive presentation alone are æsthetic—and, since the two dimensional theory of feelings is upheld, there are, strictly speaking, only two fundamental modifications of the æsthetic (beauty and ugliness); all other feelings are pseudo-æsthetic. Two problems thus naturally arise. What are the possible intuitive presentations which may give rise to the fundamental æsthetic reactions, beauty (pleasure) ugliness (unpleasantness), and what are the pseudo-æsthetic factors, judgment (or *Annahme*) feelings, which may enter to produce the other modifications, the tragic, sublime, etc.?

The elementary æsthetic objects are therefore intuitively presented. How shall this characteristic, intuitive, be defined, and what objects fulfill the criterion? The criterion itself is somewhat difficult to define and the writer trusts rather to illustration and his analysis of the groups of objects which fall within the intuitive to make his distinction clear. These are (*a*) simple forms, objects of perception, (*b*) form qualities (*Gestalten*) such as melody, rhythm, spatial symmetry, etc., (*c*) objects with norm suggestion or objects of worth beauty and (*d*) expression (*Stimmung*) or objects of inner beauty (cf. pages 27 and 180). The purely formal character of the first two classes of elementary æsthetic objects is obvious. It is in the last two classes that we find the possibility of the entrance of content factors, in the form of feelings with other presuppositions than presentation, worth feelings. In the former of these, for instance, the object which represents the norm may have beauty merely as intuited object; but in addition to this a 'worth beauty' may enter through the inclusion among the presuppositions of a judgment as to its normal character, a judgment which may be either explicit or merely dispositional (p. 83). In the last class, which includes expression, *Stimmung*, a pleasure, beauty, may arise from the mere intuitive presentation, *Einfühlung* into an object or person of psychical states, but an additional feeling may arise from sympathy, in the form of participation feelings (*Antheilsgefühle*) which arise upon the assumption of, or judgment as to, the existence or non-existence of the psychical states in question and which are, therefore, worth feelings. An original, distinctively æsthetic state may therefore be increased in feeling intensity, through the enlargement of its presuppositions, through the inclusion of pseudo-æsthetic feelings.

It remains now to gather together and classify the different extra-æsthetic moments, judgment and assumption feelings which may enter in to modify the original æsthetic feeling. These are, briefly summarized, (*a*) knowledge worth feelings, such as arise, for instance, in the imitative and the characteristic, both of which involve judgments and neither of which is really an æsthetic moment; (*b*) ethical worth feelings, more particularly the sympathetic participation feelings following upon the judgment of the existence or non-existence of subjective states, pleasure, pain, etc., in others; (*c*) finally a group of feelings to which no distinctive class name is given, following upon the realization of the success or failure in the processes which condition æsthetic experience, for instance, æsthetic *Einfühlung*. This classification by no means does justice to the rather wearisome detail

of the writer's analysis, but it is at least sufficient for the purpose for which it is here adduced, namely, to show the general method of the reconstruction of the concrete modifications of the æsthetic out of these abstract elements.

A few typical illustrations will make this method clear. Beauty, which can be brought under no general formula (although harmony, absence of conflict of the feeling elements which go to make up the concrete, complex æsthetic attitude, is applicable to a wide range of phenomena), is best represented by the second group of æsthetic objects, the Gestalten, rhythms, melodies, etc., where the pure intuitive representation is most clearly marked. As soon as the worth feelings, the pseudo-æsthetic worth factors are introduced, the total experience, although it may still be called one of beauty, begins to lean toward other modifications of the æsthetic. Thus 'the tragic,' to treat his definitions most summarily, 'is fundamentally characterized by unpleasant participation-feelings.' "The object which arouses the feeling of sublimity is as such the object of *Einfühlung* on the part of the subject." The content of this projection, he goes on to further specify, is spiritual worths of extraordinary greatness (p. 322). The comic is throughout unæsthetic, although it may enter into an otherwise æsthetic whole. It is made up entirely of worth feelings, sympathetic ethical, and knowledge worth feelings as the result of successful characteristic.

This, in the main, is the synthetic side of Witasek's method. It would not be difficult to find points of criticism in this reconstruction of the concrete modifications of the æsthetic. In particular, one is led to doubt a definition of the fundamental æsthetic which excludes the comic and humorous. But any attempt to criticize these reconstructions in detail, to be of any value, would inevitably involve a minute discussion which the occasion will not permit. Rather let us return to the fundamental question of method. Here we shall find it necessary to take issue on three points: (1) The contention that the æsthetic experience itself is not a worth experience; (2) the consequent exclusion of all appreciative or worth descriptions from the science; (3) the view which underlies the entire procedure, that æsthetics as a science is identical with the psychology of the æsthetic consciousness and therefore includes no type of explanation except the causal.

The fundamental conception that the æsthetic attitude is beyond all valuation if not beyond all values, rests upon the assumption that the necessary presupposition of worth feeling is judgment. Whether this is true or not, is, of course, at bottom a matter of introspection;

but the reviewer, at least, is sure that there exist states of feeling (certain mystical states in religious experience, if no others) where the worth moment is present without any intellectual judgment presupposition being explicitly present, although conative tendencies or dispositions are. The æsthetic state is an attitude, and attitude always involves valuation. Mere intuition, presentation without worth attitude, is an abstraction which may be useful as a relative distinction in analysis but which never appears in reality. Genetically, it is a secondary product of the exclusion of certain conative tendencies which, however, remain latent and constitute the dispositional presuppositions of the æsthetic feeling.

As a worth attitude, therefore, the æsthetic has the right to interpretation as well as causal explanation, *i. e.*, in the very idea of an æsthetic science interpretation is included. The appreciative, functional descriptions, therefore, which were called pre-scientific and reduced to their analytical elements, have as such a place in such a science. Without raising the question of the validity of any of these particular descriptions (such as those which characterize the attitude in terms of freedom, or self-conscious illusion, of play, as dealing with appearance and not reality, etc.) in principle, it is precisely these appreciative descriptions which are the first stages of interpretation. It may be true, from the standpoint of psychological analysis, that we may, as does Witasek, reduce in a negative manner these appreciative descriptions to their psychological elements. We may say that what is meant by freedom and desireless intuition is the absence of judgment presuppositions in our feelings, that the description of the attitude in terms of play, self-conscious illusion and appearance points to the fact that the feelings involved are *Annahmegefühle*, follow upon assumptions and not judgments — all this may be true, but there is still a positive side to the description which affords the starting point for the interpretation of the functional significance of the æsthetic attitude in the total mental life. It is quite logical, therefore, that Witasek, in denying the worth character of the æsthetic attitude, should see no functional significance in it except through the inclusion of pseudo-æsthetic factors.

Finally, then, our criticism of Witasek is not so much on the ground of his psychological analysis as because of his conception of æsthetic method which follows upon the exclusion of the æsthetic attitude from the sphere of worths. His recognition, in the introductory chapter, of the fact that the æsthetic attitude rises upon *Ziel*-relation of feeling to object as well as causal, should, it would seem, have led to an en-

largement of method in the direction indicated. Attitude is direction of feeling upon an object, but it is hard to see how there can be this direction of feeling without valuation, either explicit or implicit, being involved. Valuable as the purely analytical method of psychology is, no satisfactory description of the concrete modifications of consciousness is possible without recourse to a method which is functional and, in the larger sense, genetic. Such a method would be part of an 'allgemeine Aesthetik.'

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MUSIC.

Essai sur l'esprit musical. LIONEL DAURIAC. Paris, 1904. Pp. v + 304.

It is a fluently written, easily readable book which Dauriac presents to the public, the result of the observations of a life time. It is written in the manner of Gurney's well known book on the same subject, addressed to the general reader rather than to the professional psychologist. It does not, therefore, attempt to solve any special psychological problems concerning the æsthetics of music, but limits itself to a discussion of the musical abilities of the average hearer who is no professional musician. The author's method consists in gathering the terms in which these abilities are usually described in the language of daily life as well as in modern treatises of musical and philosophical writers and in carefully analyzing their different meanings and adopting the one which seems to be best suited for a clear exposition of the abilities in question. He distinguishes between musical sensation and musical intelligence, meaning by the former the ability to be variously affected by the musical elements as such, by the latter the capacity of comprehending and enjoying the combinations of such elements into 'phrases' or whatever name one might give to such combinations. The book will doubtless be welcomed by those who desire an introduction into the psychology of music in general without being interested in special problems of the science.

Zur Struktur der Melodie. FRITZ WEINMANN. Zeitschrift f. Psychol., 1904, XXXV., 340-379, 401-453.

The article does not contain any *observations* to speak of. The author merely attempts to apply the theory of melody of Lipps to the most common musical phrases and to the major and minor scale. So far as the application of any theory to a mass of more or less disconnected facts must be helpful to the scientist, psychologists will be

thankful for what the author has accomplished. Those, indeed, who regard the Lippsian theory as the final truth, will derive much satisfaction from this expansion of the theory. Those, however, who prefer science to speculative thought, will be rather disappointed in reading this article. The Lippsian theory that musical tones are rhythms, *i. e.*, micro-rhythms, that melody is a system of such rhythms, and that the laws of tone relationship need *not* be investigated by independent *experiments* but are to be logically derived from the laws of rhythm which we know — this theory is accepted by the author as a dogma the truth of which must not be questioned. Since he is convinced that the laws of tone relationship can be derived from the laws of rhythm, pushing aside, indeed not even mentioning, the particular observations published which squarely contradict the results of this speculation, one should at least expect that he has carefully made use of the recent literature on rhythm, as the laws of rhythm are declared to be the basis of the whole system. But the only monograph on rhythm known to the author is Meumann's paper published ten years ago. Of the recent work on rhythm found chiefly in this REVIEW and other American periodicals he is entirely ignorant. Lippsian doctrine is throughout the paper substituted for experimental inquiry. Not results of experimental investigation and careful introspection, but exclusively quotations from the publications of Lipps are made the premises from which he draws his conclusions. That the method of scientific research just depicted is still to be found in the beginning of the twentieth century, seems to the reviewer to be a matter of regret.

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MEMORY.

La fonction de la mémoire et le souvenir affectif. FR. PAULHAN.
Paris, Félix Alcan. 1904.

It will be of interest to those who have followed the question to learn that the specific problem of affective memory has attained to the dignity of monographic treatment. Paulhan, who had already contributed to the subject in two articles in the *Revue Philosophique*, has now treated the question more at length, and in his hands, it is scarcely necessary to say, the method is largely functional and, in the larger sense of the word, genetic.

Hitherto the problem has been chiefly one of analysis. The problem of the very existence of affective memory, its differentiation

from the memory of ideas, the determination of the conditions of its appearance, all this has been sufficient to occupy the attention of the psychologist. But Paulhan, taking the positive results of this analytical labor largely for granted, passes on to the study of the functional significance of the phenomenon for the mental life as a whole. The special aspects of the phenomenon which interest him most are the functional interrelations of affective and intellectual memory; the transformations which an effective state undergoes in memory as contrasted with the effect of the lapse of time on perceptual and ideal memory images; and finally what he calls the utilization of affective memory, individual and social.

The existence of affective memory is, we have said, assumed. At least, the first two chapters, which are concerned with a rehearsal of the facts upon which the theory is based and a differentiation of these facts from those of ideal memory, disclose nothing new, and, if the matter be viewed critically, rather display a lack of first hand knowledge of all the literature on the subject. The contribution of the author to the subject is to be found rather in the light he is enabled to throw upon the phenomenon from his study of the functional significance of memory as a whole. Memory (retention), in the larger use of the word, includes two very different phenomena; first the case where an element is retained as part of the mental life through the sacrifice of its position as an independent element — is retained merely through the dispositional traces which it leaves upon the habit or functional side of consciousness; secondly the case where, on the other hand, it is retained as an independent element through its refusal to be lost in the processes of systematization and organization. To the latter, narrower form of memory we give the name *Souvenir*, revival, recall. With this preliminary distinction within the general field of memory the writer enters upon the study of affective memory. The distinction made by Mauxion between 'true' and 'false' affective memory corresponds to a real difference. The 'true' memory, in this sense, is the revival of a past emotion independently of its part in a systematized whole, or apart from habit. The question for analysis is then, not whether the affective state is a revived state or a new state, but whether it is a state revived independently or one modified by processes of assimilation and systematization. The opposition is not between memory and invention but between memory and organization. *Souvenir*, in the strict sense, terminates with organization (p. 52).

What is the relative functional significance of these two types of

retention in the mental life, more especially as applied to the affective side of consciousness? This, the problem of the 'utilization' of affective memory, is the central theme of his study. Of that form of memory which is involved in organization, in the retention of dispositional traces of feeling through systematic association, the same may *mutatis mutandis* be said as of organization in general. It is the basis of affective or worth continuity. It is everywhere in evidence and is the goal of progressive adaptation. What then is the rôle of this *souvenir* or revival of affective states as independent elements? Its rôle is analogous to the revival of perceptions as independent elements and the means of revival are similar, namely, association by contiguity rather than systematic association. To state briefly what the writer has developed with a wealth of illustration from the individual and social life, this affective revival is the conservative function in the mental life. The equilibrium of mental activity is the resultant of a struggle of the elements. Systematization is possible only through loss, sacrifice of the independence of the elements. Just as the revival of perceptions as independent elements is necessary to correct the vices of too great fluidity of thought, so the fixation of concrete affective states through arbitrary associations of contiguity serves as a balance wheel in the instinctive life of feeling and will. How the writer applies this, how he works out the technique of this *souvenir* in the moral and religious life of the individual, in the ceremonial and conventional mnemonics of race organization, must be left to the reader to discover.

Two additional points are brought out with interesting detail, the interrelations of intellectual and affective memory and the transformations that an effective state undergoes with lapse of time as compared with the transformations in idea. In the first case he shows how the purely intellectual memory tends to pass into affective if the conative tendency to which it corresponds is fortified or especially excited by attending circumstances or by arrest; how, reciprocally, the affective passes into intellectual memory if the conative tendency is able to satisfy itself more easily and regularly. His comparison of the transformations of affective memory with those of the intellectual results in the following conclusions. The well known fact of ideal memory, that enfeeblement, loss of intensity accompanies the lapse of time, is the opposite of the law of affective memory. Here with the tendency to generalization of affective attitude with the lapse of time he finds an actual increase of intensity and purity of the affective state and a consequent tendency to fixation. At bottom these opposite ten-

dencies may be reduced to the same functional causes working in different ways. The memory image tends towards hallucination, the remembered sentiment tends toward intensification and expansion in consciousness. Both are, however, affected by certain *réducteurs*, by the struggle with other elements. But while the memory image, the intensity and permanence of which are dependent upon the perception which gave it birth, is constantly being reduced by new impressions, the intensity and expansion of the sentiment, being dependent upon the degree of organization of the conative tendencies which it presupposes, and not upon the intensity of the perception which occasioned its appearance, are, within certain limits, increased rather than diminished by the arrest exercised by new elements (pp. 82, 83).

In conclusion, it may be said that this essay of Paulhan's reveals at the same time both the excellencies and the faults inherent in his general method. While some of his particular conclusions show, perhaps, a tendency to undue generalization and a certain lack of perception of some of the more difficult problems of analysis involved, the general tendency of his work is one in which the psychologist can take satisfaction. It contributes to our insight into the functionally important rôle which affective memory plays in the continuity of consciousness. And, while showing this, it incidentally fills up a gap in his own systematic portrayal of the mental life, a portrayal which, though written perhaps in a somewhat large and schematic way, has in its successive stages, without doubt, contributed not a little to that systematic view of the mental life without which our particular studies threaten to become 'useless knowledge.'

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SOCIAL AND GENETIC PSYCHOLOGY.

Indian Boyhood. CHARLES A. EASTMAN. New York, McClure, Phillips & Co. 1902.

Social psychology is not confined to works written with purely scientific purpose. In the book called *Indian Boyhood*, Dr. Eastman has given much valuable material for the psychologist, although designed primarily for his young son, as a record of his father's boyhood. Dr. Eastman has the double advantage of both an Indian's and a white man's education, and so is able to tell of Indian life not only from the inside but from the outside.

Many illustrations are given of the strong control of the group over the individual. In hunting, the Indian police "oversee the hunt,

lest some individuals should be well provided with food while others were in want. No man might hunt independently. The game must be carefully watched by the game scouts, and the discovery of a herd reported at once to the council, after which the time and manner of the hunt were publicly announced. * * * An Indian might hunt every day besides the regularly organized hunt; but he was liable to punishment at any time. If he could kill a solitary buffalo or deer without disturbing the herd it was allowed. He might also hunt small game."

The influence of group institutions is also illustrated by the Maidens' Feast (pp. 181 f.) which was jealously guarded against any unworthy participants, and by the similar feast of young men "in which the eligibles were those who had never spoken to a girl in the way of courtship. It was considered ridiculous so to do before attaining some honor as a warrior, and the novices prided themselves greatly upon their self control."

The forces which make toward collective and toward family or individual life are well shown also. Military necessities favored the large company, economic advantage the small group:

"There was a constant disposition to break up into smaller parties, in order to obtain food more easily and freely. So large a body [from two to five thousand] could not be easily supplied with the necessities of life; but on the other hand our enemies respected such a gathering! Of course the nomadic government would do its utmost to hold together as long as possible. The police did all they could to keep in check those parties who were intent upon stealing away. * * * It was chiefly by reason of this food question that the Indians never established permanent towns or organized themselves into a more formidable nation" (p. 261).

If Dr. Eastman's own boyhood was a typical one the consciously directed educational forces were very great among the Indians. They gave to the boy's mental and moral equipment for his life as hunter and warrior an unremitting and extraordinarily well directed course of instruction. In fact the customs in connection with the training of children were, like other customs, held to be divinely instituted, and hence were scrupulously adhered to. The pregnant Indian woman would frequently choose some character as a model for her expected child, learn all his exploits and dwell upon them in solitude. The infant warrior hears lullabies rehearsing exploits in hunting and war. The girl is at once addressed as the future mother of a noble race. The boy hears almost every evening a myth or a true story of some

deed which he must himself repeat the following evening, for the criticism or applause of the household. "His conception of his own future career becomes a vivid and irresistible force." "It seems to be a popular idea that all the characteristic skill of the Indian is instinctive and hereditary. This is a mistake. All the stoicism and patience of the Indian are acquired traits, and continual practice alone makes him master of the art of wood craft." In the case of Dr. Eastman his chief teachers were his uncle and grandmother, as his mother was dead and his father a prisoner among the whites. The uncle catechized him at night on what he had seen during the day, taught him the habits of animals, challenged him to fast with him all day, waked him with war-whoops and ridiculed him if he did not instantly grasp a weapon and whoop in reply, and sent him for water after dark when camping in a strange place. The grandmother gave special attention to the moral and religious training. "Religion was the basis of all Indian training" (pp. 49-60).

The games of the Indian boy are more directly related to the occupations of adult life than can be the case with those peoples which have exchanged the thrilling life of the hunter for prosaic farming and trade — except, perhaps, as the white boy plays marbles 'for keeps' or pitches pennies. "We practiced only what we expected to do when grown. Our games were feats with the bow and arrow, foot and pony races, wrestling, swimming and imitation of the customs and habits of our fathers." The boys even played 'medicine dance' in secret, for to imitate these dances was regarded by the elders as irreverent.

The most striking and impressive incident in the boy's education was his first offering to the 'great mystery,' made when he was eight years old. The story of the process by which his grandmother worked him up to the point where he was willing to sacrifice his inseparable companion, a dog, is most instructive. The complex emotions — desire for future success, pride in rising to the height of a brave deed, awe in the presence of natural forces, actual and suggested, social sympathy — exhibit the chief roots of the religious sentiment. Modern methods of 'painless education' certainly make a less forcible appeal to some of the deeper elements of character.

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The Genetic Function of Movement and Organic Sensations for Social Consciousness. MARGARET FLOY WASHBURN. American Journal of Psychology, 1903, XIV., 73-78.

In the first paragraphs, the author draws the distinction between a concrete element and a genetic element of mental life. The former may be in its nature complex, but by introspection it cannot be reduced to simpler forms. An example is the sensation red. Such a concrete element may be the result of a long process of combination of primitive ingredients. These primitive ingredients probably were unlike anything now experienced as a concrete element; they were the psychic aspects of *nervous shocks*; the author would differentiate these primitive ingredients by using the term *genetic elements* for them.

The remainder of the article is a discussion of the origin of social consciousness. Attention is drawn to the fact that the rise of social consciousness cannot be explained by the data furnished by introspection. The explanation by imitation, given by Prof. Baldwin, accounts for the awakening, not for the construction of social consciousness.

We find the child has such a mental constitution that he gives a social interpretation to certain experiences, but how it comes about that he does so, we are unable to explain in terms of introspection. Observation of animal life furnishes evidence that certain motor reactions of coming to the rescue, joining in defense, and so forth, were developed before it is possible to assume the presence of any social consciousness of a fellow creature's suffering.

We cannot be sure that the animals below man can have a representation of their own past experiences; much less probable is it that they can have an idea of the experiences of others.

The social motor reactions are found in animals very low in the scale, while the power to represent, the power to form free ideas, is a much later development.

The life of the species may depend to a considerable degree upon the helping activity of the members of a group; that there should be aroused a representation of the suffering of the animal is not so necessary; these representations are by-products in the growth of the representative power in general. As this power develops the conscious state produced in the mind of one animal by manifestations of mental processes in another would be determined by the elements entering into it; these elements are the genetic elements, that is, the movement and organic sensations produced by reactions, and 'already on the field before social consciousness develops.'

CLOYD N. McALLISTER.

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Enquête sur le sentiment de la colère chez les enfants. P. MALAPERT. Année Psychologique, Vol. IX., pp. 1-40.

In this article M. Malapert states the results obtained from a questionnaire sent out by the 'Société libre pour l'étude psychologique de l'enfant.' This questionnaire is one of three sent to members of the Society, to primary inspectors, and to instructors. It consists of nineteen questions covering the following points: The general characteristics of the subject, physical signs of anger, acts during anger, self-control, provocative causes of anger, premeditated anger, phenomena consequent upon fits of anger, effect of heredity, and influence of climatic and physiological conditions. The conclusions are based upon observations on 183 children of whom only fourteen were under six years of age.

The writer proceeds first to a statistical summary of the replies to the questionnaire. Among his conclusions are the following: The majority of children observed are normal in their intellectual development; anger is not particularly characteristic of feebleness of mind. Contrary to Lange and Ribot, M. Malapert finds pallor as well as redness a common accompaniment of anger. Rapidity of limb-movement results in most cases, and the innervation of the voluntary muscles is increased, but in a form incoördinate and spasmodic. The effect of anger on the voice is constant; it becomes more guttural or more shrill and the throat contracts. Acts of violence are common, most often directed against other persons, but often directed against lifeless objects. Self-control is usually lost. Premeditated anger is extremely rare. Anger very frequently ends in tears and is often followed by slight prostration or minor derangements but seldom has grave or lasting physical effects. The child usually returns quickly to his normal condition but frequently manifests remorse. A majority of the subjects are described as healthy, yet a considerable number of the children so designated are very nervous or suffer from specific ailments. In a significant number of cases, nervous instability or alcoholism is indicated in the child's heredity. In the vast majority of cases, anger decreases with age either in frequency or in violence or in both.

In the second part of the article, the writer attempts to differentiate the typical forms of anger and to determine the conditions of abnormal irascibility. He distinguishes two fundamental forms of anger, the offensive and the defensive; movements of attack are the index of the first; movements of flight or withdrawal of the second. The writer differs from Lange in his explanation of the aimless movements and

self-inflicted injuries of rage. M. Malapert maintains that in motor activity and in painful impressions the subject is instinctively seeking distraction from the cause of irritation rather than the reestablishment in a state of lowered sensibility of the normal flow of sensations.

The writer believes that nervous instability is the primary factor in producing passionate children. This state is often hereditary, but may be induced by bad management. Since every abnormally violent discharge decreases the stability of the nerve-centers, a child may be rendered more passionate either by an exasperating severity or by finding that he gains his point when he flies into a rage. The example of an irascible parent is rather the pattern of the child's behavior when angry than the initial cause of his irritability.

In his third and last section, M. Malapert presents his pedagogical conclusions. Parents and teachers should study the temperament and state of health of each individual. Hygienic measures should precede moral measures, but in both the educator should beware of exacting the same things from all children, or from any one child the same things at all times and in all circumstances. When a fit of anger has actually set in, the emotion can be checked only by some inhibitive experience vivid enough to counteract it. Although M. Malapert admits that corporal punishment is sometimes effective, yet he ranges himself decidedly with the advocates of the 'appeal to reason.' He strikes, moreover, the keynote of modern pedagogical thought in maintaining that the child is to be taught self-control rather than submission to another. To this end, perfect regularity of life is necessary, and most important of all is quiet firmness on the part of parent and teacher.

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Les jeux des enfants. FR. QUEYRAT. Paris, Félix Alcan, 1905.
Pp. 158.

This little volume opens with a brief but interesting discussion of the character of imagination in children. The author then takes up the well-known theories of play and concludes with Gross that play is essentially based upon instinct. The psychology of play is then discussed. Pleasure and illusion are said to be its psychic accompaniments. Plays are then classified as to origin and end. With reference to origin, plays are due either to heredity, imitation, or imagination. As to ends served, plays may have educative value for movement, sense, intellect, emotions, will and artistic sense. The book closes with a discussion of the psychology of play with dolls, and some practical suggestions as to toys.

IRVING KING.

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VOLITION AND ETHICS.

The Definition of Will. F. H. BRADLEY. *Mind*, N. S., Vol. XIII., 1-37.

This is a vigorous defense of the author's definition of will as 'the self-realization of an idea with which the self is identified'—a definition advanced and expounded in an article with the same title in *Mind*, XI., pp. 437-469 and noticed in the *PSYCHOLOGICAL REVIEW*, X., p. 448 ff. The incompatible position that there is a variety of unique types of volition (upheld by Mr. Shand in *Mind*, N. S., No. 23) is first considered—the imperative, hypothetical, disjunctive, negative and averse—and the conclusion reached that 'so far as they are volitions, they consist in the self-realization of an idea, the main question' being as to the exact nature of the idea in each case. The types of will differ, in short, because in each type I will to do something different. The discussion of aversion is here very suggestive and timely. "Aversion is the desire for the negation of something painful. . . Aversion is positive, but its true object is the negation of that which is commonly called its object." The object of aversion does not exist; aversion and desire are alike in this respect. Aversion and desire are not coördinate opposites, as pleasure and pain are. Aversion and desire tend to transform themselves and pass into each other. I cannot will that to which, while willing it, I have an actual aversion. As to the 'ultimate nature of a permanent disposition to act' (averseness), the author writes, 'I should myself decline in psychology even to entertain such a problem.' But the transition from a 'standing will' to an actual volition is produced by Redintegration.

The paper next considers the relation of desire to conation, and finds that 'if conation is understood as the experienced striving of myself' (as distinct from a striving which is not experienced and from a striving only of some psychical element, such as a fixed idea), 'I cannot perceive that everywhere conation is involved in desire.' The paper admits that 'the desired object must contain always to some extent the idea of my actively getting it, and every desire therefore will essentially involve a conation'; but this is true only of the origin of desire and it does not follow that conation belongs to its essential nature. He denies 'that in all desire without exception a conation is implied.'

As to 'the distinctive character of wish,' it is not a striving or conation, is not 'the general head under which desire falls,' is 'not distinguished from desire by its weakness,' and is not distinct from desire in that in desire it is my action to which the real world is op-

posed, while in wish it is something else. "Wish is a desire which in a certain way has been specialized and limited." "Wish is a desire for an imaginary end which, because it is imaginary, can be regarded as attained." The imaginary object and its fruition are, in wish, recognized as out of our reach, the idea being separated from our world by the perceived failure of means to its realization. "Being in a sense satisfied beyond the reality, it is so far removed from collision with fact." "In so far as it is not actually satisfied, a wish tends to collide with the world and to become a desire."

The discussion proceeds to the question in what way the idea in volition realizes itself. First of all, desire and conation are not essential to will. Acts done at once from imitation or in obedience to an order, or in general from the suggestion of an idea, do not involve either; and such acts fall within our definition of volition. Pleasure and pain do not produce my volition. Even if pleasure and pain were always present in volition (which the author does not admit), still the essence of the volitional passage would remain unexplained. As to the 'machinery' of this volitional passage, "we have in the first place a variety of 'special disposition,' and we have in the second place the presence of some ideal suggestion which is at the same time the presence of the starting-point of some one disposition. The consequent passage of this special disposition into act is, we may say, the bridge which carries our idea over into reality." Dispositions may be wholly or partly physical but must in every case possess a psychical aspect. The ideal suggestion is more or less identical in character with the first element of some psychical disposition, and the process described 'is of course so far what is called Redintegration.' If a disposition is originally physical and without a psychical aspect, there must be an experience of the disposition and its resulting action before there can be will: the idea of the end must coincide with the beginning of the disposition.

The paper considers certain objections to this conception and comes to the conclusion "that will is a psychical process certainly not original or ultimate or self-explanatory. It is everywhere a result from that which by itself is not volition. The passage of an idea into existence, we found, is the essence of will; and that passage, we have now seen, depends on machinery. Thus in psychology the conditions of will come before will itself, and, at least in psychology, these conditions are in every sense more ultimate than their consequence." The author does not regard the original tendency of ideas to realize themselves as the essence of volition, because this tendency does not explain how and

why one idea realizes itself in fact while another idea fails. As to pleasure and pain, the paper agrees that without them the will does not in fact originate or exist, but he cannot admit pain and pleasure into the essence of will, because they cannot possibly serve as a bridge for the passage of an idea to reality.

The discussion next considers the objection that, while will is made to rest upon dispositions, dispositions in turn are made to rest upon will; and replies that, in the first place, questions of origin must not be confused with questions of essence, and, in the second place, even if we could prove (what we cannot) that dispositions are the result of pleasure and pain, it does not follow that pleasure and pain are volitional or that dispositions result from will. Consequently we are not warranted in holding that the will is in any sense self-developed or autogenous. There is, for psychology, no will which comes before dispositions.

Every reader of this article has doubtless been led 'once more to examine doctrines too lightly maintained' and has felt grateful to this most keen and subtle thinker for this work. The article is more independent than either of the three articles on kindred subjects in *Mind*, XI., but can best be read in connection with them. The author insists upon the psychological point of view throughout, and one finds himself asking at the close of this discussion, as before at the close of the other three;¹ what then from a psychological point of view is an idea? One wonders whether a similar method applied to idea (as used by the author) might not lead to the conclusion that it also is a psychical process certainly not original or ultimate or self-explanatory, that it is everywhere a result from that which by itself is not an idea, and that in psychology the conditions of an idea come before the idea itself and, at least in psychology, these conditions are in every sense more ultimate than their consequence. As there is for psychology no will which comes before dispositions, may it not also be true that there is for psychology no idea which comes before dispositions? And dispositions? What are they and whence are they? If it is not the business of psychology to entertain these questions, as the author holds, then it surely is the business of psychology to accept some answer from whatever discipline does entertain them.

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¹ Cf. PSYCH. REV., X., p. 442, 7.

The Relations of Ethics to Metaphysics. W. H. FAIRBROTHER.
Mind, N. S., Vol. XIII., No. 49.

Mr. Fairbrother introduces his subject by reference to the Platonic assurance — and the generally accepted Greek faith — that a man can by introspective analysis discover ‘the manner in which he ought to live’ and can, further, instruct others in the results of his investigation. Moreover, our ethics must be deduced from the truth of things; what ought to be has no effective validity until it is made manifest that it has coherence with what is. The Platonic doctrine may be summed up in two propositions: (1) Ethical doctrine must be deduced or derived directly from the results of metaphysical investigation; (2) This deduction is possible. Both these propositions are strongly affirmed, and, with equal emphasis, denied to-day, such writers as Graham Watson and T. H. Green asserting that ‘to act morally is to determine oneself in accordance with the true nature of existence,’ while, on the other hand, Leslie Stephen maintains that ethics in common with the other sciences gives us ‘knowledge which within its own sphere is entirely independent of the metaphysician’s theories.’ The point at issue may be put in two ways: “(1) Are the ethical doctrines taught by the more important writers in this subject derived from, or traceable to, their respective metaphysical beliefs? or (2) *in abstracto*, is the subject matter of moral science of such a kind that it is necessarily affected by our belief as to the ultimate nature of man and the universe?”

Mr. Fairbrother, though acknowledging the greater finality of the solution of the latter question, determines, because of its more hopeful possibilities, to attack the problem in the more assured region of philosophical history.

He proceeds, then, to review the ethical teachings of well known and representative writers. Many thinkers (Plato among the ancients, Green and Prof. Watson to-day), explicitly and as far as possible, deductively, base their moral teachings on the results of their metaphysical investigations, not only in matters of abstract principles, but, to a certain extent at least, in affairs of concrete practical detail. On the other hand, many writers, it is popularly supposed, maintain their metaphysics and their ethics as closed domains — notably Kant, Spencer, Mill, and the English moralists of the eighteenth century. The latter, it is true, make no appeal to the truth of things but concentrate their attention on the bare fact of moral approval and disapproval, with much futile concern for ‘moral faculty’ theories. Mr. Fairbrother then considers individually the ethical systems of Kant,

Spencer and Mill, and makes clearly manifest the interdependence of their ethics and their metaphysics. He is inclined to conclude that 'ethics is independent of metaphysics only in so far as it is valueless even as ethics'; since it is concerned with the conduct of life it necessitates some theory of life which must needs in turn be based on some conclusion as to the nature of reality. What then is the significance of the contention of the school represented by Professor Sidgwick and Mr. Leslie Stephen? In the words of our author it means that 'in this year of our Lord, 1903, our knowledge of reality is not complete enough to enable us to deductively demonstrate the multifarious detail to which answers must be given, and practically acted upon, in daily life.' But the impossibility of such ideal detailed deduction is not peculiar to the science of ethics and must not here any more than in any other field lead us to elevate a temporary difficulty into a general and absolute principle.

EDNA ASTON SHEARER.

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APPARATUS.

Class Experiments and Demonstration Apparatus. E. B. TITCHENER. *American Journal of Psychology*, XIV., 175-191.

The writer offers a large number of systematic and explicit suggestions in regard to topics and materials of lecture demonstration. He draws a preliminary distinction between 'experiments that are performed psychologically, by the student, and demonstrations that are made to the class by the lecturer' (such as the taking of the instructor's reaction-time). The demonstration-apparatus here discussed is designed for experiments of the first class; it is apparatus which standardizes the conditions for such introspections of the quality of sensations as time and place allow. "The instruments fall roughly into two groups according as the sense appealed to is capable or incapable of 'action at a distance.'" The details presented for vision, hearing, and the skin-senses may be summarized as follows:

I. Visual sensations: (1) Demonstration of the two great visual series, grays and colors. For grays, the best single means of demonstration is Marbe's album of photographic grays. For colors, a true 'psychological spectrum' is needed. This should consist of four bands of color so hinged that the color scale may either be presented in one dimension or made to return on itself, the one band shading off from red to yellow, the second from yellow to green, the third from green to blue and the fourth from blue through purple back to red. No such device, however, is as yet on the market. (2) Demonstra-

tion of the three moments in a color-sensation by (*a*) variation of color-tone and saturation while brightness remains constant; (*b*) variation of brightness and saturation while color-tone remains constant; (*c*) variation of color-tone and brightness while saturation remains constant; and (*d*) variation of saturation while both color-tone and brightness remain constant. The writer has under construction a demonstration color-mixer, consisting essentially of a horizontal shaft running parallel with the front edge of the lecture-table and driven by a motor underneath, which, by means of a set of friction-plates, may be made to turn at any required speed one or more of six large-size discs placed at 30 cm. intervals. (3) Demonstration of the laws of color-mixture. (4) Demonstration of local adaptation and after-images; (5) of contrast; (6) of indirect vision. For color after-images, the Wundt demonstration apparatus is recommended, and for contrast, the Hering window if the dark room is so near that the students may conveniently pass through it in groups. The writer describes simply constructed devices of his own by which one may furnish simultaneously to a large number of students the conditions for the familiar after-image experiment with the abutting black and white fields and central fixation-points, for Meyer's experiment, and for observing the alteration of colors in indirect vision. (7) Demonstration of the effects of color-blindness. The writer exhibits to his classes two sets of Holmgren worsteds as they were actually sorted by two partially color-blind observers. (8) Demonstration of Purkinje's phenomenon. This purpose is sufficiently answered by Professor Sanford's suggestion of requiring the class to observe a selected red and blue through partially closed eyes.

II. Auditory sensations: (1) Demonstrations of the two sound-modalities, noise and tone, by showing (*a*) the distinction between a single noise and a single tone; (*b*) the tonal character of many apparently simple noises (such as the strokes of a hammer upon the blocks of a xylophone); (*c*) the distinction between complex and simple noises and (*d*) between simple tones and clangs; and (*e*) the generation of clangs from noises and of noises from clangs. (2) Demonstration of the range of tonal hearing. The lower limit can scarcely be demonstrated, as the tones are too weak, but the larger Appunn wire forks may be clearly seen to vibrate. (3) Demonstration of pitch-discrimination; (4) of clang-tint; (5) of clang-analysis; (6) of clang-relationship; (7) of the continuity of the tonal series; (8) of beats; (9) of difference-tones; (10) of fusion. Among the devices suggested for these purposes, are the Appunn *c*-box and over-tone appa-

ratus, as an alternative to the Ellis harmonical, for clang-analysis, and a large Mach model of the piano key-board for the explanation of clang-relationship. The new pattern Stern variator, actuated by the Whipple double gasometer, is recommended as the best 'universal' apparatus for demonstrations in tonal psychology.

III. Cutaneous sensations: (1) Demonstration of pressure-spots. A simple instrument devised by von Frey may easily be furnished to every member of a large class. This device consists of a stout horse-hair waxed into a short bit of narrow-bore glass-tubing. (2) Demonstration of warmth and cold spots. Carpenter's 'spikes' rubbed to a rounded point will answer for temperature-cylinders.

Taste, smell, and organic sensations are difficult material for class-demonstrations. The writer gives, however, interesting indications of his own illustrative procedure. He closes his suggestions with remarks upon models, mentioning the Auzoux eye-model, the Steger models of the internal ear, and Helmholtz's mechanical model of ear-drum and ossicles, and giving directions for a home-made model of the cochlea. His article is a contribution to the practical pedagogy of psychology for which every teacher of beginners must be grateful.

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BOOKS RECEIVED FROM NOVEMBER 7 TO DECEMBER 5.

Bericht über den I. Kongress für experimentelle Psychologie. (Giessen, April, 1904.) Edited by F. SCHUMANN. Leipzig, Barth, 1904. Pp. xv + 127.

Some Aspects of Social Sensitiveness. W. A. McKEEVER. Master's Diss. University of Chicago, 1904. Pp. 22.

Psychologische Studien. I. Abt. *Beiträge zur Analyse der Gesichtswahrnehmung.* 1 Heft; pp. 160. II. Abt. *Beiträge zur Psychologie der Zeitwahrnehmung.* 1 Heft; pp. 166. Leipzig, Barth, 1904. Mk. 5. [These Studien are devoted to the work of the Psychological Institute of the University of Berlin. Both of the issues before us contain collected papers of Professor Schumann.]

Willensfreiheit, Zurechnung und Verantwortung. M. OFFNER. Leipzig, Barth, 1904. Pp. ix + 103.

Interrogative Thought and the Means of its Expression. EDWARD T. OWEN. Repr. fr. Trans. of the Wisconsin Acad. of Sci., etc., Vol. XIV. Pp. 255-470.

Education in Religion and Morals. GEORGE A. COE. Chicago, F. H. Revell Co., 1904. Pp. 434.

A System of Metaphysics. GEORGE STUART FULLERTON. New York, Macmillan Co., 1904. Pp. x + 627. \$4 net.

Adam Smith. T. W. HIRST. English Men of Letters Series. New York and London, Macmillans, 1904. Pp. viii + 236.

Mass and Class. W. J. GHENT. New York and London, Macmillans, 1904. Pp. vii + 256.

NOTES AND NEWS.

THE third International Congress of Philosophy will be held at Heidelberg in 1908. The invitation from the German delegates, it is stated, was authorized by the Imperial Government; Prof. Strong of Columbia University has been added to the English-speaking members of the International Commission of the Congress.

WE are in receipt of a *Numéro exceptionnel* (No. 6, 12^e Ann., November, 1904) of the *Revue de Métaph. et de Morale* devoted to the proceedings of the second International Congress at Geneva. Apart from the five leading papers, given in full, its reports are full and accurate résumés. The proceedings are to be published officially later on — *Actes du Congrès, &c.*, Kündig, Geneva — by a committee. Two topics which were especially reported upon at the Geneva Congress were the project for a *Vocabulaire*, now being realized under the direction of M. Lelande, as is noted below, and the matter of an international language. As to this latter the remarkable progress of Esperanto may be seen by those who care to refer to the report contained in this number of the *Revue* (pp. 1037 ff.) An interesting item is that M. Boviach has done Leibnitz' *Monadology* into Esperanto.

THE two fascicles which have just appeared (7 and 8 of Vol. IV.) of the *Bulletin de la Société française de Philosophie* contain sections of the new *Vocabulaire philosophique* noted in an earlier issue of the *Bulletin*. These two sections cover titles from Dabit to Dys — concluding the letter D. It is interesting to note that the 'international roots' given in the *Vocabulaire* for the principal terms employ affixes and suffixes drawn from the language Esperanto (see a table of meanings on p. 221 of No. 8 of the *Bulletin*).

THE following items are gathered from the press :

FOSTER P. BOSWELL, Ph.D. (Harvard), has been appointed assistant in psychology, and Edwin Lee Norton instructor in philosophy, in the University of Wisconsin. Miss Florence Fitch, Ph.D. (Berlin), has been appointed associate professor of philosophy in Oberlin College.

AT King's College, London, Professor Caldecott will lecture on general psychology during the first and second terms of coming session; Professor Halliburton on histological psychology during first term; and Dr. C. S. Myers on experimental psychology (with demonstrations and laboratory work) during the second and third terms.

MR. FRANCIS GALTON, F. R. S., has founded in London University a fellowship for the promotion of the study of 'National Eugenics' 'the study of the agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally.'

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AMERICAN JOURNAL OF RELIGIOUS PSYCHOLOGY AND EDUCATION. I., 1. Editorial. Stages of Religious Development: *Jean Du Buy*. The Jesus of History and of the Passion *versus* the Jesus of the Resurrection: *G. Stanley Hall*. Faith: *James H. Leuba*. Miscellany.

MIND, NEW SERIES, 51. On Truth and Practice: *F. H. Bradley*. Meinong's Theory of Complexes and Assumptions (II.): *B. Russell*. The Infinite and the Perfect: *J. S. McKenzie*. Scepticism of the Instrument: *H. G. Wells*. The Conception of Experience in its Relation to the Development of English Philosophy: *T. M. Forsyth*. Miscellany.

AMERICAN JOURNAL OF SOCIOLOGY, X., 2. The Development of Sociology: *Geo. E. Vincent*. The Concepts and Methods of Sociology: *Franklin H. Giddings*. The Problems of Sociology: *Gustav Ratzenhofer*. Moot Points in Sociology (VIII.): *Edward Alsworth Ross*. The Nature of Social Unity: *Romanzo Adams*. Introduction to Sociology (XI.): *G. De Greef*. Miscellany.

JOURNAL OF COMPARATIVE NEUROLOGY AND PSYCHOLOGY, XIV., 5. Retrograde Degeneration in the Corpus Callosum of the White Rat: *S. Walter Ranson*. The Early History of the Olfactory Nerve in Swine: *Edward A. Bedford*. The Relation of the Chorda Tympani to the Visceral Arches in *Microtus*: *Victor E. Emme*. Edi-

torial: Recent Contributions to the Body-Mind Controversy. *C. L. Herrick*. Literary Notices.

INTERNATIONAL JOURNAL OF ETHICS, XV., 1. The Bias of Patriotism; *Alfred Jordan*. Moral Instruction in Schools (concluded): *Herbert M. Thompson*. Music and Morality; *Halbert H. Britan*. Truth and Imagination in Religion: *Ralph Barton Perry*. Human Pre-Existence: *J. Ellis McTaggart*. A Japanese View of American Trade Unionism: *Hoito Ito*. English Prisons and Their Methods: *H. J. B. Montgomery*. Book Reviews.

BULLETIN DE LA SOCIÉTÉ FRANÇAISE DE PHILOSOPHIE, IV., 4. Sur les Origines de la Philosophie de Spencer (Thèse): *M. R. Bertelot*. Discussion.

JOURNAL DE PSYCHOLOGIE NORMALE ET PATHOLOGIQUE, I., 3. La Mesure de l'Intelligence: *J.-J. Van Biervliet*. Considérations Générales sur la Structure et le Fonctionnement du Système Nerveux (fin): *G. Durante*. Influence des Images sur les Sécrétions: *A. Mayer*. Notes et Discussions. Bibliography: I. Psychologie Normale. II. Psychologie Pathologique. I., 5. L'Amnésie et la Dissociation des Souvenirs par l'Émotion: *Pierre Janet*. Le Langage Psychologique: *P. Sollier*. Notes et Discussions. Bibliographie: I. Psychologie Normale. II. Psychologie Pathologique.

REVUE DE PHILOSOPHIE, IV., 8. La Théorie Physique, son Objet, sa Structure (4^e article): *P. Duhem*. Du Phénomène Psychologique des Affinités: *Raoul de la Grasserie*. Aristote et Platon suivant Zeller: *Bulliot*. Aristote a-t-il Connue le *Sophiste*? *C. Huit*. Miscellany.

REVUE DE L'ÉCOLE D'ANTHROPOLOGIE, XIV., 8-9. Les Tumulus (Cours de Technologie ethnographique): *A. D. Mortillet*. La Valeur Physique Générale des Indigènes Sahariens: *J. Huguet*. Monographie de la Grotte de Noailles (Corrèze): *L. Bardon* et *J. A. Bouyssonie*.

L'ANNÉE PHILOSOPHIQUE, XIV. La Morale d'Épicure: *V. Brochard*. La Critique de Bayle. Critique des Attributs de Dieu: Simplicité: *F. Pillon*. Essai sur l'Instinct réaliste. Descartes et Thomas Reid: *L. Dauriac*. Corrections à la Traduction Française des Prologomènes de Kant: *O. Hamelin*. Bibliographie Philosophique Française de l'Année 1903: *F. Pillon*. Nécrologie: Charles Renouvier: *F. Pillon*.

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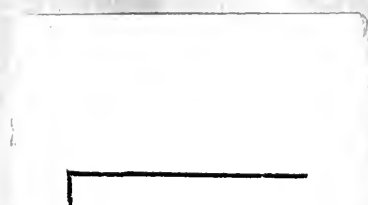
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